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Preparation and Sensory Evaluation of Arrowroot *Masala Khakhra*

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Abstract

Khakhra is a crispy version of *roti*, it is usually a cracker that is handmade and roasted to provide crunchiness. It is also a healthy snack which is a common recipe in the Rajasthani and Gujarati cuisines of western India, especially a Jain's and Gujarati's. In present investigation efforts were made to prepare *masala khakhra* by using different proportions of ingredients like whole wheat, besan, rice flour, arrowroot powder, dehydrated onion. After few trials a recipe was standardized using blends of whole wheat flour, gram flour, rice flour, arrowroot powder, dehydrated onion and spices to taste. Physico-chemical, nutritional profile and sensory analysis of final product made using standardized recipe was carried out. Sensory evaluation was done by semi trained panelists on 5 point hedonic scale. Shelf-life study of the final product was carried over a period of 14 days at room temperature it was found that product maintained the required texture for first seven days at room temperature.

Keywords: Masala *khakhra*, Sensory Evaluation, Traditional Recipe, Nutritional value, Rice flour, Arrowroot powder, Dehydrated onion

Khakhra is a traditional ready-to-eat snack or breakfast item popular in the North Western part of India. This product is very popular in the state of Gujarat. As a convenient snack it is popular during travels because it does not require any further processing at the point of consumption, need minimal packaging and has long shelf-life. *Khakhra* is a nutritious Indian diet snack. Very crispy, crunchy, mouthwatering tasty and very light in weight snack. Favorite among people of all ages from children & teenagers to adult. Available in many different flavors. It is usually relished with various kinds of chutneys, pickles, with coffee, tea, butter, ghee, topped vegetable, cheese or yoghurt. It is easy to carry and most of the people carry these as snack during travel. Since, *khakhra* is very simple to make and is enjoyed as a food item, its value addition can be done by adding many healthy ingredients in powered form as it is to be rolled very thinly. Value addition of *khakhra* with healthy flours, and/or with seeds like garden cress seeds, linseeds etc. will provide novel health benefits and this is the gap in the market as these supplemented and enriched *khakhras* as not available as such. These enriched *khakhra's* will further provide consumers a new alternative to traditional *khakhras*. More over this research will bring a new potential to the existing khakhra market. Today, we find that the people are becoming more aware about their health and various problems related to it. Thus, for maintaining changing life style and stay fit one needs to eat nutritious as well as healthy food.

This study aimed to develop *masala khakhra* by using blend of whole wheat flour (*atta*), bengal gram flour (*besan*), rice flour, arrowroot powder and other spices

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Effect of aromatic amino acids on the surface properties of 1-dodecyl-3-(4-(3-dodecylimidazolidin-1-yl)butyl)imidazolidine bromide gemini surfactant

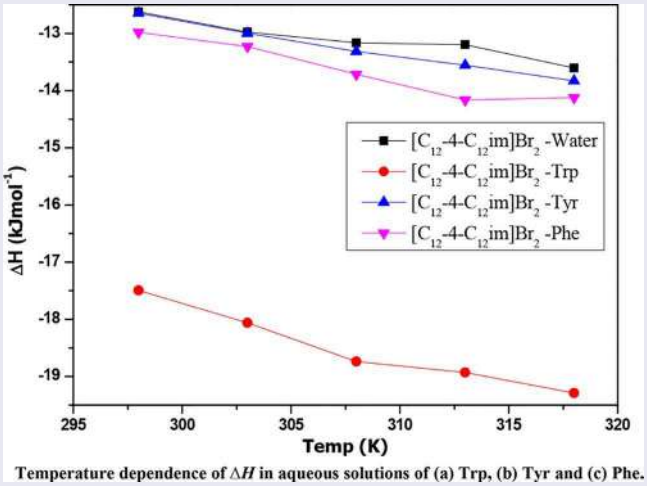
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ABSTRACT

Herein, we have studied the micellization of imidazolium-based ionic liquid type gemini surfactant ($[C_{12}\text{-4-}C_{12}\text{im}]Br_2$) in the absence and presence of aromatic amino acids by conductivity and surface tension measurements at different temperatures (i.e., 298, 308, and 318 K). Various interfacial parameters, that is, Gibbs surface excess (Γ_{max}), minimum head group area at air/water interface (A_{min}), and thermodynamic parameters, that is, free energy of micellization/adsorption ($\Delta G_m^\circ/\Delta G_{ads}^\circ$), the standard entropy of micellization/adsorption ($\Delta S_m^\circ/\Delta S_{ads}^\circ$), and the standard enthalpy of micellization/adsorption (ΔH_m°) were evaluated for all the systems. The standard entropy of adsorption (ΔG_{ads}°) was found higher than the standard entropy of micellization (ΔG_m°) for all the systems at all temperatures. The results also showed that the micellization of $[C_{12}\text{-4-}C_{12}\text{im}]Br_2$ depends on the nature of amino acids as well as temperature. The *CMC* of $[C_{12}\text{-4-}C_{12}\text{im}]Br_2$ in the absence and presence of amino acids at different temperature decreases with the increase of temperature.

GRAPHICAL ABSTRACT



Temperature dependence of ΔH in aqueous solutions of (a) Trp, (b) Tyr and (c) Phe.

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Amino acid; *CMC*; hydrophobic interactions; micellization

Introduction

The emergence of the gemini surfactants has been one of the most exciting developments in surfactant chemistry in the recent past. Gemini surfactants have generated interest in colloid chemistry due to their superior performance over conventional surfactants in various industrial applications like detergents, antiseptics, bactericidal agents, and personal care products.[1–3] The superior properties of gemini surfactants over conventional surfactants are due to the stronger intra- and intermolecular hydrophobic interactions between the two hydrophobic alkyl chains. Gemini surfactants can be regarded as green surfactants because they exhibit higher functionalities that lead to the reduction in their consumption.[4] The ionic liquid-type gemini surfactants are a new generation of amphiphilic molecules. The ionic liquid-type gemini surfactants (ILGS) unexceptionally are based on imidazolium unit, the typical ionic liquid core. They display significantly stronger tendency toward self-aggregation, and stronger attraction with aromatic rings through π-π interaction, due to the existence of imidazolium head groups.[5–8] Owing to the inherent ionic

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Effect of cationic gemini surfactant and its monomeric counterpart on the conformational stability and esterase activity of human serum albumin

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ABSTRACT

The binding effect of gemini surfactant, hexanediyl-α,ω-bis-(*N*-(2-hydroxyethyl)-*N*-methylhexadecylammonium bromide) (16-6-16 MEA) and its monomeric counterpart *N*-(2-hyroxyethyl)-*N*,*N*-dimethylhexadecylammonium bromide (16-MEA) on the structure and esterase like activity of human serum albumin (HSA) was unravelled by using UV–visible, fluorescence, three dimensional fluorescence, time resolved fluorescence and circular dichroism techniques in combination with molecular docking and molecular dynamic simulation methods. Fluorescence quenching mechanism was employed to estimate the Stern–Volmer quenching constants, $K_{sv,}$ and the corresponding thermodynamic parameters like ΔG, ΔS and ΔH for HSA-16 MEA/16-6-16 MEA systems. The results showed the static quenching mechanism and spontaneous binding of 16 MEA/16-6-16 MEA with HSA. In addition to other interactions, the hydrophobic interaction (which is more effective in case gemini surfactant) plays major role in the process of binding of both the surfactants with HSA. Synchronous fluorescence reveals that there is a slight effect of 16 MEA/16-6-16 MEA on the fluorescence intensity of tyrosine but a significant effect on tryptophan. UV–visible results obtained, suggest the complex formation between HSA and 16MEA/16-6-16 MEA through static quenching mechanism. Circular dichroism results confirmed that the decrease in the α-helical content of HSA is more on interaction with 16-6-16 MEA as compared to 16 MEA. In addition, the esterase activity of HSA was also done, which was found to decrease in presence of both 16 MEA and 16-6-16 MEA. Additionally, we also utilized computational approaches for deep insight into the binding of 16 MEA/16-6-16 MEA with HSA and the results well matched with our experimental results.
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1. Introduction

Being most abundant macromolecules in living systems, proteins have a crucial role in almost all biological processes. Protein functions are directly dependent on its three dimensional structure [1]. A lot of work has been done on protein surfactant interactions [2,3] since the property of surfactants to act as denaturants of water soluble proteins was discovered [4]. The relevance of these interactions is important in a wide spectrum of applications in drug delivery, cosmetics and food industry. Surfactants in solutions on complexing with proteins can modify their properties like surface hydrophobicity and conformational stability [5–8]. The interactions generally involved may be electrostatic or hydrophobic or in some cases specific binding between surfactant and protein takes place.

Human serum albumin (HSA) is composed of 585 amino acid residues (in a single polypeptide chain) and high cysteine content. It is a circulatory protein, having a molecular weight of ~66 kDa, present in blood plasma, playing a crucial role in binding as well as transportation of various endogenous and exogenous compounds in the body [9–11]. HSA is unique in having a single tryptophan (Trp 214) amino acid residue, so can be studied by intrinsic fluorescence. It has three domains viz. I, II and III [12]. All the three domains are further subdivided into A and B [9,10]. It helps to maintain pH of plasma and colloidal blood pressure [13].Various ligands bind to serum albumins and thus serve as model proteins to study biophysical, biochemical and physicochemical properties [14,15]. A lot of research articles on serum albumins have revealed that the affinity of a variety of biologically active compounds like metabolites, drugs etc. influence their distribution and metabolism in blood [16,17]. The binding and interaction of HSA with amphiphilic molecules can result in its folding or unfolding depending on its concentration and the concentration of the surfactant used [18–23]. It is important to study the binding process carefully by calculating binding parameters, number of binding sites and the energetics involved for evaluating the distribution and effectiveness of the ligand used. Ionic surfactants are the amphiphilic molecules, generally chosen to study the protein-surfactant

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A novel biocompatible Ni^{II} tethered moiety as a glucose uptake agent and a hit against methicillin-resistant *Staphylococcus aureus*

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ABSTRACT

In the efforts to develop a biocompatible transition metal complex as a drug alike for some of the prevailing non-communicable diseases (NCDs) and communicable diseases (CDs), a novel binuclear Ni^{II} compound [{Ni^{II}(hpdbal-sbdt)}$_2$] (**2**) has been synthesized by the reaction of $Ni(OAc)_2.4H_2O$ and H_2hpdbal-sbdt (**1**) [**1** is a dibasic tridentate ONS^{2-} donor Schiff base ligand obtained by the condensation of 2-hydroxy-5-(phenyldiazenyl)benzaldehyde (Hhpdbal) and S-benzyldithiocarbazate (Hsbdt)]. Both ligand **1** and compound **2** were structurally characterized in the solid and solution state using various spectroscopic techniques like ATIR, ^{1}H NMR, ^{13}C NMR, TGA, FESEM, EDS and CHNS analysis. The antidiabetic activity of H_2hpdbal-sbdt (**1**) and [{Ni^{II}(hpdbal-sbdt)}$_2$] (**2**) were assessed using 2-NBDG uptake assay. The assay results showed 85% and 95% of fluorescent glucose uptake by insulin resistant HePG2 cells treated with compounds **1** and **2** respectively. The 2-NBDG uptake by the cells treated with the compound **2** was observed to be comparable to the standard anti-diabetic drug metformin. Compounds **1** and **2** were also tested against five bacterial and two fungi strains in order to evaluate pathogen killing activity. Compound **2** showed significant inhibitory action towards the methicillin-resistant *Staphylococcus aureus* (MRSA) strain with an MIC value of 2 μg/mL whereas the ligand **1** was found to be inactive. Furthermore, the interactive nature of compound **2** with a model serum carrier protein bovine serum albumin (BSA) was studied using a multi-spectroscopic approach which provided an insight into the nature and extent of binding, conformational changes and the quenching of amino acid residues of the protein.

1. Introduction

The alarming rise in the number of people suffering with non-communicable diseases (Daar et al., 2007) like type II diabetes and communicable diseases in the form of few antibiotic resistant pathogenic infections (World Health Organization, 2014) like waterborne and airborne diseases have caused a global health crisis scenario. The recent WHO survey reported that approximately 1.5 million people died due to diabetes in 2015 (World Health Organization, 2016). In addition, the global surveillance report on antimicrobial resistance by WHO clearly described a void in the discovery of new drugs as the resistivity of pathogens are increasing towards well known antibiotics. This increasing resistivity has caused a failure of the commercially available oral drugs over treated individuals (Brown and Wright, 2016; Kuntikana et al., 2016; Bhat and Kumar, 2015; Kongot and Kumar, 2018). To overcome the increasing upsurge of such cases, development of effective treatment approaches are in extraordinary demand. Researchers are working to overcome these conflicts and in this pursuit, transition metal compounds have attracted much scope. With the advent of salvarsan (an arsenic based drug) (Antman, 2001) and cisplatin (a platinum based drug) (Kelland, 2007) for the treatment of syphilis and testicular cancer respectively, there has been a huge increment in the number of metal based compounds studied for their biological activities, in particular those of transition metals (Maurya et al., 2010; Maurya et al., 2012; Maurya et al., 2006a; Maurya et al., 2006b; Pessoa et al., 2015; Maurya et al., 2009; Shankar et al., 2018; Mukherjee et al., 2011). One among such important metals is nickel which has been studied widely for its therapeutic properties in the form of coordination compounds. Sridhar et al. recently reported a Ni(II) complex of (Z)-4-fluoro-N-(2,6-dimethylhept-5-enylidene) benzenamine which exhibited

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Biological nitrogen removal from wastewater by *Paracoccus denitrificans* ISTOD1: optimization of process parameters using response surface methodology

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P.denitrificans, Response Surface Methodology, Ammonia removal, Nitrogen balance analysis, Pre-optimization

ABSTRACT

In freshwater ecosystems, the vital biogenic constituent is nitrogen and the increasing nutrient load discharge from wastewaters has turned into a more grievous issue. A previously demonstrated bacterial strain *Paracoccus denitrificans* ISTOD1 was studied for the bioremoval of nitrogen in the form ammonia-N from synthetic wastewater media. A high concentration of NH_4^+-N of 100 mg/L was used to study the behavioral pattern of the bacterial strain during the utilization process. Pre-optimization experiments with different culture conditions for the strain ISTOD1 exhibited high ammonia removal efficiency of 83.9 %, 75.7% and 76.23% in presence of glucose as C-source, pH 7 and temperature of 30°C respectively. Optimization of process parameters for enhancing the heterotrophic nitrification and denitrification process in synthetic wastewater done using the Response Surface Methodology (RSM) showed 98.2% and 91.8% reduction in the concentration of ammonia and nitrate, respectively as compared to the pre-optimized conditions. Nitrogen balance analysis revealed that approximately 67 % of NH_4^+-N was removed as gas products and 32.4% was transformed into biomass. This study helps in developing a biodegradation treatment method under aerobic conditions suitable for purification of ammonia-rich wastewater and eliminating the by-product such as NO_3^-N involved in polluting the receiving waters.

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1. Introduction

One of the major environmental problems presently is the emerging nitrogen pollution caused by the continuous accumulation of nitrogenous compounds in the form of ammonia, nitrite and nitrate nitrogen in the surrounding environment. The increasing civilization and human activities has led to negative consequences leading to excessive amount of organic contaminants and nitrogenous wastewater which includes industrial, domestic, agricultural wastewater etc. being discharged into the surrounding fresh water bodies [Gao at al., 2014; Wang et al., 2016; Gupta and Thakur, 2015]. The presence of uncontrolled discharges of wastewater containing high concentration of aqueous ammonia leads oxygen depletion, increase occurrence of pathogenic microorganisms, is toxic to the fish and nitrate damages their immune system as a result it ultimately affects the human health through bioaccumulation [Huang et al., 2017; Grguric et al., 2000]. Therefore, there is an urgent need for a stringent research so that the nitrogen-containing wastewater could be effectively purified before discharging.

Physical, chemical and biological approaches help in the conventional removal of nitrogen from both wastewater and natural water. However, biological treatment approach has proved to be more advantageous compared to others due to its ease of implementation, being eco as well as pocket friendly. Biological nitrogen removal in wastewater is usually carried out by the nitrification-denitrification processes in a two-stage treatment process. Recently, researchers are focusing on the applicability of a single-stage treatment approach though simultaneous nitrification and denitrification (SND). Microbes that are capable of conducting heterotrophic oxidation of NH_4^+-N and reducing the nitrification products, NO_2^- and NO_3^- completely under aerobic conditions are gaining attention and have been reported for high ammonia removal efficiency such as *Paracoccus denitrificans* ISTOD1 [Medhi et al., 2017], *Diaphorobacter* sp. [Ge et al., 2015], *Agrobacterium* sp. LAD9 [Chen and Ni, 2012], *Acinetobacter* sp. HA2 [Yao et al. 2013], *Vibrio diabolicus* SF16 [Duan et al., 2015], *Bacillus sp. YX-6* [Song et al., 2011].

The major factors affecting the heterotrophic nitrification–aerobic denitrification process are carbon source, C:N ratio, temperature, initial pH, shaking speed and dissolved oxygen (DO) concentration. Previous studies have shown that different species of bacteria have their own distinct response to these parameters [Chen and Ni, 2012; Niel et al., 1992]. However, if the influence strength of these factors and their interactions on the heterotrophic nitrification–aerobic denitrification process are systematically evaluated, it will help in better understanding of the mechanism. Therefore, to evaluate valuable parameters which affect a process, Response surface methodology (RSM), a combination of mathematical and statistical methods for the design of experiments assists with the main objective of optimizing the process. It is widely used as an effective statistical method in various fields [Asadi and Zilouei, 2017].

This present study investigates a novel bacterium *Paracoccus denitrificans* ISTOD1 isolated from the wastewater samples of a municipal sewage treatment plant showing characteristic nitrogen removal pathway. The objective of the study was to optimize the physico-chemical conditions required to remove ammonia and nitrate nitrogen from synthetic

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ORIGINAL PAPER

Biosafety assessment of municipal wastewater after treatment by *Serratia* sp. ISTVKR1

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Abstract The previously described potent biodegrading bacterial strain *Serratia* sp. ISTVKR1 isolated from sludge of Vasant Kunj Sewage Treatment Plant (VK STP) was used for the study of detoxification of municipal wastewater contaminants with the help of in vitro bioassays conducted on human liver cancer cell line HepG2. The strain has previously been shown to reduce wastewater contaminant load as revealed by a sevenfold reduction in COD and removal of some organic contaminants in the GC–MS analysis of wastewater post-72-h bacterial treatment. Cytotoxicity, genotoxicity and dioxin-like behavior of real municipal wastewater (collected from inlet of VK STP) was assessed before and after bacterial treatment using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT), alkaline comet and 7-ethoxyresorufin-O-deethylase (EROD) assays, respectively. The bacterial strain was inoculated into MSM broth (pH = 7.2) containing 50% v/v filter-sterilized influent of VK STP and incubated up to 240 h at 30 °C and 130 rpm. Physicochemical and toxicological analyses were performed for the culture samples. The results of bioassays revealed an increase in cell viability by 40.16% and a reduction in the % EROD activity by 58.4% in the 240-h bacteria-treated sample as compared to the 0-h sample. Genotoxicity as indicated by tail moment (TM) and olive tail moment (OTM) was found to reduce by five- and threefold, respectively, after 240-h bacterial treatment. The results of the study confirmed the potency of the bacterial strain in detoxification of wastewater contaminants.

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Keywords Wastewater · Serratia · MTT · Comet · EROD · Detoxification

Introduction

The generation of municipal waste is ever increasing with population growth and economic development. Municipal wastewater and sludge may contain many trace organic pollutants, such as PAHs, alkylphenols and phthalates, which are recalcitrant to biodegradation and thus are an important source of organic pollutants into the aquatic environment (Bolong et al. 2009; Harrison et al. 2006). These chemical substances are potentially harmful, causing various problems such as bioaccumulation, feminization of organisms, cytotoxicity, genotoxicity and endocrine disruption, and consequently can be a threat to the health of the global environment (Dizer et al. 2002; Fatta-Kassinos et al. 2011). Bacteria have proved to be an efficient, sustainable and cost-effective tool for reduction in wastewater contaminant load (Gupta and Thakur 2016; Rattier et al. 2014). Their potency of degrading a wide spectrum of contaminants ranging from chlorinated congeners (Song et al. 2015), aromatic hydrocarbons (Díaz 2010; Kuppusamy et al. 2016), aliphatic hydrocarbons (Lo et al. 2015; Ramadass et al. 2016), personal care products (Edwards and Kjellerup 2013) and transforming heavy metals (Karve and Choudhary 2016; Patel et al. 2015; Valls and De Lorenzo 2002) has been well established. *Serratia* sp. has been shown to be an effective degrader of organic contaminants (Cycoń et al. 2013; Zhang et al. 2010) and heavy metals (Cristani et al. 2012).

Until recently, most researches focused on the study of these wastewater contaminants which are mainly based only on the analysis of physicochemical parameters, such as biochemical oxygen demand (BOD), chemical oxygen

PLOS ONE

RESEARCH ARTICLE

Discovery of two new species of *Crotalaria* (Leguminosae, Crotalarieae) from Western Ghats, India

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Abstract

Two new species of Fabaceae-Papilionoideae are described and illustrated. *Crotalaria suffruticosa* from Karul Ghat region of Maharashtra is morphologically close to *C. albida* and *C. epunctata*. *C. multibracteata* from Panhala region of Maharashtra resembles *C. vestita*. *C. suffruticosa* differs from *C. albida* and *C. epunctata* in its habit, leaf, inflorescence, callosity, keel type, stigma, style morphology and number of seeds/pod. To test if the new species differ from their morphologically most similar species, we measured various traits and performed a Principal Component Analysis (PCA). This analysis shows that the new species differs from similar species in gross morphology for several diagnostic traits and showed correlations between the variables or distance among groups and estimated the contribution of each character. Phylogenetic analyses were also conducted based on nuclear (ITS) and plastid (*matK*) markers. The analyses revealed nucleotide differences between the new species and their close allies attributing to their distinctiveness. A map and key including all species of *Crotalaria* from Maharashtra state are provided. Conservation status of the two new species have also been assessed.

Introduction

The Crotalarieae (Benth.) Hutch., (Fabaceae) is the largest tribe in the genistoid alliance (containing 51% of genistoid legumes) and comprises 16 genera and 1204 species [1–5]. More than half of the diversity of the tribe belongs to the genus *Crotalaria* L., with 702 species [6–7]. Recent molecular work has provided profound insights into generic and specific relationships and better understanding of the group in the tribe Crotalarieae and the genus *Crotalaria*, thereby establishing the monophyly of the genus [3, 5–6, 8]. An infrageneric classification of *Crotalaria* was attempted by Le Roux et al. [6], based on molecular phylogenetic data, which brought significant advances in the understanding of the infrageneric classification, redefined and complemented the previous classification given by Polhill in 1982 [9]. In India, the revisionary work on the genus *Crotalaria* was undertaken by Ansari [10] to which further data was incorporated by Subramaniam et al. [8]. The genus *Crotalaria* is distributed in tropical and sub-tropical regions of the world. The species of *Crotalaria* exhibits great diversity of habit and

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Endangered Medicinal Plant *Polygonatum cirrhifolium* (Wall.) Royle Undergoing Erratic Male Meiosis in Kinnaur Population

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Summary *Polygonatum cirrhifolium* commonly known as Sobnyam in Kinnaur is rich source of starch, pectin, protein and fiber content. In the present study, two accessions of *P. cirrhifolium* belonging to family Asparagaceae were studied for male meiosis from the cold desert region of Kinnaur. Both the accessions showed the presence of 16 bivalents (based on x=8) at diakinesis and metaphase, which is in conformity with the previous reports. Earlier, floristic diversity of medicinal and aromatic plants was studied by various workers, but the cytological study along with the meiotic abnormalities in the species has been carried out for the first time from the study area. Therefore, there is need to generate awareness among the local people regarding the conservation and utilization of medicinal plants.

Key words Endangered, Wild edible plant, Meiotic irregularities, Ethno medicinal value, Kinnaur, Himachal Pradesh.

Present study was conducted in district Kinnaur, the high altitude area that comes under Trans Himalayan arid zone rich in endemic plants. District Kinnaur in Himachal Pradesh lies between 31°05′50″–32°05′15″N latitude to 77°45′–79°00′35″E longitude and cover an area of about 6401 km^2. *Polygonatum* a genus of about 57 species has its centre of diversity in Eastern Himalayas and Western China (Poonam *et al.* 2011). Around the world found in Northern Asia, China, Nepal, Bhutan, Japan, temperate parts of Eurasia and North America at an elevation of 2000–4000 m. In India the species is occasionally found in the forest and grassy slopes of temperate Himalayas in between 1500–3000 m in Himachal Pradesh, Uttarakhand, Manipur and Sikkim (Balkrishna *et al.* 2012).

P. cirrhifolium is an erect tall perennial herb growing 60–120 cm in height. Leaves are narrow lance like, in whorls of three to six, linear 7–12 cm long, 3–4 mm wide. Stem is erect, weak and glabrous often climbing by means of tendril like tips of leaves. The flowers are tube shaped borne as drooping clusters from leaf axis with white coloured triangular petals. The fruits are orange red coloured berries when ripe (Fig. 1). The plant grows at an altitude range of 2000–3100 m in Kinnaur. *Polygonatum* species have traditional use, both as medicine and food, in China and other countries, like the Northern and Eastern United states, South-Central Canada, India and Korea (Youn *et al.* 2007, Misra *et al.* 2008).

Cytologically this species revealed intraspecific variability as $2n$=26, 28, 32, 38, 56. Kinnaur exhibit unique, isolated, extreme climatic locations rich in endemic forms. The non-availability of cytological information about taxa from the region promoted us to study this endangered plant.

Earlier the medicinal importance of the plant was studied from Kinnaur (Negi and Chauhan 2009), but the cytological investigation have remained unexplored, so the present study focused on the various irregularities during meiosis in the studied species.

Materials and methods

Plant material was collected from the wild plants growing on open moist slopes around the apple orchards in district Kinnaur, Himachal Pradesh in June–July 2015 and was identified with the help of regional floras and Botanical Survey of India (BSI) Herbarium, Dehradun. The voucher specimens were deposited in the Herbarium, Department of Botany, Punjabi University, Patiala (PUN). For Ethnobotanical uses local amchi and elderly people nearby habitations were consulted. For meiotic studies, the young buds of suitable sizes were fixed in carnoy's fixative for 24 h and then stored in 70% alcohol at 4°C until use. Anthers were squashed in 2% acetocarmine and a number of freshly prepared slides were examined. Pollen fertility was estimated through stainability test with glycerol–acetocarmine mixture (1 : 1). Well-filled pollen grains with uniformly stained cyto-

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Metaphysical Basis of Ethics: Swami Vivekanand's Approach

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Abstract

The primary objective of this paper is to enunciate the metaphysical basis of Swami Vivekananda's moral philosophy. The essential Oneness of all human beings is the quintessence of Advaita metaphysics. The non-dual philosophy (Advaita), constitutes the foundation of Vivekananda's conception of universal religion. It is non-duality, which is the underneath reality for human fellowship and universal brotherhood.

The ethics/moral philosophy of Vivekananda is an outcome of his concept of religion. According to him religion is one's realisation of the inner Divinity that pervades all individual selves. The philosophy of Oneness is the secret of everything. All is One, which manifests Itself, either as thought, or life, or soul, or body, and the difference is only in degree. Everything that makes for Oneness is truth. Love is truth, hatred is false, because hatred makes for multiplicity. This conception of truth entails a criterion of goodness of human conduct. Whatever action makes for Oneness is good and whatever action makes diversity is bad. Hence, the ethics of Swamiji is based on the philosophy of Oneness.

Keywords: Advaita Vedānta, Brahman, Oneness, Divinity.

Introduction

In the contemporary interpretations of the Bhagavadgītā, the first name that comes into one's mind is the name of Swami Vivekananda, a nineteenth century Hindu mystic, as it is from him that the world first heard the importance of *Karmayoga*. Though Swamiji did not write any formal commentary on the holy book (Gītā), yet his ethical philosophy in general and the '*Karmayoga*' in particular throw a new light on the teachings of the Bhagavadgītā. And the posterity is very much indebted to him for his teachings of the 'Practical Vedānta', which brought the philosophy of the forest to the hearth and home of men, through the medium of desireless service of humanity. He got the support for his ideas from the teachings of the Bhagavadgītā.

This paper is an attempt to highlight the contribution of Swamiji in bringing global awareness of the significance of Bhagavadgītā, one of the principal philosophical treatises of Hindus. So far, his philosophical views are concerned, he had no intention of expounding a new system of philosophy.

Status of Moral Judgements from the Standpoint of Moral Relativism.

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Department of Philosophy, University of Delhi.

Abstract: Moral Relativism pertains to a position regarding moral values that they are relative to cultures/ societies who embrace and practice them, and not absolute or universal. If moral values and norms are relative to cultures and traditions, then what can be said about the moral judgements which we frequently make to express the moral worth of actions. Can it be said that the truth of moral judgements is also relative being derived from the relative nature of moral norms and values? Metaethical Moral Relativism (MMR) states that "the truth or falsity of moral judgments, or their justification, is not absolute or universal, but is relative to the traditions, convictions, or practices of a group of persons."[1] This paper attempts to examine the claims of Metaethical Moral Relativism regarding the status of moral judgements, whether they can only be relatively true or false. The present work does not seek to deal with the questions of the non-cognitive nature of ethical judgements for the very reason that the relativist position does not reject the possibility of truth evaluability of moral judgements.

Index Terms: Moral Relativism, moral judgements, Metaethical Moral Relativism, Moral Disagreements.

INTRODUCTION

Metaethical Moral Relativism proposes that moral judgements based on moral principles and values do not have absolute truth values or justification; rather, their truth is relative to their acceptance by respective cultures, traditions, or groups of people. In other words, if one wants to know whether a moral claim of the form 'an act A is wrong' is true or false, then one must understand it in the form of a claim- 'According to moral framework X, action A is wrong.' The underlying idea of Metaethical Moral Relativism is that standards of justification in two societies may differ from one another and that there is no rational basis for resolving these differences. For example, the judgement 'polygamy is morally wrong' may be true relative to one society but false in relation to another. The statement would be true if and only if polygamy is prohibited by the traditions, convictions, or practices of the society to which one belongs. So, there are moral truths according to Metaethical Moral Relativism and there are also legitimate and conflicting moral frameworks. Moral codes or the moral standards accepted by the people of the society function as the determining factor for the truth claims of the moral judgements.

Metaethical Moral Relativist position is typically contrasted with Moral Absolutism. Moral absolutists[2] make the following claims about moral values and moral judgements:

1. That they have a real existence apart from any reference to the human mind, like what is said to be right or wrong, good or bad, cannot be reduced merely to what people think to be good or bad, right or wrong.
2. that moral judgements have absolute truth value i.e., they are either absolutely true or absolutely false.
3. the absolute validity of moral judgements does not presuppose the infallibility of the individual who makes such a judgement, nor even the accuracy of a general consensus of opinion; but if a certain course of conduct is objectively right, then it must be thought to be right by all rational beings who judge truly of the matter and cannot, without error, be judged to be wrong.

Thus, Moral Absolutism maintains that moral judgements are ordinarily true or false in an absolute or universal sense, that some moral judgements are true, and that people are sometimes justified in accepting true moral judgements and rejecting false ones based on evidence available to any reasonable and well- informed rational person. Moral absolutism has been challenged in several ways by moral nihilists, moral non-cognitivists and non-realists who subscribe to the view that moral judgements lack truth-value. MMR has to be distinguished from these views, as it does not completely deny that there are any moral truths rather it affirms relative forms of these. MMR in its extreme form can be said to subscribe to the view that all moral judgements are relatively true or false i.e., relative to a certain moral framework accepted by a society. Different societies may accept different moral frameworks, and the same moral judgement, which is true in one society may turn out to be false in another society. For example, 'One ought to wear Hijab' is true in Muslim society but false in Christian society. So, according to MMR a moral judgement can be both true and false, true when in accordance with mores/ values of the society and false when not in accordance with the mores/values of the society.

PROBLEMS WITH EXTREME VERSION OF METAETHICAL MORAL RELATIVISM.

According to MMR a moral judgement can be both true and false, true when valid for one group of people and false when invalid for another. But critics say that this appears to be an untenable position for nothing can be both true and false at the same time[3]. For example, a moral judgement like "suicide is morally right" (S) could be true for some people (say X) and could be false for some

[1] https://plato.stanford.edu/entries/moral-relativism/#MetMorRel

[2] Harman, Gilbert, "Is There a Single True Morality?", Moser, P.K. and T.L. Carson, (ed.), *Moral Relativism: A Reader*, New York: OUP, 2001, p. 171-175.

[3] By law of contradiction.

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Collective identity in culture: An evaluation

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Abstract
The premodern times witnessed hostile treatment towards the minorities, indigenous people, immigrants, etc. which also took shape in form of racism in the society. These groups were confined to the facilities (be it social, economical or political) provided by the dominant groups. However, with the spread of democratic ideas of equality of status and rights, the minority groups' demand for the same gained momentum. The state developed various policies to enhance societal peace and unity. Two of the most prominent policies were "assimilation" and "integration" which came with their own shortcomings. However, the state accepted cultural diversity to be a permanent feature of modern life that led to the adoption of a "multicultural" policy. The multicultural policy or multiculturalism is a complex phenomenon involving contestation and debates regarding its meaning. Multiculturalism is about affirming cultural difference within a political community. Various concepts like collective identity, community right, social goods, etc. in multiculturalism rejects the idea that the individual is prior to the culture, and that the value of social goods cannot be reduced to their contribution to individual well-being. The existence of collective is central to the discourse of culture focusing basically on plurality.

Keywords: minorities, indigenous people, immigrants

Introduction

"I do not want my house to be walled in on sides and my windows to be stuffed.
I want all the cultures of all lands to be blown about my house as freely as possible."

M. K. Gandhi, *Young India*, June 21, 1921

Culture gives rise to affinity resulting in 'identity' in the spheres of language, history, geography, people, art, architecture, etc. By virtue of identity, culture creates diversity with other cultures. Multiculturalism provides collective identity to people who share same history, language, geography, art, architecture etc. Will Kymlicka in his book *Multicultural Citizenship: A Liberal Theory of Minority Rights,* defines culture as "well bound, well integrated entities which gives meaningful life to its members" [1]. He tries to protect a "societal" sort of culture whose membership depends on a shared history, geography, language etc [2]. He distinguished between the "structure" and character". The first one is needed in order to keep a culture alive, while the latter includes rules and regulations of a culture. But what is essential for a culture to flourish is society's own struggle over power and meaning. Such conflicts can be resolved by having a systematic dialogue between different cultures [3].
However, Kymlicka's definition of culture was opposed by the "social constructivists" view which claims that it is the individuals that gives meaning to culture. The importance of the values associated with a culture depends upon its members. Further, to get a cultural difference one needs to look at the history and geography of the culture, its members' relation with the culture, the initiatives taken by the state to preserve it, etc. The constructivists view maintains that one needs to be self-critical about one's own culture. Even though one may be a part of a particular culture but may not feel a sense of belongingness and acceptance from his culture [4].

Kymlicka in *Multicultural Citizenship: A Liberal Theory of Minority Rights* [5] put emphasis both on the rights of national minorities or indigenous people and the immigrants whereas earlier works were more centred on the rights of the immigrants. The end of the cold war saw the dominance of ethno cultural disturbances in the political arena throughout the world. Kymlicka through this book approaches such disputes by giving his own theory. He maintains that resolving such issues is difficult but one needs to investigate the history and the circumstances of such disputes before providing any solution. Being a liberal multiculturalist, Kymlicka believed that by issuing civil and political rights (human rights) to every member of a society and following them in an actual manner would resolve such disputes [6]. Even though he focused on human rights, he did not undermine the importance of a culture. He goes on to make the claim that, mere human rights are not sufficient to regulate the matters. The traditional

[1] Kymlicka, Will, (1995), *Multicultural Citizenship: A Liberal Theory of Minority Rights,* p. 76.
[2] Ibid.
[3] Song, Sarah, (2005), " Majority Norms, Multiculturalism and Gender Equality" in *The American Political Science Review*, Vol. 99,No. 4, American Political Science Association, pp. 474-475.
[4] Ibid., p. 475.
[5] Kymlicka, Will, (1995), *Multicultural Citizenship: A Liberal Theory of Minority Rights.* Oxford: Oxford University Press, p. 7.
[6] Ibid., p. 2.

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An SRGM for Multi-Release Open Source Software System

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A number of software reliability growth models have been reported in the literature for open source software (OSS) systems but the effect of up-gradations on the reliability growth of multi-releases of such software systems has been discussed by a few. In this paper, the discrete modeling framework has been proposed to study the reliability growth process of OSS systems with multiple releases. The proposed model is based upon the assumption that during up-gradation some new faults are introduced in the code in addition to the left over fault content of the previous version. To validate our model, we have chosen two successful open source projects-Mozilla and Apache for its multi release failure datasets. Graphs representing goodness of fit of the proposed model have been drawn. The parameter estimates and measures of goodness of fit criteria suggest that the proposed software reliability growth model for multi-release OSS fits the actual datasets very well. An optimal release policy has been formulated by taking into account the cost of fault removal during testing and operational phases and reliability targets pre-specified by the decision makers. In addition, numerical example along with the sensitivity analysis has been provided to illustrate optimal release policy.

Keywords: Open source software; discrete software reliability growth model; fault removal process; multi-release software system; release time.

1. Introduction

Open source software (OSS) has become one of the most important and speedily expanding software in a new era of technology, developed under the open source

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IN VITRO SPORE GERMINATION, GAMETOPHYTE ONTOGENY AND SPOROPHYTE REGENERATION IN *PLATYCERIUM BIFURCATUM* (CAV.) C.CHR.

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ABSTRACT

Platycerium, commonly known as the staghorn fern, is a highly prized horticulture plant. The species are becoming threatened in wild for being in high demand for their majestic size and form and low regeneration rates. This paper presents gametophyte development pattern of *Platycerium bifurcatum* by light microscopy and scanning electron microscopy, including spore germination, development of the gametophyte and reproductive behavior. Spores were bilateral, monolete, with a straight laesura. Spores were germinated within a week on Parker's and Thompson medium and the percentage of spore germination was 85.39%. A uniseriate, germ filament of 2-8 cells was formed in 10 days after sowing. Two-dimensional stagewas observed after 15 days and a broad spathulate prothallial plate is formed with a few unicellular, papillate and secretory trichomes. Later multicellular trichomes were also developed intermixed with archegonia, below the apical notch. Chordate prothalluswas formed in 35 days. Antheridium developed first in 35 days followed by archegonium in 49 days. Simultaneously bisexual thallus also appeared. 20% gametophyte produced sporophyte in composite population while only 16% in isolated population. It seems that both intra- as well as inter-gametophytic mating system are favourable. The first sporophyte was developed in isolated culture in 120 days whereas in composite culture they appeared in 145 days after sowing. The first leaf was simple, spatulate with a dichotomous vascular system. Soon the lamina became broad and much furcated.The venation pattern also became much dissected. Later sporophyte possessed dimorphic leaves.

Key Words : *Platycerium*, epiphytic, dimorphic, trichome, apical notch, cordate.

INTRODUCTION

Platycerium (Polypodiaceae) is an epiphytic fern with pantropical distribution. It consist of about 18 species out of which 2 species are found in Africa and 4 in Madagascar (3 are endemic), 8 to 11 in Australia and Asia, and only one in tropical South America (Kreier & Schneider 2006). *Platycerium wallichii* Hook.is rare and found in far North East India (Manipur) and Myanmar (Shukla & Bashiya 1978). Dixit and Sinha (2001) also reported it from the Andaman and Nicobar Islands. Chandra *et al.* (2008) stated that it was confused with the African species *P. alcicorne* Desv., which is widely known in cultivation. *Platycerium wallichii*, falling under the rare/threatened category was collected from Manipur (Anonymous 2015).

The plant possesses dimorphic leaves. Basal leaves are semicircular, adpressed to

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Floristic Diversity at Asola Bhatti Wildlife Sanctuary, Delhi, India

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ABSTRACT

The work has been carried out from April 2012 to March 2016 with the main aim to document the floristic diversity of Angiosperms at the Asola Bhatti Wildlife Sanctuary, Delhi in a view to conserve native flora of the Aravalli biodiversity. The vegetation is dry deciduous consisting of *Prosopis juliflora* as dominant exotic species and *Diospyros montana* as dominant native species in the sanctuary. In the present study we documented 82 genera and 100 species from the trails selected in the sanctuary and analyzed over three seasons. We geo-tagged all the species encountered and frequency of species in disturbed trails was also assessed. Diagnostic features of all the documented species have been included, along with their protologue information.

Key words: Biodiversity, conservation, ecology, native flora

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Introduction

Asola Bhatti Wild life Sanctuary (Protected area since 1986) situated just at the outskirts of Delhi (National Capital Territory of India). This protected area is the last remnant of Delhi ridge hilly range, as the remaining forests with some exceptions, have been destroyed due to massive urbanization. The sanctuary serves as major center for conservation and protection of native flora and fauna in collaboration with the Bombay Natural History Society (BNHS), Mumbai and for running Environmental awareness programmes.

Vegetation is an important part of the ecosystem that reflects the effects of the entire environment (Billings, 1952). Vegetation complex fluctuates from season to season in a cyclic way, and over the years in a successional manner; these fluctuations suggest a response by each species population to the prevailing heat, moisture, and light as modified by the vegetation itself (Heady, 1958). The development and death or decay of plant species alters the pattern of the species distribution in a community (Watt, 1964). Vegetation ecology includes the investigation of species composition and the sociological interaction of species in communities (Mueller-Dombois & Ellenberg, 1974). It puts emphasis on the study of composition, development, geographic distribution and environmental relationships of plant communities (Legendre & Fortin, 1989; Kolasa & Rollo, 1991). A detailed vegetation analysis provides information about species diversity, community organization, niche resources apportionment and turnover rate of species in a forest ecosystem.

Population structure is expressed in terms of number of individuals present in each of the definite girth class distribution of tree species. Saxena and Singh (1984) reported that regeneration behaviour of tree species in a forest can be revealed from the population structure. A successful regeneration is indicated by presence of sufficient number of seedlings, saplings and young trees in a given population (Pokhriyal et al., 2010) and the number of seedlings of any species can be considered as the regeneration potential of that species (Negi & Nautiyal, 2005). Natural regeneration is a central component for tropical forest ecosystem dynamics (Getachew et al., 2010) and is essential for preservation and maintenance of biodiversity (Rahman et al., 2011). It is important to understand the growth status of a species in the ecosystem and is one of the key parameter to determine ecosystem stability (Kadavul & Parthasarathy, 2001; Deb & Sundriyal, 2011). Several types of disturbances like deforestation, landslides, herbivory, etc. can affect the potential regenerative status of species composing the forest stand spatially and temporally (Guariguata, 1990; Welden et al., 1991; Barik et al., 1996a, b; Boerner & Brinkman, 1996; Liang & Seagle, 2002; Ganesan & Davidar, 2003; Khumbongmayum et al., 2005, 2006; Ceccon et al., 2006; Ward et al., 2006; Guarino & Scariot, 2012).

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Bringing Farmers to the Centre-stage

Suranjita Ray

The 2019 Lok Sabha elections to be held in a few months from now, has compelled almost all the political parties not to miss the opportunity to promise fulfilling the demands of protesting farmers. Of the various demands the issue of farm loan waiver has become the most crucial for every political party across ideological and political differences as they claim to stand with the protesting farmers to fight their distress. Opposition parties from the Congress to Aam Admi Party (AAP) and the Communist Party of India (Marxist) (CPI-M) to Trinamool Congress have all come together to not only address the agrarian crisis but also allege the ruling Bharatiya Janata Party (BJP) of being 'pro-corporate' and 'anti-farmer'.

We have seen an unprecedented agrarian unrest across the country in 2017-18. The recent movement - 'Delhi Chalo' organized by the All India Kisan Sangarsh Coordination Committee (AIKSCC), a confederation of 150-200 farm groups, saw the discontent and anger of thousands of small and marginal farmers, landless labourers and Adivasis from different parts of the country, march from the Ramlila Maidan to the Parliament Street on 29-30 November 2018, to register their protest against the government which they distrust. The farmers have lost confidence on the government and contest its legitimacy for its apathy to their distress. The protest saw farmers across castes and landholdings including the landless come together to consolidate their demands. Thousands of students, artists and professionals also expressed their solidarity with the farmers and agricultural labourers under the banner called 'Nation for Farmers'. P. Sainath, who was part of the march, asserts that this coming together was not a culmination but a historic beginning of the links between farmers and urban Indian consumers which was broken in 1991 because of the economic liberalization. This is a historic moment in the country's democracy stated P. Sainath as farmers have moved to protests to assert their rights from their demoralized mind set to commit suicide during the last 20 years (cited in https://www.huffingtonpost.in).

Major Demands

The farmers who gathered in the Parliament Street demanded a special session in the Parliament to discuss the agrarian crisis and pass two private member bills drafted by AIKSCC -The freedom from Indebtedness Bill and The Framers Right to Guaranteed Remunerative Minimum Support Prices for Agricultural Commodities Bill. They demanded the need to discuss the credit crisis which is much larger than just one loan waiver. While a debate in the parliament would enable an understanding of the farmer's distress, the demand for a one time loan waiver, raising Minimum Support Prices (MPS) to 50 per cent above the comprehensive cost of production, making MPS legally binding on traders who should be behind the bars for 3 years for not abiding, reducing prices of fertilizers, pesticides and diesel, alongside implementing the recommendations of M.S. Swaminathan Commission Report, have been long pending. The National Commission Report on Farmers Chaired by Swaminathan submitted to the Parliament has been lying there for the last 14 years without discussion.

In the recent past, similar demands were raised by thousands of farmers in the 6 day long march from Nasik to Mumbai in March 2018. Led by the CPI (M)-affiliated Akhil Bharatiya Kisan Sabha the farmers demanded a complete loan waiver, implementation of the recommendations

Impact of Globalisation on Women in India





Dr. Vandana Tripathi* Mrs. Geetanjali Kumar**

Globalisation is a process where by the people of the world are unified into a single society functioning together. This process, usually characterized by globalisation, liberalisation and privatisation, is a combination of economic, technological, socio-cultural and political forces. It is very often referred to as economic globalisation, i.e. integration of national economies into the international economy through trade, foreign direct investment, capital flows, migration and transfer of technologies. As a result of globalisation, India has become one of the fastest growing economies of the world. It has recorded an average annual economic growth rate of 8 per cent during the 11th Five Year Plan (2007-12). According to Financial Times India has emerged as most favoured destination for foreign direct investment (FDI) in 2015 so far, outpacing China and the US.

Thus, on the one hand, globalisation has led to the phenomenal economic growth that has increased the number of millionaires and billionaires; on the other hand, the gap between the rich and the poor has also widened. Recently, ahead of the annual World Economic Forum meeting in Davos, Oxfam has warned that unless the current trend of rising inequality is checked the combined wealth of the richest one per cent will overtake that of other 99 per cent of people by 2016. The UNDP's report (1999) on globalisation rightly sums up the duality of globalisation process as follows:

"Globalisation expands the opportunities for unprecedented human advance for some but shrinks those opportunities for others and erodes human security. It is integrating economy, culture and governance but fragmenting societies. Driven by commercial market forces, globalisation in this era seeks to promote economic efficiency, generate growth and yield profits. But it misses out on the goals of equity, poverty eradication and enhanced human security."

Eventually globalisation opens the door for disinvestment, capital flows, technologies and information and provides new avenues for employment, and markets for trade. However, these benefits are restricted to those who have access to capital, technology, information and knowledge. Since the richest 20 per cent of the population together hold 94.5 per cent of the world's wealth and the poorest 80 per cent of the world's population share just 5.5 per cent (Oxfam), globalisation is a boon for few and a bane for many marginalised groups and disadvantaged sections of the society, especially women. It is true for India as well, which is clearly reflected in Human Development Report 2014 in which it is ranked 135 out of 187 countries. On gender equality too, with a rank of 127 out of 153, it fares poorly.

Impact of globalisation on women:

- Globalisation has indeed created new awareness among women and enabled them to get information about their rights and privileges and the internet revolution has linked women globally. But these benefits are restricted to urban areas and educated women. Increase in world trade, particularly in the services, has increased the involvement of women

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Impact of Globalisation on Women in India





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Keshada Mahanta

Deepshikha Mahanta Bortamuly



Keshada Mahanta (1939–2018) was a prolific and socially responsible author, a scholar par excellence in Sanskrit as well as in Assamese literature, and a lifelong researcher. Her demise on 26th March 2018 is an irreparable loss to the scholarly fraternity.

Born in a Vaiṣṇava guru family, daughter of freedom fighter, editor, lawyer and author Mohan Chandra Mahanta, Keshada Mahanta was married before matriculation to a man deeply engrossed in the study of the Vaiṣṇava tradition as well as Hindi literature. While two children were born in between, she topped the university examinations both in B.A. and M.A., with Sanskrit as the major subject.

Keshada Mahanta, along with her husband 'Rashtra Bhasha Gaurav' Bapchandra Mahanta (1928–2011) redefined research with a dedication, vision, meticulous analyses, relentless observation and conclusions beyond debate or doubt. They stayed away from the humdrum of a city life, from the luxury and advantages of a university chair. However, their research works reflect a comprehensive dealing with specified areas that can hardly be equated, harder to be excelled.

The Magnum Opus of Keshada Mahanta, for which she received the Sahitya Akademi award in 2010, is *Asomiya Rāmāyani Sahitya: Katha Bastur Atiguri*. In this voluminous work on comparative criticism, she establishes that Madhav Kandali's Assamese Ramayana is the first of its kind written in the North Indian Aryan or Sanskrit-originated regional languages. She broadens her base with a remarkably detailed account of the three existing versions of Valmiki's Ramayana and the regional variations of it in Tamil, Telugu, Malayalam, Gujarati, Kannada, Bangla, Oriya, Hindi, Kashmiri, Nepali,

উত্তৰ-ঔপনিৱেশিকতাবাদ ঃ উৎস আৰু বিস্তাৰ

ডঃ দীপশিখা মহন্ত বৰতামুলী

(১)

উত্তৰ-ঔপনিৱেশিকতাবাদৰ জন্মকথা

'উত্তৰ-ঔপনিৱেশিকতাবাদ' বৰ্তমান পৃথিৱীৰ সকলোতকৈ অধিক প্ৰভাৱশালী, অধিক বিচাৰ্য আৰু সকলোতকৈ অধিক বিবদমান এটি ভাবধাৰা। ইয়াৰ উৎস আৰু বিস্তাৰ দুটা পৰিপূৰক দিশৰ পৰা দৃষ্টিগোচৰ হয়। কুৰি শতিকাৰ প্ৰথমভাগৰ সাহিত্যৰ 'আধুনিক যুগ' আছিল অভিজাত অতিশিক্ষিত য়ুৰোপীয়ৰ বিলাসিতা। দুই মহাযুদ্ধই ৰাজনীতি, অৰ্থনীতি, সভ্যতা, সংস্কৃতি, বৈজ্ঞানিক প্ৰগতিশীলতাৰ কেন্দ্ৰবিন্দুৰূপে য়ুৰোপে চলোৱা কৰ্তৃত্বৰ অন্ত পেলালে। তাত্ত্বিক আৰু দাৰ্শনিক দিশৰ পৰাও গঠনবাদে দাঙি ধৰা কেন্দ্ৰীভূত, সুসংগঠিত, 'বৈজ্ঞানিক তথা বস্তুনিষ্ঠ' বিশ্লেষণৰ অন্ত পৰিল। ডেৰিডা, ফুক' আৰু বাৰ্থচৰ শেহতীয়া ৰচনাসমূহে সাহিত্য, ভাষা আৰু দাৰ্শনিক চিন্তাৰ জগতলৈ যুগান্তকাৰী আৰু চিৰস্থায়ী পৰিবৰ্তনৰ সূচনা কৰিলে। ইমানদিনে ভাষা তথা শব্দ ভাব প্ৰকাশৰ মাধ্যমৰূপে স্বীকৃত আছিল। ডেৰিডাই ফাৰ্ডিনান্দ দ্য চচ্যুৰৰ চিন্তাৰ আঁত ধৰি দেখুৱালে যে কোনো নিৰ্দিষ্টতাৰ ভিতৰত শব্দ, অৰ্থ, ভাষাক নিটোল ৰূপত পাব নোৱাৰি— শব্দৰ কোনো নিৰ্দিষ্ট অৰ্থ নাই, ই এক অন্তহীন অৰ্থসন্ধানী ব্যক্তিসাপেক্ষ, সময়সাপেক্ষ, পৰিস্থিতিসাপেক্ষ প্ৰক্ৰিয়া। কোনো শব্দ, চিহ্ন বা ধাৰণা কোনো এক নিৰ্দিষ্ট বৃত্তৰ ভিতৰত নাথাকে। বস্তুনিষ্ঠ কোনো পৰীক্ষণবিন্দু নাই, প্ৰত্যেকটো তথ্য, প্ৰমাণ, পৰীক্ষা আৰু ফলাফলেই ব্যক্তিসাপেক্ষ। ভাল-বেয়া, সৎ-অসৎ, বগা-ক'লা আদি যি binary বা দ্বিপাক্ষিকতাৰ ওপৰত পশ্চিমীয়া দৰ্শন বৰ্তি আছিল, সেই দৰ্শনৰ মূল ভেটিটোৰেই অসাৰ বুলি ডেৰিডাই ইচ্ছাকৃতভাৱে বহু জটিল ব্যাখ্যাৰ যোগেদি প্ৰমাণ কৰিলে। ফুকই ক'লে যে সকলো ভাষিক ব্যৱহাৰতে ক্ষমতাৰ অন্তৰ্দ্বন্দ্ব সোমাই থাকে।

এনে ধৰণৰ চিন্তাধাৰাই বিকেন্দ্ৰীকৰণৰ এনে এটা পৰ্যায় আনি দিলে য'ত কেন্দ্ৰৰ উৎখাত আৰু পৰিসীমনাত থকা ব্যক্তি, সমাজ, চিন্তাধাৰাৰ উত্থান আৰম্ভ হ'ল। উত্তৰ-ঔপনিৱেশিকতাবাদ এনে এক ঐতিহাসিক পৰিৱৰ্তনৰ ফলশ্ৰুতি।

এক সংজ্ঞাৰ সন্ধানত

'উত্তৰ-ঔপনিৱেশিকতাবাদ' শব্দটোৱে কেইটামান অন্তর্নিহিত অৰ্থ বহন কৰে যিকেইটা অন্তর্দ্বন্দ্বযুক্ত, আদৰ্শবাদী অথবা অতি সাধাৰণীকৰণৰ ফল। সকলোতকৈ সৰল সংজ্ঞা বিচাৰিবলৈ হ'লে ক'ব লাগিব যে ঔপনিৱেশিক শাসনৰ অন্ত পৰাৰ পাছৰ সময়ছোৱাই উত্তৰ-ঔপনিৱেশিক সময়। সৰ্বপ্ৰথম বিচাৰ্য বিষয় এইখিনিতে হয় যে ইয়াৰ সময়সীমা, ঔপনিৱেশিক শোষণকাৰী দেশ, শোষণৰ প্ৰকাৰ আৰু স্বাধীনতা লাভৰ পাছৰ অৱস্থা পৃথিৱীৰ বিভিন্ন প্ৰান্তত বেলেগ বেলেগ। গতিকে উত্তৰ-ঔপনিৱেশিক অভিজ্ঞতা এটা সাধাৰণীকৰণ কৰিব পৰা অভিজ্ঞতা নহয়। তাৎপর্যপূর্ণ কথা হ'ল যে এই তাত্ত্বিক চিন্তাধাৰাৰ আৰম্ভণি কালছোৱাত ইয়াত য়ুৰোপৰ ঔপনিৱেশিক কার্য-কলাপহে মুখতঃ সামৰি লোৱা হৈছিল, তদানীন্তন আমেৰিকা আৰু ৰাছিয়াৰ আগ্ৰাসী কার্যকলাপক নহয়। মূলতঃ আফ্ৰিকা মহাদেশ আৰু ভাৰতীয় উপমহাদেশৰ কেইবাজনো চিন্তাবিদ, যেনে— ফ্ৰানৎজ ফেনন, চিনুৱা আচিবি, এনগুগি বা ঠিৱংগ, হোমি জাহাংগীৰ ভাবা, গায়ত্ৰী চক্ৰৱৰ্তী স্পিভাক আৰু লগতে পেলেষ্টাইনৰ এডৱার্ড চইড ইয়াৰ মুখ্য হোতাৰূপে পৰিগণিত। বৰ্তমান সময়ত উত্তৰ-ঔপনিৱেশিকতাবাদ এক তাত্ত্বিক ভাবধাৰাৰ পৰা ভাষিক, সাহিত্যিক, সাংস্কৃতিক, অর্থনৈতিক, ৰাজনৈতিক ক্ষেত্ৰলৈ সম্প্ৰসাৰিত এক কার্যকলাপত পৰিণত হৈছে।

ব্ৰিটিছৰ সূর্যাস্ত নোহোৱা সাম্ৰাজ্যৰ প্ৰথম বীজ বোপণ হৈছিল আয়াৰলেণ্ডত, সোতৰ শতিকাৰ একেবাৰে আৰম্ভণিতেই। আইৰিচ ভাষা, সংস্কৃতি, জীৱন-যাত্ৰা প্ৰণালী ইংলেণ্ডৰ মানুহে সদায়েই হেয় জ্ঞান কৰি আহিছিল। যদিও ১১৯৯ চনতে ৰজা জনে নিজকে আয়াৰলেণ্ডৰ ৰজা ঘোষণা কৰিছিল, সোতৰ শতিকাৰ পৰা আয়াৰলেণ্ডৰ বৃহৎ অঞ্চলত খেতি-বাতিৰ যোগেদি ইংলেণ্ডৰ ভৰাল চহকী কৰা কার্যকে ঔপনিৱেশিকতাবাদৰ প্ৰথম পর্যায় বুলি বহুতে অভিহিত কৰে।

আমেৰিকাৰ অধিগ্ৰহণো আৰম্ভ হৈছিল প্ৰায় ইয়াৰ পাছে পাছেই। তাত অতীজৰে পৰা বাস কৰি থকা মানুহবোৰৰ পৰা চলে-বলে-কৌশলে ভূমি অধিগ্ৰহণ কৰি কেৱল ইংলেণ্ডেই নহয়, ফ্ৰান্স, স্পেইন আৰু পর্টুগাল উত্তৰ আৰু দক্ষিণ আমেৰিকাৰো বৃহৎ অঞ্চল নিজৰ কর্তৃত্বাধীন কৰি গ্ৰাস কৰি ল'লে। অত্যাচাৰ, শোষণ আৰু বেমাৰ-ব্যাধিয়ে স্থানীয় মানুহৰ সংখ্যা অতি শীঘ্ৰে কমাই অনাত য়ুৰোপৰ সাম্ৰাজ্যবাদী দেশবোৰ ঢাপলি মেলিলে আফ্ৰিকালৈ।

আফ্ৰিকা মহাদেশ বিভিন্নতাৰে ভৰা, ইয়াৰ ঔপনিৱেশিক শোষণৰ ইতিহাসো মানৱীয়তাৰ সকলো সীমা চেৰাই যোৱাকৈ বর্বৰ আৰু ঘৃণনীয়। ব্ৰিটিছ, ফৰাচী, ডাচ্চ, বেলজিয়াম, পর্টুগীজ, জার্মান সকলোৱে মিলি আফ্ৰিকাৰ পৰা কিমান বেছি গ্ৰাস কৰিব পাৰে, তাৰে যেন প্ৰতিযোগিতাতহে নামি পৰিছিল! যোচেফ কনৰাডৰ Heart of Darkness নামৰ উপন্যাসত বর্ণিত নৰমুণ্ডৰ চৌহদৰ বেৰা কোনো বিকাৰগ্ৰস্ত কল্পনাপ্ৰসূত নাছিল, এনে ঘটনা ঘটাৰ ঐতিহাসিক তথ্যও আছে।

ইতিহাস শব্দটোৱেই বর্তমান সময়ৰ সকলোতকৈ বিবদমান শব্দ। ইতিহাস যদিহে লিখিত সমলৰ সমাহাৰ, তেন্তে এই লেখনীৰ আঁৰৰ কাৰণসমূহেহে নির্ধাৰণ কৰে ইতিহাসৰ অন্তর্ভুক্ত কি কৰা হ'ব আৰু কেনে ৰূপত। য়ুৰোপীয় সভ্যতাৰ প্ৰগতিশীল, সংস্কৃতি, জ্ঞান আৰু উদাৰতাৰ প্ৰচাৰকৰূপে য়ুৰোপীয়সকলে আফ্ৰিকালৈ গৈ তাত জ্ঞানৰ পোহৰ বিলোৱাৰ চেষ্টাত ৰত হৈছিল বুলি তেওঁলোকে

TEJIMOLA, CINDERELLA AND KATNISS: THE CONTRASTIN THE SUBALTERN CHANGE OF STATUS

Deepshikha Mahanta Bortamuly*

A community treasures its values, beliefs, moral and ethical bindings and age old experiences in the folktales that are told and repeated in every household. Thus a tale is a community legacy, living a million lives through every retelling and every imaginative recreation of the child. This article focuses on a story – Tejimola – from Assamese, a rather strange but highly popular story where a lot of violence is embedded into the content as well as narration. Popularity is then dissected with various other stories from different locales. A comparison with the main protagonist of the *Hunger Games*, for instance, reveals a considerable number of significant issues.

Tejimola is the story of a teenager. After her mother's death, the father married again. Being a merchant, the father had to set sail on a long venture for business. In his absence, the stepmother set trap to prove Tejimola guilty and inflicted inscrutable punishment on her till she breathed her last. The stepmother then buriedTejimola stealthily in the backyard. There grew a gourd plant, laden with gourds.When a stranger tried plucking one, the plantaddressed the stranger and started singing Tejimola's plight. Startled, the stranger informed the owner of the house, the stepmother. Irritated, frustrated and terrified, the stepmother got the plant cut and dumped it. While she tried to forget about it and spread the news that Tejimola had

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Changing Energy Paradigm and its role in Economic Growth in Global South

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***Abstract*— The paper highlights the changes in the energy paradigm in the developing nations of Global South, comparing the prominent countries within the regions in terms of energy transition towards renewable and sustainable energy sources. The study has primarily two-fold objectives, first to evaluate the energy security of Global South on the basis of 4 A definition of energy security. Secondly, to investigate the interdependence of economic growth and consumption of renewable energy using the granger causality test which reinforces the case for energy transition to renewable sources of energy in these developing nations. The results reveal that High income countries are much worse off in terms of deterioration in status of energy security as compared to other categories which improve in status of energy security in this region. The paper highlights the significant role of acceptability dimension of 4A definition of energy security implying policy implications of investing more on renewable energy and carbon reducing technologies. The Granger causality test fortifies existence of no relationship between economic growth and renewable energy consumption in case of high income, upper middle, low income countries but in case of low middle income countries renewable energy consumption granger causes economic growth. Energy transition towards renewable energy sources which involves time lag in realizing socio – economic benefits is strongly recommended by the study.** (*Abstract*)

***Keywords*— Global South; Energy transition; Energy security index; 4A definition; Renewable energy; Granger Causality Test; Economic Growth**

I. INTRODUCTION

Energy is prerequisite for country's growth and development and therefore holds a crucial place in country's economic growth. Global South reflects a region which is struck with bottlenecks of lack of availability of infrastructure, lack of capital and immense need of energy for sustaining their growth process in the midst of poverty, unemployment and rising population.

The economies of this region of Global South as widely known is undergoing a huge transition in terms of their energy structure. According to the Asian Development Outlook 2011(ADO2011), ADB signifies a substantial rise in the trade and a tremendous growth in investment among all developing nations in South, including developing Asia, Latin America, Africa and middle East. Since 1980, there has been a tremendous rise in share of South in World's gross domestic product which has risen from 25% to 45% in 2010[1]

The demand for energy is perceived to be doubled in Asia and Pacific region by 2030. It has been further stated in ADB reports that promoting growth in South and ongoing influx of foreign direct investment in developing Asia would not only trigger benefits in South but also the global economy. In this context South Asia Subregional Economic Cooperation (SASEC) program brings together Bangladesh, Bhutan, India, Maldives. Myanmar, Nepal and Srilanka in a project based partnership aiming to improve economic opportunities and improving better quality of life. This will strengthen intraregional trade and provide better connectivity through this economic integration. The member countries would also improve their energy security by developing the infrastructure and emphasizing on intraregional power trade to reduce costs and import dependence.

Global South is considered to be challenged by multitude of problems like poverty, unemployment, lack of infrastructure etc. Under such circumstances access to electricity provides a key to reduce poverty , improving education, livelihoods and health status in the region .In terms of energy security which is defined as four As , accessibility , availability , affordability and acceptability , the focus of UN's sustainable development goals is effectively towards the questions of what kind of energy and for whom .As a result the existing deep rooted energy politics and energy diplomacy started changing in global south in the name of Climate Change . While the politics of energy in 20th century was largely shaped by geopolitics of oil, with the emerging concerns of Climate Change there is an evolution of new energy politics ultimately changing the energy regime in Global South.

The countries in global South lack capital, funds for research and development for technological innovation, therefore need to resort to import renewable energy technology. This proves to be a very expensive option due to which the perceived growth becomes costlier. As a result it becomes a challenge for these economies to visualize a structural change in the energy system at the time when their economies need energy security to grow and prosper.

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A Decentralized Pathway for Energy Security and Energy Transition in Asia and the Pacific region.

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ABSTRACT

With the onset of Climate Change as a biggest Challenge in today's era, energy security and the consequent energy transition has been addressed as issue of concern by all the countries across globe. In the context of conceptualisation of energy security in a 4 A framework defined in terms of accessibility, affordability, availability and acceptability, the paper finds all its remedies and solutions in prescribing a decentralized pathway for the selected region of Asia and the Pacific. Kumarappa's notion of 'economy of permanence' which recommends decentralization as a key alternative for improving the situation of people is reinforced by the paper in the context of ensuring energy security in the current scenario of energy transition. The paper concludes that by empowering local communities, strengthening their indigenous clean energy technologies would solve the impediments of political economy involved in the process of achieving energy accessibility. This would further contribute immensely in making each local community or region energy secure thus uplifting the standard of living and improving the quality of life. In this manner paper argues that a decentralized approach in adopting renewable energy technologies would safeguard the entire nation from becoming technologically dependent on Western economies. Finally, the paper strongly recommends Kumarappa's notion of non–violent economy and Gandhian ideas as a sustainable solution or a benchmark in the current times when the entire economy is undergoing a transformation. This can be achieved by adopting bottom up approach for energy transition, ensuring energy security proposes a bottom up approach, along with the top – down approach. This entails utilizing human resource, encouraging skill enhancement and promoting research and development perfectly aligned in the direction to cater to the needs of indigenous communities or society.

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Role of Rural Electrification and Renewable Energy on Poverty in India: A State Wise Analysis

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Abstract - *The paper tests the hypothesis that rural electrification and increasing deployment of renewable energy in rural areas affect the agricultural income which in turn reduces the level of poverty for the sixteen selected states for the year 2011. An index of rural electrification and renewable energy is constructed using appropriate indicators by the method of Principal Component Analysis (PCA). The impact of these indices on agricultural income and later the impact of these variables on rural poverty are visualized using two regression models. Rural electrification in all states is much higher than the deployment of renewable energy sources while Rajasthan represents the state using maximum amount of renewable energy. The regression results reveal a significant positive impact of rural electrification on agricultural income and a significant negative impact of renewable energy on agricultural income for the selected year 2011. Agricultural income plays a positive role in reducing rural poverty. The study recommends that renewable energy deployment must be focused on those states that are deprived of grid connectivity in rural areas. Enhancing agriculture productivity through renewable energy deployment should be targeted along with the reforms in structure of subsidy and tariffs.*

Keywords: *Rural electrification, Renewable energy, Energy Transition, Rural poverty, Climate Change.*

INTRODUCTION

Power is an essential requirement for all facets of our life and has been recognized as a basic human need. It is the critical infrastructure on which the socio-economic development of the country depends. The growth of the economy and its global competitiveness hinges on the availability of reliable and quality power at competitive rates. The demand of power in India is enormous and is growing steadily. Power is the basic building block for socio-economic development. Future economic growth crucially depends on long-term availability of energy in increasing quantities from sources that are accessible, affordable, and socially acceptable and environment friendly.

Rural electrification emerges as one of the aspects of power sector reform process and therefore it is important to assess the current status of rural electrification in power sector reforms. Theoretically rural electrification constitutes an important factor in determining the agricultural output. It forms a crucial part of infrastructural base to agriculture sector, enhancing growth in agricultural income. In rural areas a large number of population is engaged in agriculture, therefore the income from agriculture sector enhance rural incomes Thus it is intuitively understandable that an increase in the level of agricultural income should have an effect on the level of poverty. In order to explore these linkages it is important to understand the state of poverty prevailing in rural India. Poverty and inequality has been a crucial point of discussion ever since India moved on path of planning since 1950s. It was picked up as an objective only after the third plan. In 2017, based upon 2011-12 MRP consumption, the percentage of rural population below poverty line was highest for Chattisgarh (44.61%) followed by Jharkhand (40.84%) and Arunachal Pradesh (38.93%) while Goa had the lowest percentage of rural population below poverty line only 6.81% [1].

The rural inequality started declining while the urban inequality started rising during nineties [2]. The incidence of poverty is higher in rural areas than in the urban areas. The rural urban inequality in income and consumption expenditure exists in India since Independence and even before. During the nineties this disparity has been sharpened after the new economic policy was adopted. According to Census of India 2011, approximately 597,464 villages have been electrified. However, there is a vast difference between the urban and rural areas in regard of access to electricity. Electrification varies dramatically between the urban poor (33% without connection) and rural poor (77% without

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Establishing the Link between Fiscal Indicators in India: A VAR Analysis (1980-2013)

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ABSTRACT

In this paper, the relationship between the three major fiscal indicators: central government revenues, development expenditure of the Central government and real GDP in India has been established for the period 1980-2013. The vector autoregressive model is used for studying the relationship and the direction of causality between the variables determined using the Granger causality test. Granger causality test shows that there is causality running from growth of central government revenue to growth of central government development expenditure supporting the tax spend hypothesis. Also, GDP growth is granger causing the growth of revenues of the central government but the causality in the reverse direction is not true.

1. Introduction

The study of the nexus between government expenditures and revenues is important since that will guide the government in formulating optimal fiscal policies and managing its fiscal deficits. In a developing country like India, the government has to carefully allocate expenditure between development and non - development sectors. All expenditures that promote growth and development are termed as development expenditures. Expenditure on social services, infrastructure development, public enterprises or development of agriculture increase productive capacity in the economy and bring income to

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प्रेमचंद की कहानियों में नारी जीवन की समस्याएं और नवजागरण

डॉ. अनीता मिंज
असिस्टेंट प्रोफेसर, हिन्दी विभाग,
दौलत राम महाविद्यालय, दिल्ली विश्वविद्यालय,
नई दिल्ली।

सारांश- प्रेमचंद का कथा साहित्य भारतीय जनमानस की सामाजिक, सांस्कृतिक, आर्थिक और राजनीतिक पहलुओं पर एक व्यापक दृष्टिकोण को लेकर रचा गया है। प्रेमचंद अपनी कहानियों में समाज की मूक जनता के साथ-साथ हाशिए पर खड़ी नारी समस्याओं पर केवल चर्चा नहीं करते अपितु नारी मुक्ति की भी बात करते हैं। प्रेमचंद 'नारी अस्मिता' के लिए नारियों को स्वयं जागृत होने की सलाह देते हैं। प्रेमचंद नारी जागरण की अलख जगाने के लिए घर-घर की नारियों का आह्वान करते हैं। जिसमें कोई सामाजिक विभेद नहीं दिखाई पड़ता। वर्षों पहले अपने साहित्य द्वारा प्रेमचंद ने नारी अस्मिता और मूल्यों के लिए जो संघर्ष किया वह नवजागरण के इतिहास में बहुत बड़ा योगदान है। यही कारण है कि आज भी प्रेमचंद का 'स्त्री विमर्श' प्रासंगिक बना हुआ है।

बीज शब्द : नवजागरण, दहेज प्रथा, अनमेल विवाह, विधवा की त्रासदी, वेश्या जीवन, नारी शिक्षा, पर्दा प्रथा, नारी और नवजागरण के प्रश्न।

प्रस्तावना- विश्व फलक पर प्रेमचंद आज भी विद्यमान हैं। भारतीय समाज के मन का लेखा-जोखा, उनकी समस्याएं, उनका निदान सभी कुछ उनके साहित्य में विद्यमान हैं। साहित्य 'समाज का दर्पण' होता है। अतः उनके साहित्य में भारतीय जीवन की सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक पहलुओं की जितनी सटीक एवं प्रमाणिक जानकारी मिलती है उतनी शायद ही कहीं और उपलब्ध हो। उनके साहित्य में युगीन संदर्भ का सजीव चित्रण हुआ है।

प्रेमचंद का काल संक्रांति का काल था। जहां एक ओर यूरोपीय नवजागरण के फलस्वरुप भारत में सामाजिक, सांस्कृतिक, धार्मिक एवं साहित्यिक क्षेत्रों में नई क्रांति आई तो वहीं परस्पर विरोधी तत्व भी सक्रिय हो उठे। जहां समाज में वर्षों से पीड़ित, शोषित, नारी जागरण का स्वर बुलंद हो रहा था वहीं सनातन धर्मियों का जातीय एवं धार्मिक अत्याचार जोरों पर था। देश की स्थिति डांवाडोल थी। ऐसे हालात में प्रेमचंद जैसे जागरुक एवं क्रांतिकारी लेखक की लेखनी कैसे चुप रहती ?

19 वीं सदी के अंत तक 'नवजागरण' का प्रचार-प्रसार केवल उच्च वर्ग तक सीमित था। निम्न एवं मध्यम वर्ग इससे अछूता था। फलतः समाज में नारी की स्थिति ज्यों की त्यों बनी हुई थी। वह पोषित होकर भी शोषित थी। प्रेमचंद की जागरूक दृष्टि इस ओर गई उन्होंने महसूस किया कि संपूर्ण जागरण के बिना नवजागरण में सफलता नहीं मिल सकती। यही कारण है कि

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Full length article

Modulation of immune response and protective efficacy of recombinant outer-membrane protein F (rOmpF) of *Aeromonas hydrophila* in *Labeo rohita*

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ABSTRACT

The outer-membrane proteins (OMPs) of *Aeromonas hydrophila*, an imperative fish pathogen accountable for massive economic losses to aquaculture industry, are found to be immunogenic and considered as potential vaccine candidates. In spite of development in the formulation of vaccine candidates against *Aeromonas* infection, no commercial preparation has been done so far; in addition, the molecular mechanisms of immunoprotection induced by various vaccine formulations in Indian major carp, *Labeo rohita,* are little known. The present study was undertaken to evaluate the modulation of immunity and expression of immune-related genes post-rOmpF (recombinant outer-membrane protein of *A. hydrophila*, a novel vaccine candidate) immunization and protective efficacy after *A. hydrophila* challenge. The rOmpF-immunized fish showed a variable expression of the immune-related genes, viz. toll-like receptor 22 (TLR), complement component 3 (C3), chemokine (CXCa), tumor necrosis factor-α (TNFα), interleukin 1β (IL-1β), manganese superoxide dismutase (MnSOD) and natural killer enhancing factor (NKEF) in the head kidney tissues, when compared to the control group at different time intervals post-vaccination. A significant increase in serum hemolysin titer, ceruloplasmin level and myeloperoxidase activity was observed on day 140 post immunization. Also, bacterial agglutination titer and antiprotease activity were significantly increased on day 42 post immunization. No significant change was observed in lysozyme activity. Challenge studies with live *A. hydrophila* on day 140 post-immunization of *L. rohita* significantly increased the relative percentage survival (~44%) in the vaccinated group. The results suggest that the rOmpF could be used as a potential vaccine candidate to combat *A. hydrophila* infection in fish.

1. Introduction

Aeromonas hydrophila, a gram-negative bacterial pathogen, is responsible for causing fin and tail rot, ulcers and hemorrhagic septicemia in marine and fresh water fish, including Indian carps in hatcheries and culture systems leading to severe economic losses of approximately US$ 15 million in Southeast Asian countries [1]. In India, a mortality to the tune of 2% per day in an acute disease outbreak caused by *A. hydrophila* infection has been reported [2]. *Aeromonads* has also been reported to cause diseases in amphibians, reptiles and mammals, including humans [3]. The treatment of *Aeromonas* infection using antibiotics is not recommended due to the emergence of antibiotic-resistant strains and environmental pollution that could be a health hazard for consumers [4]. Therefore, vaccines are more reliable tools to combat *A. hydrophila* infection in aquaculture attributed to their safety, no risk to environment and long-term efficacy.

Aeromonas has several surface structures (including outer-membrane proteins, various secretion systems and pili) that have the potential to contribute to pathogenesis by modulating the host immune response to its advantage. The antigenic diversity among the *Aeromonas* strains has been a constraint to develop an efficient vaccine. OMPs are found to be conserved across serotypes and their exposed epitopes on bacterial surface make them promising candidates in vaccine development to prevent diseases in commercial aquaculture. Immunogenicity and protective efficacy of the OMPs of gram-negative bacteria in fish have been assessed by a number of investigators. Rahman and Kawai [5] studied that the protective immunity against *A. hydrophila* in goldfish could be induced by OMPs. Immunization with a recombinant outer-membrane protein, rOmpG, in European eel elicited a significant immune response and conferred protective immunity against two strains of *Aeromonas,* i.e., *A. hydrophila* (70% protection) and *A. sobria* (75% protection) [6]. The immunogenicity and protection by the OmpTs and OmpR of *A. hydrophila* in the major Indian carp have also been investigated [7,8]. Other studies on the OmpW of *Vibrio cholerae*

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MINI-REVIEW

Bifunctional in vivo role of laccase exploited in multiple biotechnological applications

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Abstract

Laccases are multicopper enzymes present in plants, fungi, bacteria, and insects, which catalyze oxidation reactions together with four electron reduction of oxygen to water. Plant, bacterial, and insect laccases have a polymerizing role in nature, implicated in biosynthesis of lignin, melanin formation, and cuticle hardening, respectively. On the other hand, fungal laccases carry out both polymerizing (melanin synthesis and fruit body formation) as well as depolymerizing roles (lignin degradation). This bifunctionality of fungal laccases can be attributed to the presence of multiple isoforms within the same as well as different genus and species. Interestingly, by manipulating culture conditions, these isoforms with their different induction patterns and unique biochemical characteristics can be expressed or over-expressed for a targeted biotechnological application. Consequently, laccases can be considered as one of the most important biocatalyst which can be exploited for divergent industrial applications viz. paper pulp bleaching, fiber modification, dye decolorization, bioremediation as well as organic synthesis. The present review spotlights the role of fungal laccases in various antagonistic applications, i.e., polymerizing and depolymerizing, and co-relating this dual role with potential industrial significance.

Keywords Laccase · Bifunctional · Isoforms · Polymerization · Depolymerization

Introduction

Laccases are polyphenol multicopper oxidases which catalyze oxidation of various phenols and anilines with the concomitant reduction of molecular oxygen to water (Thurston 1994; Solomon et al. 1996). The enzyme is ubiquitous in nature being found in plants (Berthret et al. 2012), fungi (Baldrian 2006), bacteria (Claus 2003), insects (Dittmer and Kanost 2010) as well as lichens (Lisov et al. 2007) and sponges (Li et al. 2015). The genes that encode for laccases belong to members of a multi-gene family with different isozymes expressed in different space and time (Gianfreda et al. 1999; Kumar et al. 2017). The presence of multiple laccase isoforms explains the diverse and multiple functions of this enzyme within same as well as diverse species (Sharma and Kuhad 2008). In plants, laccases are involved in lignin and polyflavanoid synthesis (Ranocha et al. 2002; Liang et al. 2006), while, in fungi, they have a role in delignification (Eggert et al. 1996), fruit body formation (Zhang et al. 2015, pigmentation (Eisenman et al. 2007), and pathogenesis (Zhu and Williamson 2004). In insects, the function of laccases is sclerotization of cuticle (Gorman et al. 2012) and in bacteria they regulate copper homeostasis, morphogenesis, melanization (Claus 2003), and pathogenesis (Singh et al. 2016). While in lichens, laccases are considered to carry out metabolism of lichen acids and other phenols (Lisov et al. 2007). In sponges, laccase is involved in the antibacterial defense of the sponge organism (Li et al. 2015). Therefore, it can be seen that in vivo function of laccases is synthetic in all the organisms except in fungi (Fig. 1), where they carry out both synthetic (fruit body formation, pigment synthesis) and degradative roles (lignin degradation). In all laccase-mediated catalysis, reaction begins with single electron oxidation of substrate to corresponding radicals, which can then subsequently either repolymerize or lead to depolymerization of the substrate (Madhavi and Lele

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Preparation, Properties and Applications ofButyl Acrylate, Acrylonitrile,Methacrylic Acid Based Polymers.

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ABSTRACT

Acrylates are made up of esters and conjugate bases of acrylic acid. Generally acrylates are obtained from acrylate monomer with esters containing vinyl groups. Acrylates contains unique and versatile properties such as super absorbency, flexibility, transparency and hardness. These compounds are widely used in paints, coatings, diapers, cosmetics, orthopedics, adhesives, textiles and biomedicals such as contact lenses and bone cements. Here we highlights the synthesis and properties of acrylate derivatives which were obtained around 80°C.

Keywords: Acrylates, Butyl Acrylates, Emulsion, Coatings

INTRODUCTION:

Copolymerizationof butyl acryl ate(BA), Acrylonitrile(ACN),Methacrylic acid.The polymerization reaction were carried out by bulk and suspension polymerization methods.The effect of structure of monomers onCopolymer.Composition and reactivity ratio has also been discussed.

EXPERIMENTAL PROCEDURE:

Materials and method:

The chemicals used in the procedure were procured and utilized as follows: The monomers i.e. n-Butyl Acrylate(BA) which was of commercial grade and purchased from PCl, Baroda, India; Acrylonitrile(ACN) was of L.R. grade and procured from S.D. Fine Chemical Pvt.Ltd.,Boisar,India and Methacrylic Acid(MAA) was obtained from Anabond India Ltd,Chennai, India.The inhibitors from acrylonitrile monomer were removed by washing with 5% sodium hydroxide solution followed by DM water. The other monomers were used as such without further purification. The other chemicals used are Ammonium Persulphate (APS) of L.R.grade was purchased from S.D. Fine Chemicals Pvt. Ltd., Boisar, India).Sodium Lauryl Sulphate was of commercial grade and Alphox-200 was procured from IGL, Gajraula, U.P.

A Study on Impact of Social Media on e-Commerce in India

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1. Abstract

E-commerce is buying and selling of goods and services over the internet. E-commerce technology is changing in a big way. It has become a buzzword for businesses over the past few years, with increased awareness about the use of computer and communications technologies to simplify business procedures and increase efficiency. It combines a range of processes, such as EDI, E-mail, World Wide Web, and social media that provides ways to exchanges information between individuals, companies and countries. For developing countries like India, e-commerce offers considerable opportunity. E-commerce in India is still in growing stage, but even the most-pessimistic projections indicate a boom. It is believed that low cost of personal computers, rapid development in mobile technology, a growing installed base for Internet use, and an increasingly competitive Internet Service Provider (ISP) market will help fuel e-commerce growth in Asia's second most populous nation.

The E-Commerce market is thriving and poised for robust growth in India. There are players who made a good beginning. Their success depends on their understanding of the market and offering various types of features. In present time many businesses use social media e-commerce strategies to target their audience on social networks. Social media are computer mediated technologies that facilitate the creation and sharing of information, ideas, career interests and other forms of expression via virtual communities and networks. It use web-based technologies to create highly interactive platforms through which individual, communities and organization can share, co-create, discuss, and modify user-generated content. It introduces substantial and pervasive changes to communication between businesses, organization, communities and individuals. Social media has gained a lot of importance over the last few years and continues to do so. It has been used as an important tool by firms to influence consumer's attitude and behavior. Influence occurs in consumer communities in social media because community members have the control of discovering, producing, sharing and distributing information. There is no better way to increase awareness of a product or service than social media allowing businesses to not only advertise products but participate in one-on-one customer service by interacting with customers. Social media impacts almost every aspect of e-commerce, including warehousing and order fulfillment. E-commerce in India to explode in 2020 and Indian e-

Self Attested

Impact of online Marketing in India: Opportunity and Challenges

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Abstract

Internet marketing, also referred to as web marketing, online marketing, or e-marketing, is the marketing of products or services over the Internet. Online marketing includes a wider range of marketing elements than traditional business marketing due to the extra channels and marketing mechanisms available on the Internet. It ties together creative and technical aspects of the Internet, including design, development, advertising, and sale. In the past few years, the internet and e-commerce business activities have become one of the fastest growing technologies that playing a significant role in the daily life of human beings. Today, online marketing is one of the most emerging technologies in IT and E-Commerce sector. It helps to find out the right audience to whom goods and services are to be provided by the business organizations. The internet-based communication technologies had contributed to the restructuration of major economic sectors in India including marketing. It established speed, information flow and access in buying and selling of products. This in turn created a virtual market for actual products globally. This has brought about different businesses incredible gains. However, this new method also involves its special disadvantages, e.g. lack of personal contact, security and privacy, etc. which should be taken account for. This paper starts with defining online marketing and reviewing historical background to utilization of online marketing and different kinds of online marketing. The study continues with growth and challenges, such as problems of security, privacy, etc., emerged in the field of online marketing from implementation of virtual space produces. This paper focuses on the opportunities and challenges for online marketing in Indian business environment.

Keywords: Online Marketing, SMEs, E-commerce, Challenge.

I. Introduction

Online marketing is becoming a hot topic in every business sector, and gradually plays a truly important role in any company's multi-channel marketing strategy. Online marketing refers to a set of powerful tools and methodologies used for promoting products and services through the Internet. Online marketing includes a wider range of marketing elements than traditional business marketing due to the extra channels and marketing mechanisms available on the Internet. It uses the Internet to deliver promotional marketing messages to consumers. Its broad scope includes email marketing, search engine marketing, social media marketing, electronic

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From Continuity to Change: Thinking through Social Media Led Mobilizations

Piyush Kant*

Social media, it appears today, is giving new means to motivate citizen commitment to politics and political mobilisation. Facebook, Twitter and YouTube are admittedly playing a major role in campaigns, movements and protests on a scale that was hard to imagine two decades back. However, the idea that the net can be a serious political tool, important to study, occurred rather late to us. The term and phenomena of 'Blog' signposted this process. The rapid rise of blogging and offshoots led to another term in the twenty-first century: Web 2.0. Tim O'Reilly coined it in 2003 and unpacked the term in a paper in 2005.[1] He identified seven principles that define the phenomena, which were reformulated by Andrew Chadwick and Philip Howard. They are as follows: (i) Internet as a platform for political discourse, (ii) the collective intelligence emerging from collective web use, (iii) the importance of data over particular software and hardware applications, (iv) perpetual experimentalism in the public domain, (v) the creation of small scale forms of political engagement through consumerism, (vi) the propagation of political content over multiple applications and (vii) rich user experience on political websites. Scholars ranging from Manuel Castells to Don Tapscott have talked of the web in a highly optimist vein, with unparalleled opportunities for user engagement, cooperation and creativity. This is techno-optimism, which is palpable in new book titles, such as *Wikinomics: How Mass Collaboration Changes Everything*; *The Art of Community: Building the New Age of Participation*; *Here Comes Everybody: The Power of Organizing without Organizations*; and *Grown Up Digital: How the Net Generation is Changing Your World*. The early scholarship on social media is largely reflective of this techno-optimism.

However, the likes of Morozov see this techno-optimism as offering straitjacketed solutions to some of the most pressing and complex issues of human civilisation. The focus of their criticism is the twin ideologies of "solutionism"[2] and "Internet-centrism"[3]. "Solutionism" is the tendency to portray the complex problems facing humans in singular, all-encompassing ways, so as to provide regimented solutions without taking into account the diversity of thought and practices on the ground. What is problematic is not the solution but the very way in which "the problem" is defined. In the rush to quick solutions, the

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[1] Titled *What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software.*

[2] Morozov borrows the unabashedly pejorative term from the world of architecture and planning where it has over a period of time come to refer to an unhealthy preoccupation with sexy, monumental, and narrow-minded solutions to problems that are extremely complex, fluid, and contentious.

[3] The belief that we are living through unique, revolutionary times, in which the previous truths no longer hold true for the present times, everything seems to be undergoing through profound changes and the need to "fix things" runs as high as ever. So much so that the putative values of "the Internet"—be it openness or participation— become the valued criterion for assessing almost all areas of human endeavor, regardless of their own goals and standards.

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Ethics in Governance: Swami Vivekanand's Perspective

Chandra Prakash*

Abstract

Good governance is the call of the 21st century, particularly for developing countries like India. Good governance, in turn, has evolved several components and nuances developed by international organisations like World Bank, International Fund for Agricultural Development (IFAD), etc. Widely accepted components of it are – efficiency, responsiveness, accountability, transparency, rule of law, participation, equity and consensus orientation. Irony lies in the fact that all these parameters do not contain basic elements – happiness, environment and ethical values. The ethical values, needed for governance, are ingrained as core elements in Indian culture evident from the inscriptions of epics and ruling discourses right from ancient period. Kautilya in his Arthashastra has made "sukhe praja sukham ragyah" as a foundation of rule. Swami Vivekanand had been pleading for spiritual perfection and ethics in public life for a just social order. In the backdrop of this assumption, the present paper examines the issue of ethics in governance and concerned ideas of Swami Vivekanand. It finds that essence of good governance lies in happiness of the masses which can only be achieved by inculcation of ethical and moral values in governance and such values are suggested by Swami Vivekanand.

Keywords: Ethics, Probity, Good-governance, Vivekanand, Spiritualism, Vedanta.

Ethics in governance is not a new idea of 21st century rather it has a long history dating back to ancient period. In modern times too, the Minnowbrook Conference in late 1960s has raised the issue of inclusion of ethics and values in public administration, that resulted into the concept of New Public Administration. So far India is concerned, the National Commission to Review the Working of

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व्यापार युद्ध और बदलता वैश्विक माहौल

चन्द्र प्रकाश* व डॉ0 अरुण कान्त सिंह**
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**विभागाध्यक्ष, स्नातकोत्तर, राजनीति विज्ञान विभाग, वीर कुँवर सिंह विश्वविद्यालय, आरा

सारांश : 1990 के पश्चात् विश्व राजनीति में एक भूचाल सा आ गया। द्विगुटीय विश्व के मायने बदल गए। विश्व में एक ही विचारधारा बच गई वह अमेरिकी उदारीकरण फ्रांससि फुकुयामा ने इसे ही इतिहास के जीत और अमेरिकी वर्चस्व की ओर निर्दिष्ट किया हैं। सोवियत संघ के पतन ने वैश्विक अर्थव्यवस्था में बाजारीकरण की नीति को बल प्रदान किया। पूरा विश्व 1990 के पश्चात् यह मानकर बैठा था कि विश्व में एक मात्र वर्चस्व अमेरिकी का होगा और बाकि देश अमेरिकी नीतियों का अनुसरण करना शुरु किया। मार्गेन्थाउ ने राष्ट्रहित को सर्वोपरि मानता है और वाकई प्रत्येक संप्रभु राष्ट्र के लिए राष्ट्रहित सर्वोपरि होता है।

मुख्य शब्द : अर्थव्यवस्था, आर्थिक मंदी, अनुचित व्यापार एवं बौद्धिक संपदा, ग्लोबल ट्रेड वॉर, टैरिफ युद्ध, आदि।

विश्व की सबसे बड़ी जनसंख्या वाला देश, तीसरा बड़ा भौगोलिक क्षेत्र वाले देश चीन ने अपनी अर्थव्यवस्था को 1980 के दशक में ही उदारीकृत कर दिया, अमेरिकी वर्चस्व को अब चुनौती पेश करना प्रारंभ कर दिया हैं। चीन के पास एक समृद्ध कार्यशील पूँजी है जो कि अमेरिकी को पीछे ले जाना चाहता है।

डोनाल्ड ट्रंप का राष्ट्रपति चुनाव : वर्तमान राष्ट्रपति डोनाल्ड ट्रंप ने अपने चुनावी भाषणों में चीन और अमेरिका के मध्य व्यापार असंतुलन (जो कि अमेरिका के लिए नकारात्मक है) को मुख्य मुद्दा बनाया। उनका मत था कि राष्ट्रपति बनने के बाद तुरंत ही इस असंतुलन को समाप्त करने का प्रयास करेंगे। इन सब कारणों के पीछे मुख्य चुनौती अमेरिकी को उनका पुराना इतिहास पुनः वापस दिलाना है। डोनाल्ड ट्रंप के सामने मुख्य चुनौती आर्थिक मंदी से अमेरिकी आर्थिक व्यवस्था को निजात दिलाना है जिसके लिए एक सशक्त अर्थव्यवस्था का होना जरूरी है व्यापार घाटा को कम करना इसी संदर्भ में देखा जा सकता है।

अमेरिकी व्यापार घाटा एंव संरक्षणवादी नीतिया : अमेरिका का चीन के साथ व्यापार घाटा 375.2 बिलियन डॉलर, मैक्सिको के साथ 375.2 बिलियन डॉलर, जापान के साथ 68.3 बिलियन डॉलर, जर्मनी के साथ 64.3 बिलियन डॉलर, वियतमान के साथ 38. 3 बिलियन डॉलर है। वही भारत 22.9 बिलियन डॉलर का व्यापार घाटा है।

अमेरिका व्यवस्था 1947 के व्यापार कानून के धारा 301 पर आंशिक बल दे रहीं है। जिसमें कहा गया कि अनुचित व्यापार एवं बौद्धिक संपदा की चोरी को रोका जाए। जिसमें अमेरिकी राष्ट्रपति को यह अधिकार प्राप्त हो जाता है कि वैसे देश जिससे अमेरिका का व्यापार हो रहा है और अमेरिकी हित नकारात्मक रूप से प्रभावित हो रहा है उस पर जुर्माना लगा सके। अमेरिकी राष्ट्रपति ने बौद्धिक संपदा में हो रही चोरी को ध्यान में रखते हुए नवंबर 2017 में एक औपचारिक जॉच करवाई ताकि प्रत्येक वर्ष लगभग 556 बिलियन डॉलर के घाटे को समाप्त किया जा सके।

2017 में अमेरिका का चीन के साथ व्यापार घाटा 375 बिलियन डॉलर का था। अमेरिका जहाँ चीन में 130 बिलियन डॉलर का निर्यात करता है वही 506 बिलियन डॉलर का आयात करता है। अमेरिका चीन से 77 बिलियन डॉलर का कंप्यूटर व उसके उपकरण आयात करता है, 70 बिलियन डॉलर का मोबाईल और 54 बिलियन डॉलर का वस्त्र और जूते प्रति वर्ष आयात करता है। अमेरिकी उत्पादकर्त्ता इन सब वस्तुओं के कच्चे माल को चीन भेजता है जो कि निर्मित होकर पुनः अमेरिकी बाजारों तक पहुँचता है, इसको अमेरिका के लिए निर्यात माना जाता हैं।

23 जनवरी 2018 को राष्ट्रपति ट्रंप ने विदेशी सोलर पैनलों पर 30% टैक्स लगा दिए। चीन जो कि विश्व में सबसे बड़ा सोलर पैनल का निर्माता है ने इसका विरोध किया। उसी दिन विदश निर्मित प्रथमतः 1.2 मिलियन वाशिंग मशीनों के इकाईयो पर 20% टैरिफ लगा दिया गया। 2016 में लगभग 425 मिलियन डॉलर के वाशिंग मशीन का निर्यात चीन ने अमेरिका में किया था। 2 April 2018 को लगभग 128 उत्पादों पर चीन ने 25% का टैरिफ लगा दिया।

क्या यह ट्रेड वार की शुरूआत है : ट्रंप की चेतावनी के बाद यूरोपियन यूनियन, कनाडा और मैक्सिको ने अमेरिकी समानों पर ज्यादा टैरिफ लगाने का ऐलान किया। चीन ने जवाबी कारवाई की सीधी चेतावनी तो नही दी है लेकिन कहा कि ट्रंप ने कारवाई की तो चुप नहीं बैठेंगे।

EU यूरोपीय युनियन ने चेतावनी दी है कि अग़र US ने अपने कदम नहीं रोके तो US से आनेवाले 2.8 अरब यूरो के सामानों पर 25 फीसदी टैरिफ लगाएगा। कनाडा ने भी बदला लेने की बात कही है। अमेरिका की बरबॉन टिहस्की, जीन्स और चीज के निर्यात पर EU की ओर से हैवी टैरिफ लगाई जा सकती हैं। इससे अमेरिका मे इस उधोग से जुडें लोगों के रोजगार पर असर पड़ सकता है। अमेरिका चीन को बडी मात्रा में सोयाबिन, मक्का और मीट का निर्यात करता है। चीन में US बैंकिग और इश्योरेंस कंपनियाँ सक्रिय हैं। चीन ने कारवाई की तो अमेरिका को भारी नुकसान होगा। अगर बीच बचाव नहीं हुआ तो ग्लोबल ट्रेड वॉर छिड़ सकता है।

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भारत–चीन सम्बन्ध में सुरक्षा दुविधा और परिवर्तन की प्रकृति

कृष्णा सिंह
शोधार्थी, राजनीति विज्ञान विभाग, हरियाणा केंद्रीय विश्वविद्यालय

परिचय

अंतर्राष्ट्रीय राजनीति के संरचनात्मक सिद्धांतकारों ने सुरक्षा दुविधा को राज्य के अस्तित्व के लिये अराजकता और अनिश्चितता के रूप में वर्णन किया है । अराजकता यह दर्शाती है कि अंतर्राष्ट्रीय राजनीति में राज्य अंतर–राज्य सहभागिता में अनिश्चितता से भी ग्रस्त हैं । राज्य एक–दूसरे के इरादों पर यकीन नहीं करते हैं। ऐसी संरचनात्मक स्थितियों को देखते हुए, राज्य अधिकतम शक्ति प्राप्त करते हैं और सापेक्ष लाभ के लिए लड़ते हैं। हालांकि, एक राज्य द्वारा सत्ता में किसी भी सापेक्ष लाभ दूसरों को जवाबी कार्रवाई करने के लिए मजबूर करता है, और प्रतिस्पर्धी सुरक्षा दुविधा वाली परिस्थितियां पैदा करता है। सुरक्षा दुविधा सदैव स्थिर नहीं रहती हैय अंतरराष्ट्रीय राजनीति में ''युद्ध और शांति, अस्थिरता और स्थिरता, संघर्ष और सहयोग की परिस्थितियां विधमान होती है। सुरक्षा दुविधा में विभिन्न चर आदर्श और यथार्थ चर होते हैं । ये हैंः शक्ति (सापेक्ष सैन्य क्षमता), आक्रामक–रक्षा संतुलन, आक्रामक–रक्षा विभेदीकरण, एक राज्य की अपनी प्रेरणाएँ और दूसरे के उद्देश्यों की धारणा पर निर्भर करती हैं ।

सापेक्ष शक्ति – संभावित सैन्य क्षमताओं के संदर्भ में परिभाषित, सुरक्षा दुविधा को समझने में एक महत्वपूर्ण चर है। चूंकि अव्यक्त शक्ति को भविष्य में सैन्य क्षमताओं में परिवर्तित किया जा सकता है, इसलिए सापेक्ष शक्ति में महत्वपूर्ण परिवर्तन एक सुरक्षा दुविधा को बढ़ाते हैं। इसके अंतर्गत राज्य अपनी संसाधनों को सैन्य क्षमताओं को बढ़ाने के लिए कर सकते हैं, यह हमेशा दूसरों राज्य के लिए चिंता का विषय बना रहता है । प्रासंगिक सैन्य अभियानों को करने की क्षमता आक्रामक–रक्षा संतुलन और आक्रामक–रक्षा भेदभाव पर निर्भर करती है। आक्रामक–रक्षा संतुलन को एक निश्चित स्थिति का बचाव करते हुए विरोधी राज्य पर काबू पाने के लिए उग्र आवश्यक शक्तियों का प्रयोग किया जाता है।

राज्यों को उच्च आक्रामक–रक्षा भेदभाव होने वाले विरोध के इरादों को समझने में मदद कर सकता है इसलिए, तैयारी के लिए समय पर्याप्त समय रहता है। राज्य ऐसे आक्रामक स्थिति को कम करने में सहयोग के मूल्य समझ सकते हैं। उच्च आक्रामक–रक्षा भेदभाव सुरक्षा दुविधा को कम करने में मदद करता है। परन्तु बदलाव की गति को सटीक रूप से समझना, निर्णय निर्माताओं के लिए एक अत्यंत कठिन चुनौती है। जैसा कि लिबर का तर्क है, ''आक्रामक–रक्षा संतुलन का मूल्यांकन करने तथा उसमे होने वाले परिवर्तन की भविष्यवाणी करने पर नीति निर्माताओं को भारी अनिश्चितता का सामना करना पड़ता है। इसलिए, जहां ''तकनीकी परिवर्तन की अंतर्निहित अप्रत्याशितता'' मौजूद है, सापेक्ष शक्ति के लिए प्रतिस्पर्धा तेज होने की संभावना बनी रहती है । ऐसी परिस्थितियों में, सुरक्षा दुविधा की गंभीरता का निर्धारण करने में, विरोधी के बीच सापेक्ष शक्ति, विशेष रूप से सैन्य शक्ति का संतुलन सबसे महत्वपूर्ण कारक बन जाता है।

राज्य का ''मौलिक हित और लक्ष्य'' अपने उद्देश्यों को पूरा करना होता है। यदि कोई राज्य मुख्य रूप से अपनी सुरक्षा हितो को अधिक महत्व देता है , और अपने क्षेत्रीय स्थिति को बनाए रखने, हमलों को रोकने की क्षमता रखता है तो ऐसे राज्य को सुरक्षा–प्राप्त राज्य कहा जाता है। दूसरी ओर, एक लालची राज्य होता है, उसके पास गैर–सुरक्षा हित होते हैंः ''अपनी संपत्ति, क्षेत्र या प्रतिष्ठा बढ़ाने या अपनी विचारधारा को फैलाने की इच्छा होती वहीं राज्य की सुरक्षा गैर –जरूरी होती है ।''

एक राज्य में दोनों तरह के उद्देश्य हो सकते हैंः यह कुछ मामलो में सुरक्षा की मांग कर सकता है और दूसरे उसका लालच भी बना रह सकता है । यह सुरक्षा दुविधा को प्रभावित करता है क्यूकि एक राज्य दूसरों राज्यों के उद्देश्यों के बारे में जानता है। यदि कोई राज्य है कि वह एक लालची राज्य के बजाय सुरक्षा–प्राप्त राज्य है, तो वह समझौता और रियायतें देने के लिए अधिक इच्छुक होगा । दूसरी ओर, यदि कोई राज्य दूसरों को लालच से प्रेरित है, तो सहयोग एक जोखिम भरा रणनीति है क्योंकि इसे

Doka La, Doklam, Donglong or Dolaam Dispute and The Status of Indo-China Relationship

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Abstract

India and China are the emerging powers of the continent of Asia. Cultural and trade relations between the countries in the region have been since ancient times. But there has been a continuous border dispute between the nations in India. The current border dispute is related to the matching point of the India-Bhutan and China border. Sikkim has a Doklam plateau adjacent to the Indian border, where China is the major source of road construction. This was the Doklam controversy. The Doklam dispute refers to the ongoing military border crackdown between the Indian Armed Forces and the People's Liberation Army of China over a road construction in Doklam. After 72 days a diplomatic solution to the said dispute was reached and both the countries of the country started retreating from the disputed area. The paper purportedly seeks to highlight the diverse aspects of the doctoral dispute, such as what has been the doctoral dispute, and how it has had an impact on India-China relations. How India tried to resolve the dispute by its strategy. What was the view of the world community on the said controversy and in this context, an attempt has been made to analyze the India-China relations.

Keywords:- *Doklam, Geopolitics, Strategy, Tri-junctional, Border dispute , Stand-off*

Introduction

Since late last month, Indian and Chinese forces have stood face-to-face on the Dolam Plateau near Doka La, India's military outpost between Batang La in the north and Gymochen in the south. This mobilization of troops from both countries began when Chinese troops started working on expanding a rough road into the territory of Bhutan, which was opposed by Indian troops. India and Bhutan believe that China's intention to do so is to reach the Jampheri Ridge in the south, which is strategically important. The Chinese government and the pro-government media there have maintained the same rhetoric that no talks will be held to resolve the issue until the Indian troops return from there. India and China are the biggest emerging powers of the world, where China has become the world's largest economy on the basis of huge growth in the last decade. India's growth rate is currently far ahead of China. While the country is in the forefront of development in the country, in many other cases, the parties are equally uneven and unequal. The border dispute between the two countries has been going on for centuries, besides the countries are also dreaming of becoming the biggest power of Asia. China on the strength of big projects like 'One Belt One Road'. Shining brilliantly, India is increasing its role on global issues with the help of countries like America and Japan. Recently, there has been a rift in the relationship between India and China over the border dispute. The current border dispute is

जूठन (खंड –दो) जाति की समस्या व निवारण

डॉ. नीतू गुप्ता[1]

[1]*सहायक प्रोफेसर, हिंदी विभाग, दौलत राम कॉलेज।*

भारत को आजाद हुए सत्तर वर्ष बीत चुके हैं। इन सत्तर वर्षों में विज्ञान, प्रौद्योगिकी, मीडिया, अंतरिक्ष-विज्ञान, चिकित्सा आदि कई क्षेत्रों में भारत ने खूब प्रगति की है। चीन, अमेरिका और यूरोप आदि देश भारत को एक महाशक्ति के रूप में देख रहे हैं। यह भारतीय समाज का एक उज्ज्वल पक्ष है। परंतु इसके साथ ही भारतीय समाज की जाति-व्यवस्था अपनी रूढ़िवादी विशिष्टता के चलते दलित दृष्टि से समाज का एक कलंक है। आज हम चाहे प्रगति का कितना भी दम्भ क्यों न भरे परंतु यह एक अकाट्य सच्चाई है कि यहाँ के सवर्ण समाज के लोगां की रूढ़िवादी - जातीय मानसिकता टस से मस नहीं हुई। और हाँ, जाति-व्यवस्था का सबसे अधिक खामियाज़ा भुगता है - दलित समाज ने। दलित वह है जिसे जातिगत भेदभाव के चलते हर तरह से कुचला गया, दबाया गया। इसीलिए दलित साहित्य में दलितों के दुख, दर्द, अपमान, अभाव, अन्याय, उपेक्षा, प्रताड़ना, विषमता, विसंगति, आदि को अभिव्यक्त किया गया है। ऐसी ही सामाजिक समस्याओं को लेकर ओम प्रकाश वाल्मीकि ने 'जूठन' आत्मकथा लिखी।

यहाँ पर 'जूठन' के दूसरे खंड में जाति की समस्या व निवारण के रूप पर बात करने से पूर्व जाति-व्यवस्था और समाज पर इसके प्रभाव को जानना जरूरी है।

जाति की समस्या 'विश्व गुरु' और सोने की चिड़िया' कहलाने वाले इस भारतवर्ष की एक ऐसी बिमारी है, जिसका आज तक कोई तोड़ नहीं निकल पाया है। भारतीय धर्म, एवं संस्कृति में वर्ण-व्यवस्था को आदर्श रूप में प्रस्तुत किया गया है। इसी वर्ण-व्यवस्था के वर्ण का विकृत रूप जाति है। वेदों में केवल चार वर्णों का ज़िक्र है जिनमें से प्रथम तीन 'द्विज' है क्योंकि इनका उपनयन संस्कार होता था। चौथे वर्ण को उपनयन संस्कार का अधिकार नहीं था। इन चार वर्णों के अतिरिक्त मनुस्मृतिकार ने व्यवस्था कर दी कि पाँचवा कोई वर्ण नहीं होगा। वर्ण-व्यवस्था के अनुसार अछूतों को छोड़कर केवल चार ही जातियाँ हैं लेकिन ज्यादातर पेशे के आधार पर जाति को नामित या चिह्नित किया जाता है। जाति-व्यवस्था का जो स्वरूप समाज में दृष्टिगत होता है उसके सबसे महत्त्वपूर्ण लक्षणों में से एक है इसके श्रेणीक्रम में स्पष्टता का अभाव, विशेषकर मध्यवर्ती जातियों में। यही कारण है कि ब्राह्मण-क्षत्रिय जातियाँ तो स्वयं को सर्वोच्च मानती ही हैं साथ ही दलित.निम्न जातियाँ भी समय.समय पर स्वयं को श्रेष्ठ बताने या ठहराने का प्रयास करती रहती हैं। अक्सर कहा जाता है " भारत में अंग्रेजों के जमाने में समय.समय पर होने वाली जनगणना के दौरान इस प्रवृत्ति को खास बढ़ावा मिला जब निचली जातियों ने अपने नाम बदलकर श्रेणीक्रम से ऊपर उठने का प्रयत्न किया।[1]

वास्तव में, भारत में जाति चेतना को दृढ़ता प्रदान करने का कार्य युगों-युगों से आर्यों की ब्राह्मण.बुद्धि ने किया है, इसमें कोई संदेह नहीं। 'जाति' भारतीय समाज के भीतर एक महत्त्वपूर्ण लेकिन उत्पीड़नकारी 'सोशल कैटेगरी (अस्मिता) है, जो लगभग तीन हजार साल से समाज में अस्तित्वमान है। साथ ही इस अस्तित्वमान जातिवादी समाज को धर्म और पुराण न्यायसंगत ठहराने का कार्य निरंतर करते रहते हैं। समय-समय पर मनु और शंकराचार्य जैसे ब्राह्मणवादी जाति-व्यवस्था को एक दार्शनिक आधार भी प्रदान

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APPLICATION OF PHOTOSENSITIZER-INCORPORATED INDIUM OXIDE NANOPARTICLES IN PHOTODYNAMIC THERAPY

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ABSTRACT

Many disorders, both cancerous and non-cancerous, may be effectively treated using photodynamic therapy. In this scenario, photosensitizer drugs are first excited by light of the appropriate wavelength (in the visible-NIR range), after which they transmit their extra energy to molecular oxygen, resulting in the creation of strongly cytotoxic singlet oxygen. Indium oxide nanoparticles are optically transparent materials and can be used to incorporate fluorophores and photosensitizer drugs. Herein, we report the use of indium oxide nanoparticles incorporated with a photosensitizer. These nanoparticles have been synthesized in a methanolic medium. The characterization of prepared nanoparticles included FTIR, XRD, TEM, and optical studies (UV-visible and fluorescence spectroscopy). Cell viability studies demonstrated that the photosensitizer-incorporated nanoparticles showed cytotoxic effects only upon light irradiation. The results indicate the promise of photosensitizer-incorporated indium oxide nanoparticles as delivery agents in photodynamic therapy.

Keywords: Photodynamic Therapy (PDT), Photosensitizer (PS), Laser Light, Singlet Oxygen ($^1O_2$), Cytotoxicity.
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INTRODUCTION

A large band-gap, optically transparent semiconductor is indium oxide. It has been extensively used in solar cells, liquid crystal displays, and microelectronic window heaters. Most of the studies involving indium-oxide nanoparticles or thin films have been focused on their electrical and optical properties. Various indium oxide nanostructures including nanoparticles, nanowires, and nanotubes have recently been synthesized using the vapor-liquid-solid method.[1,3] They possess remarkable qualities including strong electrical conductivity and great transparency to visible light.[4-6] In the treatment and management of cancerous and non-cancerous disorders, photodynamic therapy (PDT), a noninvasive method, is recognized for its low toxicity.[7-9] It includes the direct (topical) or systemic injection of a photosensitizer (PS) medicine, which when in contact with the right wavelength of light releases reactive singlet oxygen ($^1O_2$) species (visible or NIR). The effects of PDT are caused by this cytotoxic singlet oxygen. The PDT action stays isolated to the irradiated (diseased) spot because singlet oxygen has a short half-life and a small diffusion range in aqueous media (0.1μm), protecting nearby healthy tissues and cells from harm.[10-12] Although theoretically simple, the PDT method has many shortcomings. One disadvantage of PS medicines is their hydrophobic nature, which prevents optimal biodistribution and pharmacokinetics.[13-16] Incorporation of PS within aqueous dispersed nanoparticles can render aqueous formulations of PS. In the past decade, several reports involving nanoparticulate formulations of PS have surfaced, most of which involve porous and optically-transparent inorganic-based nanoparticles.[17-20] It may be noted that the release of the PS from the nano formulation is not a prerequisite for PDT action, as long as the nanoparticle matrix is permeable to the oxygen species.[21] We synthesized indium oxide nanoparticles and combined them with a PS molecule to see whether this may improve the PS's efficiency at producing singlet oxygen through photogeneration. Here, 2-diazo-3-oxo-5,10,15,20-tetraphenyl chlorin is the PS

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Thermal annealing and transient electronic excitations induced interfacial and magnetic effects on Pt/Co/Pt trilayer

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Magnetic stability
Switching field distribution

ABSTRACT

Present study investigates the importance of thermal annealing and transient electronic excitations (using 100 MeV oxygen ions) in assisting the interfacial atomic diffusion, alloy composition, and magnetic switching field distributions in Pt/Co/Pt stacked trilayer. X-ray diffraction analysis reveals that thermal annealing results in the formation of the face centered tetragonal L1°CoPt phase. The Rutherford back scattering spectra shows a trilayer structure for as-deposited and as-irradiated films. Interlayer mixing on the thermally annealed films further improves by electronic excitations produced by high energy ion irradiation. Magnetically hard face centered tetragonal CoPt alloy retains its hard phase after ion irradiation and reveals an enhancement in the structural ordering and magnetic stability. Enhancement in the homogeneity of alloy composition and its correlation with the magnetic switching field is evident from this study. A detailed investigation of the contributing parameters shows that the magnetic switching behaviour varies with the type of thermal annealing, transient electronic excitations of ion beams and combination of these processes.

1. Introduction

The possibility of tuning the magnetic properties in magnetic multilayered systems leads to its usage in practical applications like high density magnetic recording [1,2]. Recently, Co/Pt and Fe/Pt layered structures have proved to be potential candidates for such applications due to their high perpendicular magnetic anisotropy (PMA) [3,4]. The origin of a high PMA is attributed to the reduced symmetry between the magnetic and non-magnetic layers. Apart from the necessity of achieving an appropriate coercivity and preferred crystallographic and magnetic orientations, the existence of a single magnetic phase with a narrow switching field distribution (SFD) is also an important feature for the magnetic data storage applications [5,6].

It is well known that compared to thermal annealing ion irradiation is recently being used as a unique technique to modify the material especially magnetic properties selectively in a controlled manner. As early as in 1998, Chappert et al. demonstrated a 30 keV He^+ beam induced magnetic patterning in Pt/Co/Pt films [7]. Thereafter many investigations have been carried out on such intermetallic layered structures [8,9], films [10,11], nanoparticles [12,13] and even nanocomposite sheets [14] demonstrating ion irradiation (both low and high energies) as an excellent tool in modifying the corresponding structural and magnetic properties. The effect of swift heavy ion (SHI) irradiation in FePt systems has been reported in terms of modifications in the direction of easy axis of magnetization [15], morphology [16] etc. but no emphasis was made regarding the irradiation induced diffusion of atoms at the interface of multilayers. Although, low energy ion irradiation (keV/nucleon) is well known to produce the desired CoPt phase, there are only limited reports on the modifications induced by SHI (MeV/nucleon) irradiation.

SHI irradiation based materials could be of interest for very specific cases in defense and space research. For example, the integrated circuit (IC) chips, memory chips etc. can fail in the space vehicle due to space radiations. Such IC chips can be tested for their radiation hardness by the ion beams. It would be interesting to study the stability of the magnetically hard $L1_0$ fct CoPt phase after irradiation using an ion beam with high electronic energy loss as it may be useful in areas wherein interference created by radiations may be troublesome.

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POLLUTION CONTROLLING ABILITY OF INDIGENOUS PLANT SPECIES GROWING AROUND DRAIN IN DELHI

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(Received 27 July, 2019; accepted 17 August, 2019)

ABSTRACT

The Air Pollution Tolerance Index (APTI) and Anticipated Performance Index (API) of the indigenously growing plants of the polluted Najafgarh Drain near Vishwavidyalaya, North West Delhi was assessed and compared with those growing in the less polluted neighbouring institutional area of Vishwavidyalaya of North West Delhi. *Ficus benghalensis* (Burgad), *Ficusra cemosa* (Gular), *Ficus religiosa* (Peepal), *Ficusvirens* (Philkan), *Saraca asoca* (Ashoka), *Pithecellobium dulce* (Jangal Jalebi), *Azadirachta indica* (Neem) and *Phyllanthus emblica* (Amla)) were the eight plants which were studied.They recorded more alkaline leaf extract pH (6.37) which was significantly different from the control (P<0.001), They showed greater amount of Relative Water Content (RWC) (60%) , lesser Ascorbic Acid (AA) (1.08mg/g). higher Chlorophyll content (109mg/g) , lowerAPTI but similar API when compared with controls. It was observed that *Azadirachta indica* (Neem) and *Pithecellobiumdulce* (JangalJalebi) scored the best over the other six species. Their Ascorbic Acid (AA) content and Chlorophyll (TCh) concentration were the highest, their Relative Water Content (RWC) was much lower than others and their pH was 6.3. However the APTI scores were much lower than their counterparts in the institutional area. On the contrary, the scores for *Ficus religiosa* (Peepal) and *Saraca asoca* (Ashoka) improved in the drain area as compared to the institutional area. This shows that *Ficus religiosa* (Peepal) and *Saraca asoca* (Ashoka) Tree had greater tolerance level to polluted air and water of the drain area than *Azadirachta indica* (Neem) and *Pithecellobium dulce* (Jangal Jalebi). We recommend that preference should be given to plantation of *Ficus religiosa* (Peepal) and *Saraca asoca* (Ashoka) along with *Azadirachta indica* (Neem) and *Pithecellobium dulce* (Jangal Jalebi) around the drain area to control pollution.

KEY WORDS : Najafgarh Drain, APTI, API, *Azadirachta indica* (Neem), *Pithecellobium dulce* (Jangal jalepi), *Ficus religiosa* (Peepal), *Saraca asoca* (Ashoka)

INTRODUCTION

Due to industrialization and urbanization air pollution (Hamrazet *et al.*, 2014), has become a serious problem in cities and today Delhi is one of the most polluted cities in the world. The Najafgarh drain flowing across the city is one of the contributing sectors of pollution. We tried to quantify the impact of this air and water pollution on life around the drain. Several researchers have proven that air pollutants affect plant growth adversely. Vegetation shows dissimilar behavior for various pollutants and all components of tree can be used as biomonitors. Physiological changes take place in plants which are open to air pollutants before showing visible damage to the foliage (Steubing *et al.*, 1989). Most plants experience internal changes before showing noticeable injury to leaves when they are open to air pollutants. Plantation of trees is a handy tool for combating urban pollution. Vegetation works as a sink for air pollution and reduce pollution level in the atmosphere. Plants naturally purify the air by consuming particulate matter and smoke (Rai and

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KEY WORDS : Najafgarh Drain, APTI, API, *Azadirachta indica* (Neem), *Pithecellobium dulce* (Jangal jalepi), *Ficus religiosa* (Peepal), *Saraca asoca* (Ashoka)

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Understanding Relationship Quality Dimensions: A Study of Hotel Industry

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Abstract

Purpose: This paper is an attempt to assist in understanding the concept of relationship quality and its dimensions. Relationship quality measures the strength of a relationship and an important asset with a service firm which cannot be duplicated by the competitors. It helps in customer retention and in increasing the profitability for the firms in the highly competitive environment.

Design/methodology/approach: Primary data is collected using a structured questionnaire administered on respondents who have used the services of hotel industry in the last one month in National Capital Region of India. A total of 362 usable complete questionnaires are used for data analysis. Exploratory factor analysis is used to explore and extract the dimensions of relationship quality. Confirmatory factor analysis is used to confirm the dimensions of relationship quality extracted. Reliability of the constructs is checked. The value of relationship quality is estimated by using a measurement model in AMOS 21.

Findings: Results indicate that three dimensions emerge that define and explain the construct of relationship quality, namely, trust, satisfaction and commitment. All three of them have a combined explained variance of 70 percent. Confirmatory factor analysis results show that the measurement model for estimating the value of relationship quality is overall a good fit. All the three dimensions of relationship quality are important, maximum contribution in explaining the concept is that of satisfaction followed by trust and then commitment.

Originality/value: Relationship Quality is a much-researched topic in the western part of the globe and in countries like China and Hongkong. This paper has been written to customize the concept of relationship quality to the hotel industry in the Indian context and find out the generalizability of this new concept of relationship quality to developing economy.

Keywords: Relationship Marketing, Relationship quality, Hotel Industry, Trust, Satisfaction, Commitment.

A Study of Income, Consumption and Wealth Inequalities among different Caste groups in India.

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Abstract: Income, consumption and wealth inequalities are the major social issues that is concerned with power, status, and class. In the last few decades, the income gap between the different castes has increased radically creating a significant gap between the rich and the poor. As a result, inequality of income in India is the highest and it is close to Russia which top the list of unequal countries in the world. This paper evaluates the extent of income, consumption, and wealth inequalities with respect to different castes and religions in India and suggests some measures to reduce income inequality. For analysis, I have used publicly available secondary statistical databases available from the National Sample Survey Office (NSSO) and India Human Development Survey (IHDS). The study is based purely on secondary data. It will review journals and articles on theories regarding income inequality and development. Figures from international organization's and websites will also be reviewed as part of the study.

Keywords: Inequality, income, consumption, wealth, Caste, NSSO, IHDS.

I. INTRODUCTION

Income inequality refers to the unequal dissemination of income and wealth amongst the top earners and the bottom earners in a particular country. It is the main barrier to economic and social welfare. In fact, income equality is considered as the biggest hurdle of the 21st century. For the past few decades, the gap between the rich and the poor has significantly increased and still perpetuating to increase to a greater extent. Approximately 80% of India's wealth is controlled by just 10 % of the population while the top 1 % of India's population holds nearly 60 % of its wealth. India is among the 10 richest countries in the world with a total individual wealth of $5,600 billion, still the average Indian is quite poor.

II. OBJECTIVE OF THE CURRENT STUDY

1. To understand the interconnection between Income, Consumption and Wealth
2. To evaluate the income, consumption, and wealth inequalities with respect to different castes and religions in India.
3. To suggests measures to reduce income inequality

III.METHODOLOGY

The paper is descriptive in nature. The data collected for this paper consisted of secondary data collected through complete analysis of qualitative data concerned to the topics that have been published in various sources ie published reports, news articles, websites etc. of various Government and NGOs".

IV CURRENT SCENARIO

According to the (World Inequality Report, 2018), 10% of neediest Indians possess only 0.2 % of national wealth. In 2000-01 the inequality between the wealthiest 1% and the poorest 10 % was 1,840 times. The figures reached to 2,430 times in 2010 and 2,450 in 2014. The percentage of the world's adults live in India is 15.5 whereas its share in the global wealth is just 1 %. At present there are 119 billionaires in India. Till 2022, India is projected to create 70 new millionaires every day. Over a decade millionaires' treasures has increased by almost 10 times and their total wealth is higher than the Union budget of India for the year 2018-19, which was at INR 24422 billion. ((Oxfam 2019)). However, the wellbeing of the population is connected not only with the economic growth but also on its apportionment values. For the last three decades inequality has been rising abruptly in India. The surging economic growth has enhanced the living conditions of its citizens, but these enhancements were not evenly distributed among India's varied population. Every year the income inequality trend is climbing in the upward direction which means the rich people are getting richer at much more expeditious rate than the poor. The growing income disparity has an adverse impact on the poor citizens' access to food, clothing, education, sanitation, and medical facilities creating difficulties for them to climb up the economic ladder and also undermining the sustainability of economic growth. The condition of the poor population has worsened, when compared not only to the rich but also to the average middle-income population. According to the Global Multidimensional Poverty Index (MPI), (Global MPI 2018) India has 364 million people living in poverty. It is more than 25% of 1.34 billion people living in 'multidimensional' poverty globally. Concerns about intensifying inequality have been highlighted by the International Monetary Fund (IMF), World Bank, and the Asian Development Bank The rising income inequality in India is also impeding the development and growth of the middle class. Besides economic growth, the other factors affecting income/wealth include population slopes, savings and investments, inheritance, economic reforms, and other government policies.

V POPULATION SHARE BY RELIGION AND CASTE CATEGORIES

India has citizens from all religions. Hinduism Buddhism, Jainism and Sikhism have their ancestry in India whereas Christianity and Islam are imported religions to India. The below mentioned six religions make up nearly 99% of the Indian population. The majority of the population belongs to the Hindus religion. The population of our country is classified into four categories:

1. **Scheduled Castes:** Previously called untouchables, due to the nature of work (as semi-skilled and unskilled labourers) they do. They form nearly 19.7% of the country's population. SCs are among the disadvantaged caste in India.
2. **Scheduled Tribes:** Socially and economically relegated original ethnic groups in India that live in harsh conditions, mainly in forests and other hilly areas account for about 8.5% of the population. One important remark on Schedule Tribe (ST)

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Evaluating Health Impact of Air Pollution

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Abstract The paper attempts to evaluate health benefits individuals can derive by reducing the expenditure on health related diseases by deploying the methodology of health production function. The study is based on survey of households located around half kilometer of monitoring station for ambient air pollution of Central Pollution Control Board (CPCB) situated at Siri Fort and R.K. Puram in the South Delhi region. The survey was conducted in the winter season of 2015.The results reveal that individuals can reduce the expenditure on health by controlling indoor pollution, awareness index, habit index, averting activities, nutrition index, and outdoor pollution. The paper identifies the role played by habits and nutrition status of individuals in affecting the number of sick days of individuals thus reducing the expenditure on mitigating activities. The study holds socio-economic and political implications as it highlights the role of better living conditions in the society and the significance of reducing indoor pollution and policies promoting clean energy fuel.

Keywords Health Production Function, Monitoring Stations, Indoor Pollution, Awareness Index, Habit Index, Averting Activities, Nutrition Index, Outdoor Pollution

1. Introduction

In this present era a serious concern and challenge has emerged related to air pollution, its consequent acute and chronic impact on human health has been witnessed across the world. Various pollutants that degrade the air quality are carbon monoxide (CO), sulphur dioxide (SO_2), nitrogen oxides (NOx), volatile organic compounds (VOCs), ozone (O_3), heavy metals, and particulate matter (PM2.5 and PM10). The impact of existence of such pollutants ranges from minor upper respiratory irritation to chronic respiratory and heart disease, lung cancer, acute respiratory infections in children and chronic bronchitis in adults, aggravating pre-existing heart and lung disease, or asthmatic attacks.

The State of Global Air report 2018 by IHME paints a grim picture of India with Global Burden of Disease (GBD) analysis 2016 estimating 1.1 million out of 4.4 million, that is, a quarter of global deaths from air pollution occurring in India – the highest amongst the South Asian countries and 10 per cent of total deaths in India [1]. The report also documented that 70 per cent of Indian population resides in areas with PM 2.5 concentration more than 35 ug/m^3, much above the WHO air quality guideline of 10 ug/m^3 and India experienced one of the steepest increase in PM 2.5 concentrations since 2010. The report projected the concentration to increase to 48 ug/m^3 by 2050, increasing the exposure by 40 per cent, if no further action is taken. WHO's World Global Air Quality Database ranking of PM 2.5 concentration in cities shows 11 among the 12 most polluted cities globally from India, with the National Capital - Delhi being the 7th most polluted one. The urban air database by WHO in 2010 showed that Delhi has exceeded PM 10 level by 10 times at 198 ug/m^3, vehicular emissions being the major contributor followed by coal burning [2]. South Delhi is one of the prominent locations in Delhi covering an area of 247 square kilometers. The southern region of National Capital Territory comprises of a population of 27.32 lakhs (Census of Delhi, 2011) [3] suffering from very unhealthy daily average levels of PM 10 and PM 2.5 as per the Air Quality Index (AQI) reported by Delhi Pollution Control Board (DPCC) [4].

There exists a vast quantity of literature that reconfirms the hazardous impact of air pollution on health of individuals. Mukhopadhyay and Forssell [5] confirm that the close linear relationship between pollution and health exhibiting the impact of pollutants from fossil fuel combustion in India on health by applying input-output structural decomposition analysis approach. Smith [6] evaluated attributable risks and patterns of disease in India that impact health and concluded that acute respiratory infections and chronic obstructive pulmonary diseases and

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Toxic Effects of Food Colorants Erythrosine and Tartrazine on Zebrafish Embryo Development

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Abstract

Erythrosine and tartrazine are common artificial food additives which have become a part of daily human consumption. Advised daily intake values for these agents are set strictly, however, the actual intake is much higher than the recommended ADI. A higher intake of erythrosine and tartrazine is shown to exhibit adverse effects in mammalian models, and is thus a matter of public health concern. In this study we have assessed and compared the dose-dependent effects of erythrosine and tartrazine on inducing oxidative stress in zebrafish embryos. We performed the superoxide dismutase (SOD) enzyme activity assay to test the effect of the two food colorants on reactive oxygen species (ROS) production. Erythrosine and tartrazine treated embryos showed significantly increased SOD activity in an enzyme assay. Additionally SOD mRNA transcripts in the treated embryos were found to be upregulated. Erythrosine and tartrazine treatment specifically altered SOD1 mRNA transcript levels while it had no effect on SOD2 mRNA, the other isoform found in zebrafish. Our study shows that erythrosine at a concentration of 0.05% is embryotoxic in a dose and time dependent manner. Tartrazine treated embryos exhibit similar toxicity at a concentration of 0.5%. Erythrosine treated zebrafish embryos hatch much slower when compared to tartrazine treated embryos and control embryos. While erythrosine affects the yolk utilization, tartrazine exhibits teratogenic effects on early zebrafish embryos. The mRNA expression as well as biochemical analysis indicates that exposure to food colorants induces cytoplasmic SOD transcription to combat the ROS toxicity in zebrafish embryos.

Article History

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Keywords

Erythrosine;
Tartrazine;
Yolk;
Oxidative Damage;
Superoxide Dismutase.

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Familial Background as a Hidden Cause for Obesity among College Going Girls

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Abstract

Background: Rapid changes in global economies and industrialization have resulted in switch from traditional diets and labor intensive lifestyle to consumption of modern calorie-rich diets loaded with fat and sugar contents, accompanied with sedentary lifestyle further leading to onset of numerous non-communicable, chronic disorders; obesity being one of them. This study aims at investigating risk posed by family history of obesity over the generations for inducing extreme overweight conditions among adolescent females of Delhi. **Methods:** Present work is a cross-sectional study conducted in Delhi (India) with sample size of 444 females aged between 18 - 22 years. Socio-demographic aspect along with lifestyle-related profile of participants was assessed using a self-administered proforma. Prior history of obesity among family members, if any, was noted as well, and anthropometric and physiologic measurements were recorded using well established customary techniques. Analysis was carried out in SPSS 20.0. **Results:** Participants holding a history for obesity in family were comparatively more obese than their counterparts. Positive family history for the same has been found possessing a notably closer association with elevated levels of adiposity determined by various physical and physiological variables. **Conclusion:** Family history of excessive fatness develops high risk of pathological manifestation for the same in upcoming generations that needs to be administered effectively—at individual or population level, and addressed efficiently by one's family or by the prevailing governmental provisions.

Keywords

Obesity, Family History, Genetic Predisposition, Delhi, Behavioral Patterns

*Both authors have contributed equally to the work and must be regarded as first authors and corresponding authors.

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Original Article

Assessment of Health Management Information System for Monitoring of Maternal Health in Jaleswar Block of Balasore District, Odisha, India

Ranjit Kumar Dehury[1], Suhita Chopra Chatterjee[2]

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Abstract

Background: In 2005, the Government of India implemented the National Rural Health Mission for reduction of maternal mortality. One of the major impediments in improving maternal health since then has been a poor management of the Health Management Information System (HMIS) at grass-roots level which could integrate data collection, processing, reporting, and use of information for necessary improvement of health services. **Objective:** The paper identifies the challenges in generating information for HMIS and its utilization for improvement of maternal health program in the tribal-dominated Jaleswar block in Odisha, India. It also aims to understand the nature and orientation of the HMIS data generated by the government for the year 2013–2014. **Methods:** The study is a cross-sectional type which used observation and interview methods. Primary data were gathered from health professionals to understand the challenges in generating information for HMIS and its utilization. Next, to understand the nature and orientation of HMIS, data pertaining to tribal block were analyzed. **Results:** The findings show that there are challenges in generation of quality data, capacity building of workforce, and monitoring of vulnerable tribal population. The discrepancies between HMIS data and field reality display the gap in formulation of policy and its implementation. **Conclusion:** The study unearths the existing politics of knowledge generation. This shows highly standardized procedures and information gathering by use of dominant biomedical concepts of maternal health with limited inclusion of local birthing conceptions and needs of vulnerable tribal pregnant women.

Key words: Health Management Information System, maternal health program, Mother and Child Tracking System, National Rural Health Mission, tribal health

Introduction

The Government of India implemented the National Rural Health Mission (NRHM) in 2005 for reduction of maternal mortality in order to achieve the Millennium Development Goal-5. NRHM mostly focuses on five key issues for the improvement of maternal health which centers on a good communication network, satisfactory and flexible financing, monitoring against a quality standard, providing adequate human resource, and capacity building at all levels of the continuum of care.[1,2] However, one of the major impediments in improving maternal health has been a poor management of the Health Management Information System (HMIS) at grass-roots level which could integrate data collection, processing, reporting, and use of information for necessary improvement of health services. There are medical reasons for high maternal mortality in India due to nonavailability of obstetricians and skilled birth attendants (SBAs) in rural areas. This could be monitored using HMIS and allocating resources for optimal planning and programming.[3-6] Developing countries needs to be equipped with systematic data management system for improvement of health programs.[7] In a commentary on maternal health in India, researchers found that some of the indicators monitored using HMIS, i.e., immunization status,

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Body Age as an Undeniable Adiposity and Obesity Indicator

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Abstract:
Background: Aging that indicates changes in body functioning with progressive reduction in viability of organism, can be determined using chronological age as well as biological age. **Objectives**: Present study aims to assess the extent to which the two types of age differ

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Gut Microbiota and the Diseases

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Abstract: *Human body has lesser human cells and more microbes in their system. Microbes and human cells exist in 10:1 proportions in our bodies. It is 10 trillion human cells versus 100 trillion microbial cells. Thus we are just 10% humans!!!! The entire repertoire of microbes present in an organism is termed as microbiota. Endogenous microbiota is so vast that it's termed as 'microbial organ'. Microbiota exists almost everywhere in our bodies: skin, mouth, vagina, gut. Each point in our body is a microbial community and its dysbiosis (imbalance) leads to diseases. Dysbiosis of microbiota has potential roles in many diseases: Kidney disease in Systemic lupus erythematosus [1], food allergies [2], Ulcerative colitis [3], Crohn's disease [4], cystic fibrosis*

period. Soon it develops into adult like microbiota which can change with age, environment, body mass index and lifestyle. Gut microbiota can by studied in DNA extracted from poops by 16S rRNA sequencing. 16SrRNA is only present in microbes and not in us. This provides us information about the gut microbiome, which is the collection of genomes from all the microorganisms. The human gut microbiota majorly contains the *Bacteroidetes* and the *Firmicutes*. The homeostasis of gut microbiota is essential for maintaining health of the individual [10]. This review focuses on few diseases when dysbiosis of gut microbiota occurs: Obesity, Inflammatory bowel disease, atherosclerosis and colorectal cancer. We also highlight the plausible importance of fecal microbiota

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Familial Background as a Hidden Cause for Obesity among College Going Girls

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Abstract

Background: Rapid changes in global economies and industrialization have resulted in switch from traditional diets and labor intensive lifestyle to consumption of modern calorie-rich diets loaded with fat and sugar contents, accompanied with sedentary lifestyle further leading to onset of numerous non-communicable, chronic disorders; obesity being one of them. This study aims at investigating risk posed by family history of obesity over the generations for inducing extreme overweight conditions among adolescent females of Delhi. **Methods:** Present work is a cross-sectional study conducted in Delhi (India) with sample size of 444 females aged between 18 - 22 years. Socio-demographic aspect along with lifestyle-related profile of participants was assessed using a self-administered proforma. Prior history of obesity among family members, if any, was noted as well, and anthropometric and physiologic measurements were recorded using well established customary techniques. Analysis was carried out in SPSS 20.0. **Results:** Participants holding a history for obesity in family were comparatively more obese than their counterparts. Positive family history for the same has been found possessing a notably closer association with elevated levels of adiposity determined by various physical and physiological variables. **Conclusion:** Family history of excessive fatness develops high risk of pathological manifestation for the same in upcoming generations that needs to be administered effectively—at individual or population level, and addressed efficiently by one's family or by the prevailing governmental provisions.

Keywords

Obesity, Family History, Genetic Predisposition, Delhi, Behavioral Patterns

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Lifestyle Trends and Obesity among College Going Girls of Delhi

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Abstract

Background: Place of food preparation and hence consumption is an important determining factor for diet intake and consequently the risk for development of obesity. Aims: Present study attempts to examine dietary behavior among students attending undergraduate courses at Delhi University so as to assess the prevalence of overweight and obesity status using various dietary and behavioral factors triggering obesity. Methods: 201 females with age ranging from 18 to 22 years were interviewed for different socio-demographic information and parameters relating to lifestyle regime using a standardized proforma. Anthropometric and physiological measurements were taken according to standard techniques. Analysis was done using SPSS 20.0. Results: Family history for obesity and diabetes is noted to be significantly higher among girls taking home-made food. It has been reported that girls taking food prepared at home are more overweight/obese for BMI or at risk for higher waist line and waist height ratio as compared to those taking meals away from home. Conclusion: Universities can perform a crucial role in restraining the prevalence of obesity among young population by assessing college-going students for their weight status and eating practices and counseling them about healthy eating choices and habits.

Keywords

Adiposity, Delhi, Food, Risk, Students

1. Introduction

Etiology of obesity is multifactorial; however, it is certainly the existing equili-

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Gut Microbiota and the Diseases

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Abstract: *Human body has lesser human cells and more microbes in their system. Microbes and human cells exist in 10:1 proportions in our bodies. It is 10 trillion human cells versus 100 trillion microbial cells. Thus we are just 10% humans!!!! The entire repertoire of microbes present in an organism is termed as microbiota. Endogenous microbiota is so vast that it's termed as 'microbial organ'. Microbiota exists almost everywhere in our bodies: skin, mouth, vagina, gut. Each point in our body is a microbial community and its dysbiosis (imbalance) leads to diseases. Dysbiosis of microbiota has potential roles in many diseases: Kidney disease in Systemic lupus erythematosus [1], food allergies [2], Ulcerative colitis [3], Crohn's disease [4], cystic fibrosis [5], asthma [6], irritable bowel syndrome [7], obesity [8] and even cancer [9]. The list is large. This review focuses on dysbiosis of the gut microbiota and the associated diseases. A deeper understanding of the gut microbiota will lead us to cures of many incurable diseases which are actually caused due to dysbiosis.*

Keywords: *Microbiota, dysbiosis, IBD, Obesity, Atherosclerosis, colorectal cancer*

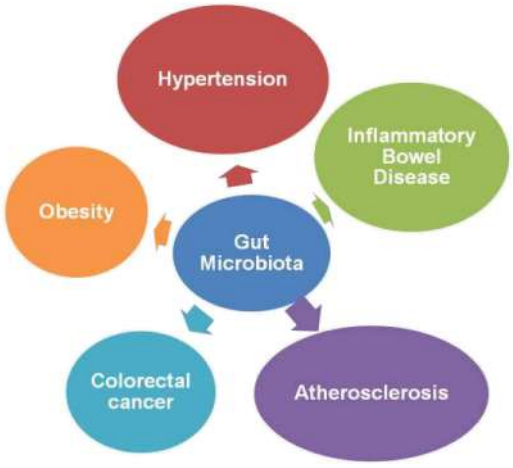


Fig.1. *Gut microbiota is associated with many diseases: Atherosclerosis, Inflammatory Bowel Disease, Obesity, Hypertension and colorectal cancer*

Microbiota develops after birth of the child. Vaginally delivered children versus children born by C-section develop different microbiota. It not only depends on method of delivery but also breast feeding and weaning period. Soon it develops into adult like microbiota which can change with age, environment, body mass index and lifestyle. Gut microbiota can by studied in DNA extracted from poops by 16S rRNA sequencing. 16SrRNA is only present in microbes and not in us. This provides us information about the gut microbiome, which is the collection of genomes from all the microorganisms. The human gut microbiota majorly contains the *Bacteroidetes* and the *Firmicutes*. The homeostasis of gut microbiota is essential for maintaining health of the individual [10]. This review focuses on few diseases when dysbiosis of gut microbiota occurs: Obesity, Inflammatory bowel disease, atherosclerosis and colorectal cancer. We also highlight the plausible importance of fecal microbiota transplant in treatment of these diseases in addition to current therapies being used for additive cure of the disease.

(A) Obesity

A multifactorial disease defined by body mass index greater than 30 kg/m^2. Fat distribution pattern further divides obesity into android and gynoid obesity. Android obesity (apple shaped or central obesity) common in men is more dangerous than gynoid or pear shaped obesity predominant in women. Centrally obese person is more prone to cardiovascular diseases and diabetes type II. Dysbiosis of gut microbiota has been seen in obese person with increased *Firmicutes* and decreased *Bacteriodetes* (Fig. 2). Also, obese people show less alpha diversity of microbes illustrating diverse kinds of microbes is not present in the fecal samples of obese person [11]. Like any multifactorial disorder, dietary changes influence the microbiota to larger extent. For example, change to diet rich in animal fat increases *Bacteriodetes* levels, while switching to diet rich high fat and low fiber decreases plant polysaccharide degrading microbes like *Eubacterium rectale.* Dietary fiber intake improves overall microbiota richness of the gut [11].

Although in its infancy, fecal microbiota transplant (FMT) or bacteriotherapy, a process by which fecal bacteria from a healthy individual is transplanted in intestine of an obese person carry promising therapeutic potential for treating obesity.

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Background: Aging that indicates changes in body functioning with progressive reduction in viability of organism, can be determined using chronological age as well as biological age. **Objectives**: Present study aims to assess the extent to which the two types of age differ

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Toxic Effects of Food Colorants Erythrosine and Tartrazine on Zebrafish Embryo Development

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Abstract

Erythrosine and tartrazine are common artificial food additives which have become a part of daily human consumption. Advised daily intake values for these agents are set strictly, however, the actual intake is much higher than the recommended ADI. A higher intake of erythrosine and tartrazine is shown to exhibit adverse effects in mammalian models, and is thus a matter of public health concern. In this study we have assessed and compared the dose-dependent effects of erythrosine and tartrazine on inducing oxidative stress in zebrafish embryos. We performed the superoxide dismutase (SOD) enzyme activity assay to test the effect of the two food colorants on reactive oxygen species (ROS) production. Erythrosine and tartrazine treated embryos showed significantly increased SOD activity in an enzyme assay. Additionally SOD mRNA transcripts in the treated embryos were found to be upregulated. Erythrosine and tartrazine treatment specifically altered SOD1 mRNA transcript levels while it had no effect on SOD2 mRNA, the other isoform found in zebrafish. Our study shows that erythrosine at a concentration of 0.05% is embryotoxic in a dose and time dependent manner. Tartrazine treated embryos exhibit similar toxicity at a concentration of 0.5%. Erythrosine treated zebrafish embryos hatch much slower when compared to tartrazine treated embryos and control embryos. While erythrosine affects the yolk utilization, tartrazine exhibits teratogenic effects on early zebrafish embryos. The mRNA expression as well as biochemical analysis indicates that exposure to food colorants induces cytoplasmic SOD transcription to combat the ROS toxicity in zebrafish embryos.

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Keywords

Erythrosine;
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Original Article

Assessment of Health Management Information System for Monitoring of Maternal Health in Jaleswar Block of Balasore District, Odisha, India

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Abstract

Background: In 2005, the Government of India implemented the National Rural Health Mission for reduction of maternal mortality. One of the major impediments in improving maternal health since then has been a poor management of the Health Management Information System (HMIS) at grass-roots level which could integrate data collection, processing, reporting, and use of information for necessary improvement of health services. **Objective:** The paper identifies the challenges in generating information for HMIS and its utilization for improvement of maternal health program in the tribal-dominated Jaleswar block in Odisha, India. It also aims to understand the nature and orientation of the HMIS data generated by the government for the year 2013–2014. **Methods:** The study is a cross-sectional type which used observation and interview methods. Primary data were gathered from health professionals to understand the challenges in generating information for HMIS and its utilization. Next, to understand the nature and orientation of HMIS, data pertaining to tribal block were analyzed. **Results:** The findings show that there are challenges in generation of quality data, capacity building of workforce, and monitoring of vulnerable tribal population. The discrepancies between HMIS data and field reality display the gap in formulation of policy and its implementation. **Conclusion:** The study unearths the existing politics of knowledge generation. This shows highly standardized procedures and information gathering by use of dominant biomedical concepts of maternal health with limited inclusion of local birthing conceptions and needs of vulnerable tribal pregnant women.

Key words: Health Management Information System, maternal health program, Mother and Child Tracking System, National Rural Health Mission, tribal health

Introduction

The Government of India implemented the National Rural Health Mission (NRHM) in 2005 for reduction of maternal mortality in order to achieve the Millennium Development Goal-5. NRHM mostly focuses on five key issues for the improvement of maternal health which centers on a good communication network, satisfactory and flexible financing, monitoring against a quality standard, providing adequate human resource, and capacity building at all levels of the continuum of care.[1,2] However, one of the major impediments in improving maternal health has been a poor management of the Health Management Information System (HMIS) at grass-roots level which could integrate data collection, processing, reporting, and use of information for necessary improvement of health services. There are medical reasons for high maternal mortality in India due to nonavailability of obstetricians and skilled birth attendants (SBAs) in rural areas. This could be monitored using HMIS and allocating resources for optimal planning and programming.[3-6] Developing countries needs to be equipped with systematic data management system for improvement of health programs.[7] In a commentary on maternal health in India, researchers found that some of the indicators monitored using HMIS, i.e., immunization status,

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Toxicology

In vitro apoptosis-induction, antiproliferative and BSA binding studies of a oxidovanadium(V) complex

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ABSTRACT

In our ongoing efforts to develop novel trace metal complexes with therapeutically interesting properties, a neutral mono nuclear oxidomethoxidovanadium(V) complex, [$V^{V}O(OCH_3)$(hpdbal-sbdt)] (**1**) and a μ-O bridged dinuclear oxidovanadium(V) complex, [{$V^{V}O$(hpdbal-sbdt)}$_2\mu-O$] (**2**) [H_2hpdbal-sbdt (**I**) is a tridentate and dibasic ONS^{2-} donor ligand obtained through the Schiff base reaction of 2-hydroxy-5-(phenyldiazenyl)benzaldehyde (Hhpdbal) and S-benzyldithiocarbazate (Hsbdt)] have been synthesized and characterized by various analytical techniques such as TGA, EDS, ATR-IR, UV–Vis, CV, ^{1}H NMR, ^{13}C NMR and ^{51}V NMR. Single-crystal X-ray diffraction analysis of **1** confirms the coordination of phenolate oxygen, imine nitrogen and thioenolate sulfur of the ligand to the vanadium center with a distorted tetragonal-pyramidal geometry. The compound **2** triggered apoptotic and reproductive death of the cancer cells *in vitro* with 76% and 62% growth inhibition of human breast adenocarcinoma (MCF-7) and human lung carcinoma cells (A549) respectively. The compound **2** was found to be sufficiently stable over a wide window of physiological pH. The complex **2** was studied further for its interaction with a drug carrier protein BSA with the aid of spectroscopic techniques *viz.* fluorescence, temperature controlled UV–vis and deconvoluted IR techniques.

1. Introduction

Cancer is a global disease burden which causes high level of morbidity and mortality in the context of non-communicable diseases (NCDs). It had an estimated 14 million cases as of 2012 and accounted for about 8.8 million deaths in 2015 [1]. Cases of death due to lung cancer for men and breast cancer for women being the highest, this second leading cause of death worldwide is expected to give a 70% rise in the total number of cases within a span of two decades [2]. In order to combat this deadly ailment, World Health Organization (WHO) had launched a global action plan 2013–2020, which aims for the prevention and control of NCDs according to which designing efficient control strategies for cancer is one of the immediate goals. In this pursuit, countless organic and inorganic compounds have been synthesized for exploring their anticancer activities [3–6]. Notable example of one such compound is cisplatin [7] which is now utilized in the treatment of variety of malignancies [8,9]. Many such platinum based drugs have been developed in the later stages as second generation drugs all of which are limited in their tumor targeting ability and cause undesirable dose-limiting side effects, toxicity [10,11] and drug resistance [10,12] in treated individuals; cisplatin not being an exception. In order to overcome these glitches, extensive research is being done to discover alternative non platinum anticancer drug candidates based on different trace metals with improved pharmacological activities [13]. Vanadium is one among such prospective trace metals which has received huge importance after the discovery of its biological role in certain ascidians and mushrooms [14]. Vanadium has also been recognized as a micronutrient in humans which prevents minor damages occurring to essential biomolecules like DNA and proteins [15]. This directs the attention towards the biological role of vanadium in DNA maintenance and genomic stability thereby preventing mutation of healthy cells leading to cancer [16]. The study of vanadium coordination complexes got further thrust following the exploration of their therapeutic applications [17–22] in terms of antidiabetic, anticancer and antiamoebic activities. Vanadocene compounds [23], amino acid vanadium complexes [24,25], vanadium-oxido [26], vanadium-peroxido [27],

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Time fractional Kupershmidt equation: symmetry analysis and explicit series solution with convergence analysis

Astha Chauhan, Rajan Arora

Abstract. In this work, the fractional Lie symmetry method is applied for symmetry analysis of time fractional Kupershmidt equation. Using the Lie symmetry method, the symmetry generators for time fractional Kupershmidt equation are obtained with Riemann-Liouville fractional derivative. With the help of symmetry generators, the fractional partial differential equation is reduced into the fractional ordinary differential equation using Erdélyi-Kober fractional differential operator. The conservation laws are determined for the time fractional Kupershmidt equation with the help of new conservation theorem and fractional Noether operators. The explicit analytic solutions of fractional Kupershmidt equation are obtained using the power series method. Also, the convergence of the power series solutions is discussed by using the implicit function theorem.

1 Introduction

Fractional calculus is the theory of fractional integrals and derivatives of arbitrary order which is evolved towards the end of 17th century. Many researchers are devoted to the interpretation, properties and applications of fractional order differential equations [20], [26], [34]. In the recent years, fractional differential equations (FDEs) have been studied frequently to describe various physical aspects and procedure in hydrology, visco-elasticity, mechanics, neurons, image processing, physics, control-theory, electrochemistry and finance [7], [10], [25], [27], [28]. Many efficient

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Psychological and Cultural facets of Traditional Healing Practitioners from Assam

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Abstract

Assam has a very rich tradition of ethno-medicines used in the treatment of various ailments. Deficiency of documentation on Traditional Healing Practices endorses the present study aiming to justify and provide quality narration Traditional Healing Practice deserves. The study also aims to unearthen the rich reservoir of Traditional Healing methods grounded in some remote areas of Assam. Exploration of the cultural, historical, traditional and religious connotation of the methods and practices is done to bridge the gap between advanced technological and medical facilities and the age old redundant traditional healing practices, dissemination the information to the masses as the intrinsic motivation of the research. The research is qualitative in nature which includes surveys on the Traditional Healers, the methods they use, types of beliefs they hold, kinds of ethno-medicines they prescribe, methods and regulations they adhere to which was conducted on various districts of lower Assam where there is the prevalence of Traditional Healing Practices since time immemorial. The data collection was done by conducting interviews with the local Traditional healers. The interview questionnaire was formulated by the researchers underpinning the concepts on the basis of information acquired by the pilot study. Responses from each question are coded by classifying them into categories and ending up clubbing them into groups to form themes by formalizing an overview of the underlying concept and fundamental beliefs about each theme. Codes are derived and contemplated from the raw data collected by the researcher.

Key words: Traditional Healers, Culture, Healing

Psychological and Cultural facets of Traditional Healing Practitioners from Assam

This North-East region of the nation is comprised of eight states which harbor more than 180 tribal communities of the total of 427 tribal communities found in India which is about 40% of the total tribal communities (Shankar, Lavekar, Sharma, 2015).This region marks a specific diversity of culture, ethnicity and is home of a large number of ethnic/tribal people in India. These indigenous people are the ethnic communities who live in harmony with the nature and strive for a balance between using and conserving the natural resources. The nation is empowered with over 53.8 million tribal people inhabiting in 5000 villages dominated by forest of tribal community comprising 15% of the total geographical area of land masses which represents one of the greatest emporia of ethno-botanical wealth (Saikia & Das, 2014). This paper aims to study the rich reservoir of traditional healing methods grounded in some remote areas of one of these state of Northeast, i.e., Assam. Assam is a geographically, ecologically, traditionally, culturally and environmentally rich state with an embellishing diversification of avifauna. The conservation of this rich avifauna and natural resources is of great concern among the habitants.

Traditional Healing Practices

There is dearth of research studies citing traditional healing practices prevalent in Assam. Despite having a very rich tradition of herbal medicines that are used in the treatment of various ailments not much is

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Comparing the level of Spirituality and Resilience among Youth and Adults: Implications for Health

Shruti Aluria[1], Shubhangi Singh[1] and Dr Meetu Khosla[2]

Abstract

The present study compared the level of Spirituality, Resilience and Health among (group I) 50 youth, age ranging from 18-25 years [Mean (SD) age=20.72(1.25)] and (Group II) 50 adults age ranging from 45-70 years [Mean(SD)age=51.6(7.74)] Spirituality means believing in supreme power, resilience means individual tendency to cope with stress and health means physical and mental well-being. Belief and individual tendency to cope up with different situation impact the health. The Resilience was assessed by using the scale Connor- Davidson resilience scale (Connor & Davidson, 2003), Spirituality was assessed with the help of spirituality daily basis scale (Underwood & Teresi, 2002), and Health was assessed by using General Health Questionnaire (Goldberg, 1978). The t test revealed the difference between the two groups was significant on Spirituality [t (98)=.000,$p<0.01$] with a significantly higher level of spirituality among the youth than the adults. However, there were no significant relationships between Health and Resilience for either group. A significant correlation was found between resilience and health[r= -.431, $p<0.01$], for the youth group and for the adults[r=-.246,$p<0.05$] implying that resilience enhances health. However, there was no significant relation between resilience and spirituality or spirituality and health for group I or II. This study has important implications as it shows that resilience helps one to be healthy by indulging in emotion regulation and cognitive restructuring that probably enhances health. Perhaps intervention program could be designed to inculcate resilience and indulge in spirituality to enhance health.

Comparing the level of Spirituality and Resilience among Youth and Adults:

Implications for Health

Spirituality is associated with searching for transcendent. It is experiential and personal side of our relationship to the transcendent or scared (Emmons & Crumple, 1999). Roof (1999) gave four themes related to spirituality – a source of value, meaning and purpose beyond self, way of understanding, inner awareness and personal integration. Spirituality takes us beyond our daily life experience and has transforming effects on lives which is about experiencing and doing.

Theories of spirituality

Basic cycle of spiritual passage (Renhart, 1987) proposes that the passage of adulthood is related to crises or turning points for new growth in life. He suggest the cyclic passage of spirituality that deepen spirals from illusion to disappointment and finally to hope. He has given three stages: predictability / illusion stages is related to believe that god moves in and out lives and we have a demand for certainty and stability, disillusionment/ disappointment stage. The disillusionment occur when god burst the narrow category which is defined by us. At this time, person feel confused, doubt, apathy etc., hope (developing faith) is a last stage in which person starts moving towards the real hope with confusion, mystery and doubt related to spirituality and god. They develop a faith of finding a answers to all these mystery and confusions.

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Healing through Mindfulness Meditation in Indian Cultural Context

Meetu Khosla[1] and Meenakshi Singh[2]

Abstract

Healing is holistic transformative process which involves transformation of one's self.

Mindfulness meditation is one such therapy which enables an individual to have a clear understanding of different aspects of one's self. This paper explores how moral norms/processes prevalent in Indian socio-cultural context influence the development of the moral self. The moral process includes self-conscious emotions as one of its component which again have a complex relationship with individual's moral behaviour. Deviating from or attaining one's moral values lead to the experience of different self-conscious emotions (shame, guilt, etc.) in varying degree. Cultural experiences mediate the development of self-conscious emotions which affect the mental health of an individual. Certain self-conscious emotions like shame can have negative effects on mental health by disrupting our mental thoughts and leading to maladaptive behaviour like self-harm. Mindfulness meditation in such cases will help in healing the individuals by giving them feedback about their true self, how they are conditioned to react in a particular way while experiencing a particular emotion, thus empower them not to entangle in the reactive pattern of those emotions. It there by increases psychological resilience and help the individual to be mindful about his/her self and things happening to him/her. The paper highlights the significance of Mindfulness Meditation in reducing internal conflicts pertaining to moral self, by enhancing inclusive awareness, reducing self-criticism, emotional reactivity, improving behavioural regulation and promoting overall mental health.

Keywords: healing, mindfulness-meditation, moral-self, self-conscious emotions, mental health

Healing through Mindfulness Meditation in Indian Cultural Context

Mindfulness Meditation is an ancient technique, practiced by various people across the world. Recent researches have captured its healing effects on a wide range of health issues. This paper explores how moral norms prevalent in Indian cultural context influence the moral self-development, which further have implications for experiencing negative self-conscious emotions (SCE). Researches done on SCE (shame and guilt) highlight its negative effects on mental health. The paper tries to address cross-cultural perspective present in this area and how these emotions are experienced in India, their implication for mental health and how mindfulness mediation can act as a healing tool.

Healing and Meditation

Healing is a broad term which includes being healthy at holistic level. It is a process which transforms one's self. Mindfulness meditation is one such ancient therapy which enables an individual to have a clear understanding of different aspects of one's self. Its therapeutic role in healing and enlightenment are widely studied (Hussain & Bhushan, 2010). There are two broad approaches - concentrative and mindfulness meditations (Hussain & Bhushan, 2010) which includes various techniques. Concentration meditation aims at single pointed focus on some sound, image or sensation to still the mind and achieve greater awareness. Mindfulness meditation was developed by Siddhartha Gautama, known as Buddha, over 2500 years ago (Gombrich, 2009) as a seventh noble path to achieve liberation from sufferings. In "The Great Discourse on the Foundations of Mindfulness", he showed how to contemplate the nature of the body, focusing on awareness of breathing and awareness of body, and practicing the observation of the

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Decline of Traditional Healing Practices among Millennials

Meetu Khosla[1] and Tamraa Ranganath[2]

Abstract

The present study aimed at exploring the understanding that the so called millennial generation possess in relation to traditional Indian healing practices and the reasons for the decline of such prehistoric traditions. This was linked with the scope of treatment of such practices with respect to mental and physical illnesses according to the sample. Through this study we also gain an idea of the sample's understanding of mental health and mental illness. Qualitative data was collected from 70 participants between the ages of 18 to 34 years and of Indian nationality, using an online questionnaire containing 12 open ended questions. Through analysis of the data, it was found that the sampled millennia's show a greater preference towards modern medical procedures for the treatment of mental and physical illnesses. However, in spite of considering traditional practices redundant, a majority still successfully rely on these practices on a day to day basis and believe in their healing properties despite never having visited a traditional healer of any sort. This highlights the need for the integration of the experience and knowledge both traditional and modern healing practices in the treatment of all types of illnesses.

Key words: Healing, Millennial

Decline Of Traditional Healing Practices Among Millennials

Traditional healing practices are those which date back to the prehistoric period and are deeply rooted in India's culture and traditions. They are considered to be indigenous and a result of years of evolution through trial and error and exchange of knowledge between diverse communities and regions. Healing practices during the Indus Valley Civilisation possess influences from Persia, Mesopotamia and central Asia through trade of botanical and other natural products as well as knowledge. During the Vedic period, the hymns provide evidence of treatment of mental and physical illnesses, supposedly caused by evil spirits, through rituals, chants, mantras and even surgical intervention. Around the time of emergence of Buddhism and Jainism, experimentation in the medicinal fields was encouraged- questioning the prevailing practices and seeking tangible proof. There was thus a combination of knowledge from tribal and faith healers, physicians, Buddhist, Jaina ascetic and yogic traditions.

Types of Traditional Healing

Today, there are several different kinds of traditional healing practices arising from different regions and communities across the country; the most popular being Ayurveda, often considered one of the oldest medical systems in the world. It involves prescribing personalized treatments of amalgamation of herbs, specific diets, and exercise and lifestyle suggestions - a holistic approach. The other predominant traditional practices include Unani, Rasashastra, Siddha and Sa-Rigpa. Unani, an Arabic treatment, has Greek origins. Siddha is an ancient South Indian system which utilizes elements of Ayurveda, yoga, tantra, alchemically prepared metals and medicinal plants. Sa-Rigpa is popular in the Himalayan regions and include aspects of Ayurveda and folk practices with a strong influence from Tibetan Buddhism. The regional folk practices are utilized by individuals from all level of society and range from simple home remedies to heal minor illnesses to more sophisticated procedures like bone setting and even treating mental illnesses. These traditional methods vary between societies and communities. They are preserved and transmitted through folklore, considered sacred and associated with various rituals.

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Aesthetics of Cure: A Review Analysis on Alternate Treatments Used in South India.

Ekta Chopra[1], Dr Meetu Khosla[2]

Abstract

Ayurveda and other traditional methods of healing have long been seen as an allopathic treatment best suited for a person. Several papers highlight its effective cure for infections, allergies, illnesses and other biological problems, though only a few note its role in the overall psychological healing. Highlighting the alternate methods of treatment in south India, the present paper aims to investigate the role of traditional methods of healing used in Southern parts of India on the psychological health of a person. This theoretical paper marks to update these alternate methods researched in papers. A review analysis shows the psychological benefits of these treatments in emotions, motivation and beliefs to get cured, which expects to provide the holistic cure to an individual seeking it.

Key Words: *Traditional, Healing Methods, South-India, Psychology.*

Aesthetics of Cure: A Review Analysis on Alternate Treatments Used in South India

As noted from our history, Indian subcontinent is a vast repository of medicinal/herbal plants that are used in our traditional medical treatments. It includes a system of medication, where the alternative treatments in the traditional systems are derived from spices, herbs, minerals, and organic matter, while for the preparation of herbal drugs only medicinal plants are used. Utilization of plants as a source of medicine has been an ancient practice and is an important component of the health care system in India. Such a treatment is used by about 70 percent of rural population who depends on the traditional Ayurvedic system of medicine, while also the vast others who have experienced it's cure.

It is derived from Vedic concepts of health and healing and from other philosophical schools of Samkhya and Yoga. Besides, it incorporates Upanishadic thoughts. It is a comprehensive system of body mind-spirit medicine. The principles of ancient Indian Medicine are found to be laid in the Vedas. All the four major Vedas include ample references to medicinal herbs, methods of treatment, and descriptions of the different parts of the organs of the human body (Sambasivan, 1997). It is based on the 'the doctrine of' Tridoshas', developing from the Vedic times and finding copious references in Upanishads and Mahabharata (Sambasivan, 1997). It enunciates the role of the three biological humours namely, vata, pitta and kapha, which correspond to Air, Fire and Water respectively. They determine the constitutional and temperamental types of the individuals thereby categorising them. Ayurveda thus postulates a harmonious blending and functioning of the three *doshas* to ensure a state of good health while any disturbance in their balance ensues in morbidity.

Alternative Methods of Treatment in South India

Complementary and alternative practices are often considered adjuncts or alternatives to Western medical approaches. They are being used by about 60 percent of the world's population. These medicines are not only used by the rural masses for their primary health care in developing countries but are also used in developed countries where modern medicines dominate (Ballabh & Chaurasia, 2007). It is administered in different environments ranging from a separate institution of therapy to home remedies and corner spaces at local religious backdrops. Different methods used under alternative medicine are combined to understand as

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"The Healing Touch": Traditional Healing Practices of the Samoan People

Lakshita Malhotra[1] and Dr. Meetu Khosla[2]

Abstract

This research primarily aims to explore the healing practices and belief systems of the Samoan community of Australia. A grounded theory approach was used to understand the various methods and techniques used by the local Samoan healers to get in-depth information about their knowledge and healing methods. Two separate semi-structured interview questionnaires adapted from Khosla and Das (2018) were used for 6 women participants, of which there were 2 healers, age ranging from 24 to 32 years (Mage = 28 years) and 4 patients who were healed, age ranging from 20 to 52 years (Mage = 33 years) by the Samoan healers in Sydney. The interviews were conducted in English and were audio recorded. The questions explored the various facets of Healing Touch (HT) such as knowledge, motivation, attitude, beliefs and acceptance in the Samoan community of Sydney. The responses of the participants were transcribed and coded according to the information provided. The common themes that emerged were valuable in understanding the importance of Healing Touch in healing process and how they acquired the knowledge and skills or healing. The healing insights were also derived from the responses of the patients that they had healed. This research has important as it helps to understand how the belief systems operate in conventional societies such as the Pacific islands. Moreover, this research illuminates the importance of the effectiveness of the Healing Touch in various disorders related to physical and mental problems.

"The Healing Touch": Traditional Healing Practices of the Samoan People

Introduction

One of the most distinctive features of the Australian community is its multiculturalism. According to the Australian Department of Social Services (2014), the 2011 census recorded 19,092 Samoans in Australia, with New South Wales constituting the major part of the population. While migrating to a new country one is always faced with the expectations and challenges of becoming part of the new culture, and at the same time holding on to the values and belief systems of the native land. As an international student, one can reiterate the fact that the diaspora is in fact more careful and thoughtful of preserving one's culture and traditional belief systems. The Samoan people in Sydney preserve their culture as far as possible. They follow their traditions and customs even after migrating to Australia. The people of Samoa possess a deep sense of rootedness with their culture, traditions, and conventions. They also have their beliefs and attitudes towards the idea and practice of healing.

Although with the advent of modern medicine treatment of many kinds of illnesses, including mental illness has become easier; the people of Samoa still prefer traditional healing methods over medicines. These practices consist of using parts of indigenous plants for massages. Even though this can be attributed to the fact that affording medicines and hospital bills is difficult for most of the population in Samoa, there is also a very cultural rationale behind the strong and almost persistent faith in the practice of conventional healing rituals. The Samoan people are conservative with strong religious and family values. They are also highly superstitious and often turn towards healers in the villages in the face of an illness.

There are a few reasons which explain the researchers' interest to work with the people of Samoa. Since the researcher was a migrant to Australia she could instantly relate to the space the Samoan people came

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Religiosity, anxiety and religious coping among urban Indians

SuparnaJain*,MeharPruthi** and AnvitaSirohi**

The beginning of the year 2020 in India is marked by the protests for and against secularism. Post 1947 struggle of partition, it once again brings to forefront the importance religion holds for Indians. Though, religion is a universal institution found in all human societies, past and present, it seems to hold special importance for Indians.

Present study aimed to assess the effect of religious practices on trait-anxiety and the coping strategies adopted by people. To this aim, a sample of 59 participants (26 Males &23 Females) were taken, out of which 35 participants were in the age range of 20-30 and 24 in the age range of 31-40. Religiosity was assessed through 'The Centrality Of Religiosity Scale' (CRS). A semi structured interview was also taken with 100% of the sample to understand the deeper nuances of religiosity. The tools used to measure T-anxiety and coping were 'The State-Trait Anxiety Inventory' (STAI) and 'Coping Strategies Questionnaire' (CSQ) respectively.

To analyse the quantitative data, MANOVA and Pearson's correlation were employed using SPSS V.23.0. It was found that religiosity is not impacted by age, gender and marital status. Further, specific coping strategies used by people high on religiosity were identified. The qualitative data was analysed using content analysis, revealing the deeper meanings attached to religiosity by Indians. Overall, the study highlights the importance of religious coping for most Indians and thus has implications for clinical practitioners to incorporate positive religious coping techniques.

Keywords: *Religiosity, T-Anxiety, Coping Strategies, Religious Coping.*

INTRODUCTION

Tolling of bells or Erupting of protests, Melodies of the hymn or Mushrooming of mobs, Muslim skullcaps and colorful turbans, clashes on the streets over religious identities and ongoing conversion controversies, all these serve as an insight to the kaleidoscopic view of the religious and social composition of the multi ethnic land of India.

India is a land of secular pluralism where most people are tied-together, quarrel over and reconcile in unanimity in the name of, the unseen and unheard idea of god. In India, Articles 25 and 26 of the constitution provides for freedom of conscience and the right to profess, practice and propagate religion (The Constitution of India, 1950).

India is not home to just one religion rather it caters indigenous faiths

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Short communication

Rhizosphere provides a new paradigm on the prevalence of lysogeny in the environment

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ABSTRACT

Bacteria and phage enter into lysogeny to survive under nutrient-limiting environment. Plant-soil feedback improves nutrients and increases density and diversity of bacteria in the rhizosphere soil, however, its impact on lysogeny is not understood. The rhizosphere and bulk soil of plants colonizing nutrient-deficient abandoned mines may serve as ideal habitats to analyze the role of plants in governing lifestyle of bacteria and phage. Therefore, to unravel the importance of rhizosphere as a determinant of lysogeny, we analyzed bulk and rhizosphere soils of wild grass, *Saccharum munja* from an abandoned mine in Delhi (India) for nutrient concentration, bacterial density and diversity, and lysogens. We hypothesized that the rhizosphere, though nutrient-rich, remains nutrient-limiting and favours lysogeny because of an intense competition among bacteria for nutrients. Soil analyses confirmed that Bhatti mine soil was sandy loam with low concentration of nutrients but wild grass exerts a strong rhizosphere effect on the mine soil and improves its nutrient concentration and bacterial density and diversity. The rhizosphere soil, though nutrient-rich, supports 94–100% Mitomycin C-induced lysogens, whereas, the bulk soil, though nutrient-limiting, harbors 70–71% of Mitomycin C-induced lysogens only. The 16S rRNA sequencing showed a similar trend of bacterial diversity as bulk soil harbours bacteria of 2 genera and 3 species, whereas rhizosphere soil supports bacteria of 8 genera, 25 species. The rhizosphere soil showed 170 times higher colony-forming units than the bulk soil. Lysogeny in the rhizosphere is a characteristic of the highly competitive environment of the species-rich bacterial community. We emphasize that the gross concentration of nutrients alone provides a limited view of nutrient scarcity because high density and diversity rhizobacteria create a challenge of access to nutrients and thus present a nutrient-limiting environment. The rhizosphere, therefore, provides a new paradigm to explain lysogeny in soil. A factorial design experiment involving varying nutrients and bacterial competition would further help in unraveling the ecological significance of lysogeny in soils.

1. Introduction

Bacterial virus (phage) shape microbial communities in the environment and thus govern the structure and function of an ecosystem (Kauffman et al., 2018a; Sharma et al., 2019). Phages drive the ecology and evolution of bacterial communities because being lytic they kill the bacterial cells and determine the bacterial density, whereas being temperate they influence the bacterial fitness (Weinbauer and Rassoulzadegan, 2004; Obeng et al., 2016). Temperate phage remains silent within the bacterial genome as a prophage (lysogenic cycle) until the bacterial cell receives an environmental or a physiological signal to trigger the lytic cycle (Wang et al., 2010). Lysogens adapt to a nutrient-liming environment and outcompete non-lysogens during niche colonization because lysogens secrete toxins and become immune to other phages, which drive structure and function of a bacterial community (Jiang and Paul, 1998; Weinbauer and Suttle, 1999). Lysogeny as a driver of microbial community has been investigated in aquatic ecosystems, such as marine ecosystems, coastal areas, rivers, lakes, and ponds (Sime-Ngando, 2014; Kauffman et al., 2018b). However, few studies have evaluated the prevalence of lysogeny in off-shore areas and terrestrial habitats (Williamson et al., 2007; Ghosh et al., 2008; McDaniel et al., 2008; Obeng et al., 2016).

In contrast with soil, the factors governing lysogeny in aquatic ecosystems have been well investigated. Besides nutrient scarcity, other

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RESEARCH ARTICLE

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Zeylanidium manasiae, a new species of Podostemaceae based on molecular and morphological data from Kerala, India

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Abstract

We present the description of *Zeylanidium manasiae* (Podostemaceae), a new species from Kerala, India, which is proposed based on molecular, macro- and micromorphological data. This species is characterised by its ribbon-like dichotomous thallus, floriferous shoots produced along the margins and dichotomy of the thallus, inflorescence with two bracts, unequal stigmatic lobes, ellipsoid fruits and large seeds.

Keywords

Internal transcribed spacer, Malpighiales, Podostemoideae, rheophyte, taxonomy

Introduction

Podostemaceae represents a very distinct family of fresh water aquatic angiosperms, with unique evolutionary, ecological, morphological, developmental and embryological attributes (Cook and Rutishauser 2007, Katayama et al. 2016, Khanduri et al. 2014). It is the most diverse family of fresh water aquatic flowering plants, comprising ca. 54 genera and ca. 300 species (Koi et al. 2012, Cheek et al. 2017) distributed worldwide, but with most species presenting restricted distribution and a high degree of endemism (Philbrick et al. 2010). Podostemaceae is subdivided into three monophyletic subfamilies: Podostemoideae, Tristichoideae and Weddellinoideae (monogeneric and monospecific) (Koi et al. 2012). Southern Asia is one of the main centres of diversity for the podostemads, ac-

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RESEARCH ARTICLES

Floral biology, pollination mechanism and embryo development in *Zeylanidium maheshwarii* (Podostemaceae)

Remya Krishnan[1] · **Priyanka Khanduri**[2] · **Rajesh Tandon**[1]

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Abstract
Zeylanidium maheshwarii is one of the 23 endemic species of Indian Podostemaceae, the largest family of fresh water aquatic plants in the world. The family is unique in many ways, be it their habitat, plant body or the reproductive attributes. We looked into some of the reproductive attributes of the species encompassing floral biology, mechanism of pollination and embryo development. The flower is highly reduced, and the species can be easily identified from the rest of the *Zeylanidium* clade by two features—the presence of a gynophore and the multi-lobed stigma. The pollen grains are released in units of two—the acalymmate dyads. The exine ornamentation is microechinate with discernible apertural and interapertural regions. Pollination is accomplished by autonomous self-pollination, which occurs above the water level. The formation of three-celled embryo sac in the species is the result of precocious degeneration of the central cell prior to syngamy. Absence of central cell before fertilization leads to absence of double fertilization and endosperm in the species, and this features reiterates the general cause of usual absence of double fertilization among the podostemads.

Keywords Autogamy · Single fertilization · Aquatic angiosperm · Three celled/three nucleated embryo sac

Introduction

Podostemaceae is the largest family of fresh water angiosperms with pan-tropical distribution. The plants of this family grow on the rocks and boulders in cataracts, river rapids and waterfalls (Gupta and Sehgal 2009). There are nearly 50 genera and 280 species (Cook and Rutishauser 2007) worldwide. India harbours around 28 species of which 23 are endemic to Western Ghats, especially Kerala (Sanavar et al. 2005). The seasonal and cyclic occurrence of alternate dry and wet periods determines the phenology of the plants. The plants begin to flower upon getting exposed during the dry period, which otherwise remain in vegetative phase under the submerged condition (Mohan Ram and Sehgal 2007).

Podostemaceae is marked by characteristic deviations from the usual developmental pattern of angiosperms in terms of its overall morphology and certain reproductive features. The plants lack double fertilization event, endosperm formation, antipodal cells, and there is no concrete distinction between stems, roots and leafs. The family is considered to be an embryological one for having four-celled/four-nucleated condition of the mature embryo sac, and presence of a nutritive tissue termed nucellar plasmodium instead of biparental endosperm (Cook and Rutishauser 2007; de Sá-Haiad et al. 2010; Khanduri et al. 2014).

The genus *Zeylanidium* (Tul.) Engler belongs to the subfamily Podostemoideae, and the plant body is characterized by a crustose or ribbon-shaped thallus. The caduous leaves and flowering shoots are present either in the sinuses of the thallus lobes or are scattered on its dorsal surface. Solitary flowering shoots of the genus bears a single terminal flower, subtended by bracts, and these shoots are horizontally appressed to the thallus. The other features include persistent spathella, anisolobous ovarian locules, and many-seeded and ribbed capsules. Some of the earlier works on *Zeylanidium* include female gametophyte development (*Z. lichenoides* Engl., Choudhary et al. 2014; Sehgal et al. 2014); shoot development (*Z. lichenoides* Engl., Katayama et al. 2013), and seedling biology of *Z. lichenoides* Engl., *Z. olivaceum* Engl. and *Z. maheshwarii* (Suzuki et al. 2002). *Zeylanidium*

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An integrated approach for phycoremediation of wastewater and sustainable biodiesel production by green microalgae, *Scenedesmus* sp. ISTGA1

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ABSTRACT

The present study investigates the ability of the microalgal strain *Scenedesmus* sp. ISTGA1 for the treatment of municipal wastewater along with biodiesel production. This strain was cultured in different concentrations of sterilized wastewater (25, 50 and 100%) with BG-11 medium for 14 days in different flasks. The physicochemical properties of wastewater were analyzed before and after algal treatment. *Scenedesmus* sp. ISTGA1 was able to enhance the pH (6.3 ± 0.5 to 8.3 ± 0.2) and DO (2.7 fold) of wastewater. After treatment with the algal strain ISTGA1, there was a significant removal of heavy metals and organic contaminants as analyzed by ICP-AES and GC-MS respectively. The maximum biomass and lipid production of 1.81 g/L and 452 mg/L respectively, were attained, when strain ISTGA1 was grown in 100% wastewater. A balanced mixture of saturated and unsaturated fatty acids mainly (C16 and C18) indicated an appropriate quality of biodiesel produced by the alga. The results indicated that *Scenedesmus* sp. ISTGA1 can be applied for phycoremediation of wastewater along with biodiesel production.

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1. Introduction

Water pollution caused due to anthropogenic activities is a very serious environmental problem and disposal of municipal wastewater is one of the major contributors. Untreated wastewater contains organic, inorganic, xenobiotic and other toxic compounds. Dumping of untreated wastewater into the water bodies causes severe environmental and health hazards. Excess amount of unprocessed wastewater causes disturbance in the ecological natural processes. According to the reports of Central Pollution Control Board (CPCB), New Delhi, India, production of wastewater in India is approximately 40 billion litres per day and just 20–30% of the generated wastewater is set off for the treatment [1] In developing countries like India, various pollutants viz. surfactants, esters, benzene, phenol, phthalates and heavy metals (Zn, Cd, Cr, Fe, Ni, Pb etc.) are not efficiently removed by the conventional treatment methods [2–4] So, there is an urgent need to develop advanced methods for wastewater treatment.

Elimination or biotransformation of pollutants from wastewater, including nutrients (nitrogen and phosphorus) and xenobiotics with simultaneous biomass production by utilization of macroalgae or microalgae is called phycoremediation [5]. High amount of nutrients like nitrogen and phosphorus present in wastewater causes the problem of eutrophication, which is harmful for aquatic animals. Microalgae, by their photosynthetic capabilities utilize available nutrients present in wastewater and produce the biomass which can be useful in production of value added product like biodiesel [6–8]. In recent years, microalgae have emerged as an important tool in treatment of wastewater. The use of microalgae for biodegradation of xenobiotic and toxic compounds is an efficient and cost-effective method as compared to other conventional technologies for treatment of wastewater [9,10]. Matamoros et al. (2015) have suggested the biodegradation potential of microalgae in removal of emerging organic compounds like pharmaceuticals, pesticides, plasticizers and personal care products present in municipal wastewater [11]. Some algal species like *Spirogyra* [12], *Caulerpa lentillifera* [13], *Chlorella vulgaris* [14,15] are helpful in colour removal from wastewater. Many microalgae like *Chlorella, Scenedesmus, Pormidium, Botryococcus, Chlamydomonas* and *Spirulina* have been identified for the treatment of domestic water [6,16–21].

Today, the world is facing the crisis of fossil fuel depletion due to

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Karmayoga of The Bhagavadgītā as Embedded in Vivekananda's Teaching

Dr V. Sujata Raju[Ω]

Introduction

The paper seeks to highlight the relevance of Swami Vivekananda's interpretation of the *Karmayoga* of the Bhagavadgītā in the contemporary world from the volumes of lectures, writings, and letters in his words/voice. The Bhagavadgītā, being a fundamental treatise on Indian ethics discusses the question of the highest value: what sort of life would be most appropriate for the attainment of the ultimate reality? In the ancient Indian tradition, the emphasis was given mostly on the knowledge of the ultimate and devotion to the almighty, however, the least significance was given to the path of action. Action was considered as a source of bondage and the advice was to renounce it, and to minimize it to a few essential activities. On the contrary, starting from the latter half of the nineteenth century a new trend to interpret the Gita in the light of *karmayoga* emerged. Swamiji says that action/work is not to be renounced but be performed in such a way that both social welfare and the individual's moral upliftment can be harmonised into one goal. Action found a new meaning in Swamiji's life and work and Ramakrishna Mission, the unique monastic order established by him may be called a living example of the teachings of the Bhagavadgītā where *karma*, *bhakti* and *jñāna* are all synthesized in the desireless service of humanity and God. The later interpreters/translators were so much influenced by Swamiji's thoughts that a study of the recent interpretations of the Bhagavadgītā remains incomplete without reflection on his teachings on *karmayoga.*

Swami Vivekananda, a nineteenth-century Hindu mystic, did not write any commentary on the Bhagavadgītā. However, his small book on *'karmayoga'* is a classic exposition of the teachings of the Gita. The word *'karma'* is derived from the Sanskrit root *kri*,

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THE CONCEPT OF PRĀMĀṆYA IN INDIAN EPISTEMOLOGY

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Abstract:

The present paper delves into the intricate concept of the validity of knowledge "*prāmāṇya*" in Indian philosophy, exploring into the diverse perspectives presented by various philosophical schools. With a focus on Nyāya and Mīmāṃsā traditions, the paper seeks to unravel the intricate theories of *paratahprāmāṇya* (external validation) and *svatahprāmāṇya* (self-validation), respectively. The central issue revolves around the nature of truth and falsity, examining whether knowledge is an inherent and self-evident quality or if its validity is contingent upon external conditions. Through a comprehensive analysis of primary texts and scholarly interpretations, this research paper aims to contribute to a deeper understanding of the intricate epistemological frameworks that have shaped the discourse on the validity of knowledge in Indian epistemology.

Keywords : *prāmāṇya, svatahprāmāṇya, paratahprāmāṇya,* validity of knowledge.

Introduction:

The concept of *prāmāṇya* (truth) is one of the most significant and central concepts used in epistemological discussions in Indian Philosophy. All schools of epistemology in India are unanimous in holding that *prāmāṇya* should be the differential mark of *pramā* (true cognition/knowledge), even though they put forth divergent views regarding the precise nature of *pramā* and *prāmāṇya*.

The word *prāmāṇya* can be used in two different senses, namely (1) *pramātva* and (2) *pramākaraṇatva /pramāṇatva*. In the first sense *prāmāṇya* belongs to *pramā* and constitutes its differential character, whereas in the second sense it pertains to *pramāṇa* as its property of being instrumental in bringing about *pramā*. In this sense, *prāmāṇya* belongs to the various instrumental causes of true knowledge. In this case a distinction is drawn between *pramāṇa* and *pramāṇaphala (pramā)*. Of these two senses the first one is logically prior because the very idea of being instrumental in bringing about *pramā* cannot be understood without understanding what is meant by true knowledge and in effect without understanding what is meant by truth.

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Moral Disagreements are Rationally Resolvable: A Defense

Dr Vidhu Jain[⊗]

Introduction

Moral disagreements are often part of moral discourses. Often disagreements are seen to emerge from the conflict between values and practices of different cultures, moral evaluability of actions, rightness and wrongness of actions etc. Moral Relativists argue that these disagreements are fundamental and cannot be rationally resolved for we cannot have a common or independent criteria to evaluate different moral beliefs and practices which are specific to different cultures. One may naturally ask if these disagreements are fundamental whereby, they cannot be rationally resolved and eventually endorse moral relativism. This paper seeks to evaluate the responses given in favor of the rational resolution of moral disagreements. Views of Karl Duncker, Gilbert Harman and Kellenberger have been studied to see how we can make sense of the disagreements and their resolvability, if any, at a deeper level of concepts. If we can talk of a common core of moral values which resolves the apparent moral disagreements then we can say that moral disagreements are rationally resolvable.

Moral Relativism or Ethical Relativity pertains to the position regarding moral values that they differ and vary from culture to culture, morals are relative to the cultures/societies who hold them and they may not be absolute. Variations in moral codes or values point us in the direction of facing challenges in terms of moral conflicts or disagreements. Moral relativists say that moral disagreements are not rationally resolvable because these disagreements are of the fundamental type. Here, fundamental means that even if there was a complete agreement on the properties of the thing or action being evaluated still people might disagree concerning the morality of the thing or action i.e., one might say that

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The Relevance of Freedom in Liberalism: Locke, Kant and Mill

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***Abstract*: The present paper investigates and examines the concept of freedom in terms of the liberal theories given by John Locke, Immanuel Kant and J. S. Mill.Freedom can be defined as the capacity of an individual to act, to behave or move according to one's wish with justice. The society that provides more alternatives to its members permits more freedom. An individual is free to the extent that his action does not harm others. Liberty does not mean providing license to hurt others.For Locke, freedom is the natural right of men. They are born free but in chains because of war, hatred etc. Kant being a moral philosopher considered freedom of speech and maintained that one needs to be 'enlightened' or be free to pursue his own way for a good life without any one's guidance. And for J. S. Mill, freedom of speech and conscience is mandatory for everyone.**

***Keywords*: freedom, harm, natural right, autonomy, speech, conscience.**

Locke was primarily concerned to show the necessity and value of civil society and explore the kind of moral qualities and virtues individuals needs to sustain it. Human beings are considered to be equal because they share a common nature. In his book *Second Treatise on Government*[1], Locke maintains that every human being is equal in the sense that since they belong to the same species, no one individual can have dominance over another. He considered the role of the state to be minimal which is to provide protection to human beings' equality, liberty and property. Should they be unable to do so, the people have the right to overthrow it. The state needs to interfere when people are in a state of war.[2] In the state of nature people are free to the extent that others rights are

[1]Locke, John, (1990), *Second Treatise on Government*, Prometheus Books, New York, pp. 7-9.

[2] In a state of war, if one person threatens and harm another one, then that person can be punished by the state.

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The Concept of Individualism in the Liberal theories of Locke, Kant and Mill

Shyamalima Borgohain

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Abstract: **The present paper deals with the theory of liberalism given by philosophers like John Locke, Immanuel Kant and J. S. Mill. Locke, being often credited as the father of modern liberalism, advocated individualism. He made right to life, liberty and property as basic rights. Kant further developed the theory of liberalism in terms of autonomy, tolerance and sovereignty. Lastly, Mill included Utilitarianism in order to support liberalism. Hence, liberalism as a philosophical concept embraces beliefs and opinions of almost two centuries.**

Keywords: **liberalism, individualism, liberty, autonomy, tolerance, utilitarianism.**

1. INTRODUCTION

In this paper I have made an attempt to discuss and develop the liberal notions of Locke, Kant and Mill. Liberalism is a political movement that stressed on the values of liberty, autonomy, justice, rationality, equality and property that started during the period of Greeks. The Age of Enlightenment made liberalism a distinct political movement. Liberals opposed the absolute power that the government possessed and tried to replace it with participatory democracy where everyone abides by the law. The method I have adopted here is comparative, critical, and evaluative.

2. THE CONCEPT OF INDIVIDUALISM

This section examines the notion of individualism given by three theorists- John Locke, Immanuel Kant and John Stuart Mill. Even though the fundamental concept remains the same, each of them gave their own theory of individualism which examines the human nature and criticizes the inequalities or activities that prevailed during their times. 'Individualism' is a nineteenth century term which is used in great many ways and in various contexts. It has played a dominant role in shaping the ideologies of Europe and America.[1]

Locke's theory of individualism was a critique of the feudal system. Kant's individualism gave sanctity to individual autonomy and freedom to come out of the dependence on guidance of another person and be enlightened. J. S. Mill argued that one needs to be allowed to choose her own course of action. Interference should be considered as unnatural. The seventeenth century saw the havoc created by the feudal system in a massive scale. There existed a section that was in an advantaged situation and could afford all the luxuries like education, holding lands etc. It was a social injustice on the part of the peasants as they sold their labor and lived under their feudal lords. All they can do is to change their master and could not actually come out of that system. This led Locke to come up with his theory of individualism where he put forth the natural rights (life, liberty and property) theory.[2]

In a state of nature or a situation prior to the civil society, first, an individual is free as no one has authority over him other than the creator; second, he is naturally rational; third, he is equal in the sense that since everyone is endowed with the same rational faculty, nobody can overpower him. They have the same needs and the same rights to pursue them; and last, being equal, individuals need to respect each other. They have a state of liberty but not license:

[1] Lukes, Steven, (1971), "The Meanings of 'Individualism'", in *Journal of the History of Ideas*, Vol. 32, No. 1, University of Pennsylvania Press, pp. 45-66.
[2] Locke, John, (1990), *Second Treatise on Government*, Prometheus Books, New York, p 19

THE SIGNIFICANCE OF VALUES IN CULTURE: RUTH BENEDICT AND SRI AUROBINDO

Ms. Shyamalima Borgohain

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Cultural values are the principles and standards upon which an entire community exists. Values are the acceptable ways of behaving in a society which entails what is right, wrong, acceptable and unacceptable in a society. Ruth Benedict, in *Patterns of Culture*, has a view that cultural values are relative. A same cultural value may be treated differently in different cultures. Moreover, they change in accord to the environment they belong to, experiences of life and human imagination.[1] Different cultures possess variety of values that are exclusive to any particular cultures. They believe that by doing so their culture will survive. Even though there may be no meaningful reason behind those values, following it is an indispensable for the survival of the culture.

Culture at any point cannot be captured into a particular category. Cultures differ in areas like lifestyle, morals, customs, beliefs, etc. These cannot be brought under one unified whole. The practices that may seem least important from the view point of one culture may seem to be a central aspect in another culture. The members of a culture follow certain rules with the hope that such practices will keep their culture alive with the belief that, doing so, will keep their culture moving in a positive direction.

Cultures seem to be guided by some moral codes. Benedict maintains that even though these codes are followed, nobody has a reasonable justification for following it. It seems that men are a result more of their habits than of morality because they follow such codes without any doubt. It's due to their habit of following them that these codes have evolved over a time. It is not only in one culture, but everywhere we find some set of codes or rules that are followed. However, the irony is, people follow their unique codes and criticizes others for following theirs. Benedict scrutinized every simple part of our behavior or actions that we follow to maintain an order in the society. Hence, she concluded that there is no underlying reason shared by all the cultures which would drive them to follow certain codes or hold such beliefs.[2]

Benedict in *Patterns of Culture* discusses the cultural values shared by three primitive cultures. Zuni people are considered to be gentle, non-aggressive, modest peaceful, sober, ceremonious and emotionless, who's all the aspects of life are guided by certain harmonious set of norms. Even though they are calm by nature, they perform activities (such as warfare) with immense brutality. The chief of Pueblos holds power over its members and witchcraft was still

[1]Benedict, Ruth. (1934), *Patterns of Culture*, p. 42
[2] Benedict, Ruth, (1934), *Patterns of Culture*, pp. 17-32.

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Transcending Pluralism: A Threat to Democracy

Suranjita Ray

A pluralist society is characterised by heterogeneity, diversity and multiplicity in caste, culture, customary practices/traditions, religious belief/faith, language, thought, opinion and understanding. Such diversities and multiplicities coexist and live in harmony contributing to consensus, equilibrium, oneness and togetherness in society and in the nation. However, it is undeniable that there are also occasions when these differences have/can become divisive that result in growing hostility, incoherence, conflicts and cleavages leading to increasing polarisation in society. Intensification of hostility that leads to hatred and violence consequently impends social harmony, justice, equality and eventually unity.

By privileging the narrative of difference as the root cause of conflict, disharmony, and disunity, we see that the ruling class has led its campaign for universalism as a great unifying force.The hegemony of their ideology has campaigned for ascendency of cultural singularity which underscores prejudice and bigotry against a large section of society. Despite the political strategies to divide the people that led to a series of policies which had a polarising effect, the ruling class' performance is legitimised by upholding its vision of a majoritarian cultural nationalism rooted in the Hindu tradition. While the crucial issues, that are central to the right to life of the ordinary people, are no longer espoused in the political debates, the slogan of a 'Hindu Rashtra' has been successful in capturing the imagination of the common citizens. What is worrying is that despite the disturbing economic slowdown, increasing unemployment rate, and growing communal disharmony, we do not see much disillusionment or political unease in contemporary times.

Defending Universalism as a Force of Unity

Since the state is not a unified or monolithic entity, its characteristics, ideology and functioning can be understood in the context of time and space.The transition from conventional pluralism to neo-pluralism explicates the changing nature of the state and its complex and multi-dimensional relations with the society at the local, regional, national and international levels. The state has transformed from a weak and passive/neutral state to a far more active and strong state acting as a referee between the competing groups, and to that of a broker-state which is powerful enough and negotiates (brokers) between the vested interests of these powerful groups. It formulates policies that satisfy some of these groups while at the same time reflect the concerns, interests and ideology of the state officials.

The conceptual and empirical shifts in the state since their more orthodox or classical formulations has also seen transitions of liberal democratic politics pregnant with serious implication for the citizens across societies. The state has always remained a powerful institution making its people realise its relevance. Despite the fact that institutions are more important than the individuals, it is always the individuals leading the institutions that have played a significant role in either building the institutions and legitimising its significance or distorting it.

The centralised tendencies of the leaders in the past, in particular in the 1970s, as well as in the present times, imposingly strengthen the theory that the 'leaders know the best'. It is the leaders of the ruling class who alone as representatives of a majority of the citizens have the exclusive

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The Poverty Challenge

Suranjita Ray

It is pertinent to acknowledge that poverty is one of the biggest hindrances to human development and a challenge to the policy makers. Since any universal or objective interpretation of poverty undermines its essential characteristics, a comprehensive understanding makes it significant to move beyond its narrow meaning to comprehend the everyday experiences. Therefore, despite the differences on the method/approach/pedagogical device to understand poverty, the general agreement has been to privilege the concrete and actual of experiences of poverty across the globe.

A Paradigm Shift

The winners of the Nobel Prize in Economics, Abhijit Banerjee, Esther Duflo and Michael Kremer helped conceptualise a powerful experimental approach/ evidence-based approach to alleviating global poverty by breaking the larger problem into smaller manageable problems and measuring the specific outcomes through Randomised Control Trials (RCT). As a well-known technique in medical trials, RCT is applied to real life situations in which two sets of individuals/households that are similar are randomly selected and one set termed as the 'treatment group' is exposed to either treatment or policy interventions. The outcome of the policies is then compared to the other set termed as the 'control group' which remains unexposed to policy interventions[1]. During the past two and a half decades, their rigorous research to assess the impact of small policy interventions through policies on literacy, health and nutrition, and micro-finance has not only transformed development economics into a bourgeoning field of research but has also made it more relevant to the policy making process particularly on policies and programmes that impact the living conditions of people.

Their innovative contributions in development economics is important to combat poverty and inequality grounded in the local situations. They focused on the inter-relation and inter-dependence of the multiple causes of poverty and their complexities and the implementation viability of specific policy decisions in particular contexts based on cost and benefit analysis of alternative programmes. Though RCT are more relevant to study problems at the micro level (see also Ghatak, 2019: 10), Banerjee, Duflo and Kremer have contributed to a paradigm shift in the approach to not only understand poverty and its alleviation, but also to build scientific knowledge and useful predictions in development policy evaluation. While RCT cannot suggest better policies, Angus Deaton argues that they are important methods as part of a cumulative programme when combined with other methods 'including conceptual and theoretical development to discover not what works but why things work' (cited in Himanshu, 2019: 14). As an important method in finding out the impact of policies to alleviate poverty it enables us to re-examine, rethink, re-conceptualise and re-interpret the strategies to address the multiple causes of poverty and to achieve the goals/objectives of the programmes more adequately.

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The Malaise of Starvation Deaths

Suranjita Ray

Though starvation deaths in 2019 seem incongruous in a country which claims to have conquered hunger, we come across reported experiences of such tragedies. This compels us to not only contest the claims of the State, but also to be concerned about the persisting paradoxes of hunger and starvation despite stuffed granaries and several social security measures. On 8 July, Goutam Behera, a 17 year physically challenged youth died after starving for 5 days in Nuapada district of Odisha. Nuapada is known to be home to such starvation deaths since long. As part of undivided Kalahandi district till 1993 and one of the most backward KBK (Kalahandi Bolangir Koraput) districts, which have for long been referred to as synonyms of hunger and starvation, Nuapada has drawn the attention of policy makers and social activists across the globe to probe and prevent such reoccurring phenomena. Successive governments, both at the Centre as well as at the State, had to initiate several long-term action plans to legitimise their concerns. Many a times the opposite ruling parties at the Centre and Odisha exposed each other's negligence and failure to intervene in preventing such crises. What is worrying is that despite the National Food Security Act (NFSA) 2013, and several programmes to ensure nutrition and food security such as the Integrated Child Development Services (ICDS), Mid-day Meals (MDMs) and Public Distribution System (PDS), experiences of hunger and starvation are not uncommon.

The Indifferent State

It is rather shocking that even after repeated requests, both starving Gautam Behera and his 22 year old sister Debanti Behera of Sargimunda village of Karlakot Panchayat under Boden block of Nuapada district were denied the Antyodaya Anna Yojana (AAY) card which provides 35 kgs of rice at a highly subsidised price to the poorest of the poor families. Instead, they were given a Priority Household Card (PHH) which entitled them to 5 kilo grams of rice each, every month, which they had received last on 25 May. For nearly one-and-half months, the starving siblings had received no rice. After her brother's death, Debanti was shifted to a shelter home at Komna. Though the block level officials provided ration card under the AAY, 70 kilo grams of rice, and Rs 60,000 in addition to assurances for appropriate treatment for her illness, the response was extremely late. A three-member fact-finding team from the right to food campaign, Odisha Khadya Adhikar Abhiyan, visited the village on 13 July.

Debanti narrated how Gautam used to stay overnight in front of the block office at Boden to meet the concerned block officials to get an AYY card. The state remained a silent spectator paying no heed to several appeals of the victims, villagers, social workers and even few media persons, to intervene to rescue the siblings from starvation. Therefore, such recurrences of starvation deaths raise ethical questions about the state. The negligence on the part of the state is serious and one needs to revisit some of the claims of redressal of people's grievances by the Collectors office. Debanti narrates that had the public officials responded in the positive, 'Gautam's life could have been saved'. Debanti's narrative not only reveals their traumatic

Review Article

Gender at the Crossroads

Ghazala Jamil (Ed.) *Women in Social Change: Visions, Struggles and Persisting Concerns* (*Social Change in Contemporary India*, Vol–4; Series Editor, Manoranjan Mohanty). SAGE Publication, 2021, 276 pp., `1295, ISBN 9789353887711 (*Hardcover*).

Women in Social Change: Visions, Struggles and Persisting Concerns edited by Ghazala Jamil, a feminist scholar and academic, is reminiscent of the journey of women's struggle that gives meaning to voices which contest patriarchy. The scholarship seen here provides space for engaging with multiple methodologies that leverage the vantage point of women across diversities. This space, notably, includes the perspectives of women with a difference, with distinct identities, concerns and experiences. Since divergence in family, class, caste, ethnicity, culture, religion and morals across India impact the status of women, the stereotypical and homogenous representation of women is contested by dalit women, adivasi women, Muslim women and women from several ethnic communities. The book analyses the internal contradictions that confront women's rights movement.

In her introduction, Jamil argues that the self-reflexivity of Hindu upper-caste women scholars who worked on women issues raises questions on the dominant positioning of feminist scholars. It is significant to take cognisance of the fact that many innovative methods to understand women's visions, struggles and concerns have come from writers within this tradition who transcend boundaries of conventional debate. As a feminist scholar who merits social and cultural history as an enormously empowering methodological tool, she engages the reader to re-read the past by listening to unheard voices. By bringing together writings of prominent academics and activists published in *Social Change* over the past 50 years, the volume retains the relevance of reflecting a heterogeneity of feminist voices. While this makes the book difficult for a beginner, one develops an interest as these viewpoints reappear throughout, making it a persuasive read.

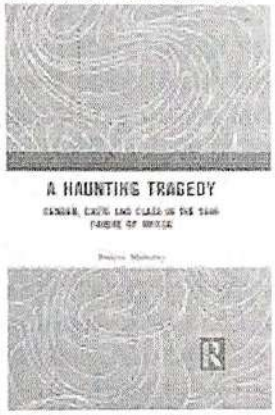
Manoranjan Mohanty, an eminent political scientist and human rights activist and the series' editor offers a foreword that weaves through the discussion on the structures and processes of domination alongside ongoing struggles for freedom. He explicates the multiplicities and complexities of the power relations rooted in social categories of class, caste, gender, ethnicity, religion and their intersections. Mohanty recalls the mission that Durgabai Deshmukh had visualised for the Council for Social Development, which she had founded, taken forward through these writings in *Social Change*, several of which have focussed on the

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intersectional perspectives of gender that ascertain the everyday living experiences of the marginalised and disadvantaged.

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The Looming Shadow of the 1866 Famine in Orissa | Suranjita Ray

A Haunting Tragedy Gender, Caste and Class in the 1866 Famine of Orissa by Bidyut Mohanty ascertains understanding famine as a process to comprehend who starved during the famine and why. The book engages the reader in understanding the Orissa Famine in 1866 that had its worst impact on the poor, in particular the agricultural labourers, weavers, salt workers and fisher folks, invariably belonging to the lower castes who were marginalised and deprived. The growing consciousness of the unequal impacts of famine, transcends the boundaries of its conventional understanding that focuses on the immediate causes. While the author considers the Food Availability Decline (FAD) theory to bring to the fore the immediate causes - the decline of grain output due to the failure of rain, irregular distribution of rainfall and the increased export of rice, her in-depth analysis privileges the entitlement theory of Amartya Sen and his seminal work on starvation and famine which underscores the lack of command over food by some people despite its availability. The chapters in the book attempt to understand the underlying causes of the processes of cumulative deprivation entrenched in structures of land relations, caste structures and patriarchy by locating it in specific economic, political, social, and cultural conditions. It is in this context that the author reminds us of the intersectionality of class, caste and gender which become important for a comprehensive overview of famine.



A Haunting Tragedy: Gender, Caste and Class in the 1866 Famine of Orissa by Bidyut Mohanty | ISBN : 1032158697

Famine associated with mortality is only the last phase of the process of famishment, which has an onset - a gradual loss of access to food, and thus one sinks into starvation, and maturing of the process culminates in mortality. Mohanty argues that famine is not just an event of extreme food scarcity resulting in starvation deaths but a process that includes both the phases of starvation as well as epidemics. It is important to concede that cholera, dysentery, malaria, and pneumonia killed a large number of people that augmented in the famine years. Though the mortality rate in the epidemic phase would have been much higher than 1 million, deaths beyond 1867 were not taken into consideration while estimating famine mortality by the authors of Famine Histories. She contests the government's declaration that famine was over when the new crops arrived in the market, even though epidemics still erupted.

Cataclysmic Experience

The book signifies revisiting the cataclysmic experience of the 1866 Famine in Orissa that saw increasing mortality rates, crimes, food riots, distress sale of land, distress migration, prostitution, child abandonment, eating of famine foods which had toxins, cannibalism, and even rebellion. By referring to the memories of traumatic experiences of the everyday strategies

Mainstream, VOL 61 No 13, March 25, 2023

Regenerating The Forest Ecosystem: Few Concerns | Suranjita Ray

As India enters a 25-year-long journey towards its centenary, policy makers must have greater responsibilities not only to enhance economic growth but also to ensure an inclusive and sustainable development. One of the major concerns is to prioritise the Sustainable Development Goals (SDGs) which aim to promote sustainable agriculture, conservation and regeneration of forests, combating desertification, reversing land degradation and biodiversity loss, and sustainable use of oceans, seas, and marine resources. Despite several conferences, summits, campaigns, education programmes and action plans at the international as well as national level that create awareness and generate consciousness to use planetary resources rationally, and be responsible to sustain and regenerate resources for the use by future generations, we find that increasing deforestation, burning of fossil fuels like coal and petroleum, global warming, emission of greenhouse gases/toxics into the food chain and underground water tables, depletion of ozone shield, excessive use of non-renewable resources, increasing drought, heat waves, melting of glaciers, floods, smog in the atmosphere, pollution of rivers and forest fires across the forest regions affect the entire eco-system, livelihood resources, and are threats to human life.

Therefore, some of environmental issues discussed in the G20 Summit in Bali in 2022 will remain important concerns in the Summit in 2023. While G20 Presidency 2023 provides India an opportunity to work out strategies to restore peace, harmony, stability and a shared prosperity based on the theme 'Vasudahaiva Kutumbakam' - 'One Earth, One Family, One Future', it becomes important to delineate constructive efforts to conserve and restore the ecosystem. A series of meetings are being hosted to invest in sustainable lifestyles through LiFE (Life for Environment) aiming at arresting land degradation, enriching biodiversity, promoting a climate-resilient blue economy, encouraging resource efficiency and circular economy. The energy transition from fossil fuels to renewable sources of energy, capturing emissions, transition in transport, forest protection, marine conservation and preserving biodiversity are some of the critical measures that need to be prioritised in the development policies.

The UN Intergovernmental Panel on Climate Change (IPCC) created in 1988 assesses the impacts of climate change on ecosystems, biodiversity, and human communities at global and regional levels. It also reviews the vulnerabilities, capacities and constraints of the natural world and human societies to adapt to climate change and suggests how to develop climate policies. Though some of the initiatives in India to conserve the environment including the recent Green Development Pact prioritised in G20 with a roadmap of actions over the next decade to tackle climate change and international cooperation on data for development, we still have a long way to go to meet the target of SDGs by 2030.

Despite the Green Budget introduced in 2011-12 for the protection and regeneration of forests and a major ingenuity of the government to conserve and sustain the forest cover for a sustainable livelihood increasing deforestation became a serious concern at the 26th United Nations (UN) Climate Change Conference of the Parties in Glasgow in 2021. As large-scale deforestation resulted in increasing problems of climate change, it became important to accelerate action to achieve the goals of Paris Agreement (2015) and UN Framework Convention on Climate Change (UNFCCC), 1994. More than 100 countries pledged to stop deforestation and conserve and regenerate forest by 2030 (also see Sinha, 2023: 13).

Since forests have a social, economic and ecological value, it is critical to conserve and regenerate the forest ecosystem for human well-being and social equity. However, several studies find huge gaps in the official data on increasing forest cover to compensate the loss of

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Investing in Women's Health: A Step Towards Gender Equality | Suranjita Raj

The World Economic Forum (WEF) 2023 at Davos makes a strong pitch to overcome several challenges to achieve gender equality by 2030 as targeted in Sustainable Development Goals (SDGs). The WEF Global Gender Gap Index for 2022 highlights the increasing gender gap in economic participation and opportunity, educational attainment, health and survival and political empowerment. The meeting at Davos noted that many of these gaps are preventable. The dialogue outlined that a healthier world for women would be possible through multilateral collaboration of private sectors with the policymakers. The need to prioritise an increased investment in women's health became a common concern.

Ayushman Bharat Yojna/Pradhan Mantri Jan Arogya Yojna, the world's largest universal national health protection scheme for the poor families in India was highlighted at the WEF by Smriti Zubin Irani, Minister of Women and Child Development. She stated that this scheme has seen 120 million women being examined for cervical and breast cancer. Similarly, Swachh Bharat Abhiyan was acknowledged as a positive step in improving health conditions of women by building private toilets to ensure hygiene and sanitation. The increase in the duration of leave from 12 weeks to 26 weeks for female employees under the Maternity Benefit Amendment Act is also an important policy decision to secure women's health.

While the government's official reports claim that the benefits of several schemes in India such as National Food Security Act, Pradhan Mantri Awas Yojna, Janani Suraksha Yojna, Pradhan Mantri Ujjwala Yojna and Pradhan Mantri Matru Vandana Yojna have empowered women across the country, the ground reality reveals that most women live in poor health conditions as they are discriminated, marginalized, and deprived of basic health care facilities and treatment. Despite the measures to address maternal and reproductive health problems, a large number of women continue to die during pregnancy and childbirth due to lack of prenatal (before birth) and postpartum (after birth) health care facilities. Though it is important to develop research and basic facilities in health care, most women are unable to access and afford the available services due to extreme poverty, increasing gender inequalities, deprivation and discriminations. In fact, preventable health conditions are the cause of deaths of millions of women, children, and adolescents, every year (World Bank).

Experiences at the Ground

It is disturbing that India ranks lowest on health and survival (the sex ratio at birth and healthy life expectancy) in the Global Gender Gap Index for 2022. Despite the launch of the Anaemia Mukt Bharat (anaemia-free India) strategy to reduce anaemia amongst the vulnerable age groups such as women, children and adolescents, the National Family Health Survey -5 (2019-21) finds that 59.1 percent adolescent girls, and 57.2 percent non-pregnant women and 52.2 percent pregnant women in the age group of 15-49 years, are anaemic. Between the two rounds of survey in 2015-16 and 2019-21, anaemia rates have increased from 53.1 per cent to 57 per cent in women (15-49 years) and from 58.6 per cent to 67.1 per cent in children (6 to 59 months). There is an increase in anaemia of 1.8 per cent in pregnant women from 50.4 per cent to 52.2 per cent. Studies suggest that it is important to invest in an enhanced understanding of the varied causes behind this increase in anaemia (Gupta and Seth, 2022: 11). Despite huge number of Maternal and Child Health and Nutrition Programmes/Schemes under various Ministries and Departments, hunger and malnutrition persist.

The irony is that more than half the women and adolescent girls are malnourished and anaemic due to menstruation, pregnancy, and lactation.

Though the constitutional responsibility of the state to secure 'right to food' has gained significance through the National Food Security Act in 2013, every year large number of

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A STUDY ON DEMONETIZATION AND EMPIRICAL ANALYSIS OF EFFECT OF DEMONETIZATION ON MICROCREDIT PARTICIPATION OF SELF-HELP GROUPS IN URBAN SLUMS OF DELHI

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ABSTRACT

This study makes an attempt to present a descriptive account of meaning of, reasons for and impact of demonetization on the Indian economy, using relevant data from published papers, journals, magazines and websites. The study follows an inferential research design and is a mix of, both qualitative and quantitative analysis of the aftermath of demonetization. The paper also uses a case-control technique to report a comparative analysis of the impact of demonetization on women members of Self-Help Groups or beneficiaries of microcredit participation (case group) vis-a vis non-participants (control group), primary data for which was collected through structured questionnaire-based surveys and interviews of women respondents (ages 18 and over), in urban slums of north-south Delhi, during the month of February,2017 and the following months, the period immediately after the demonetization drive. Statistical analysis of data consisted of two proportions Z-tests for comparison across the two groups and estimation of the odds ratio to validate the results, using SPSS. Microcredit sector, being highly cash intensive, the Self-Help Promoting Institutions (SHPIs), Banks, Microfinance Institutions (MFIs) and most of all, the SHG member women faced indescribable challenges of tremendous extents, in collections and disbursements of loans to the poor, who were the gravest hit, as they acquire loans and repay them only in cash.

KEYWORDS: Demonetization, Microcredit, Microfinance Institutions, Self-Help Groups.

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Microcredit- 'A multidimensional overview'

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Abstract

The study presents an evaluation of the contemporary literature on microcredit and the direction in which research on it has developed over the past decades. It is a descriptive account of historical perspectives, conceptualizations and measures, empirical models, impact analysis as well as related research in the field of microcredit. The objective of this paper is to improve our understanding on the dynamics of the process of participation in microcredit programs, to provide acomprehensive discussion of current discourse and at the same time identify research gaps in available literature in order to offer major directions for future research. Microcredit has anincredible untapped potential and plays a substantial role inpoverty alleviation, reducing unemployment and overall economic development, especially relevant in developing economies like India. The spillover effects, especially for women participants, includes, income generation, higher socio-economic ranking,economic empowerment and greater bargaining power in intra-household decision making. Another positive externality is an improvement in their health status, quality of life and overall well-being. Thus, there has been an exponential growth in the interestof academicians about the multidimensionaleffects on microcredit participantsin the informal sector, particularly on women. In a nutshell, the paper aims to investigate the contributions of scholarly research on microcredit, encompassing its impact on multiple fronts, through an exploratory and systematic literature reviewby means of a thorough content analysis.

Keywords:empowerment, health status, literature review, Microcredit, poverty alleviation,socio-economic.

1. Introduction

A review of literature places a research in its proper perspective by showing the volume of work already carried out in the related areas of the study. The paper presents pertinent reviews that were collected through various secondary sources, such as books, journals, monographs, magazines, newspapers and websites. This includes select theoretical works, government reports, empirical case studies, field studies and other documented evidence. The subsequent sections present reviews relating to financial inclusion, origins of Microfinance, Microcredit, self-help groups, impact on poverty alleviation, on women empowerment, on health status and other related areas, which could be of great interest to researchers. The literature review will contribute to an understanding of the

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Evaluating Health Impact of Air Pollution

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Abstract The paper attempts to evaluate health benefits individuals can derive by reducing the expenditure on health related diseases by deploying the methodology of health production function. The study is based on survey of households located around half kilometer of monitoring station for ambient air pollution of Central Pollution Control Board (CPCB) situated at Siri Fort and R.K. Puram in the South Delhi region. The survey was conducted in the winter season of 2015.The results reveal that individuals can reduce the expenditure on health by controlling indoor pollution, awareness index, habit index, averting activities, nutrition index, and outdoor pollution. The paper identifies the role played by habits and nutrition status of individuals in affecting the number of sick days of individuals thus reducing the expenditure on mitigating activities. The study holds socio-economic and political implications as it highlights the role of better living conditions in the society and the significance of reducing indoor pollution and policies promoting clean energy fuel.

Keywords Health Production Function, Monitoring Stations, Indoor Pollution, Awareness Index, Habit Index, Averting Activities, Nutrition Index, Outdoor Pollution

1. Introduction

In this present era a serious concern and challenge has emerged related to air pollution, its consequent acute and chronic impact on human health has been witnessed across the world. Various pollutants that degrade the air quality are carbon monoxide (CO), sulphur dioxide (SO_2), nitrogen oxides (NOx), volatile organic compounds (VOCs), ozone (O_3), heavy metals, and particulate matter (PM2.5 and PM10). The impact of existence of such pollutants ranges from minor upper respiratory irritation to chronic respiratory and heart disease, lung cancer, acute respiratory infections in children and chronic bronchitis in adults, aggravating pre-existing heart and lung disease, or asthmatic attacks.

The State of Global Air report 2018 by IHME paints a grim picture of India with Global Burden of Disease (GBD) analysis 2016 estimating 1.1 million out of 4.4 million, that is, a quarter of global deaths from air pollution occurring in India – the highest amongst the South Asian countries and 10 per cent of total deaths in India [1]. The report also documented that 70 per cent of Indian population resides in areas with PM 2.5 concentration more than 35 ug/m^3, much above the WHO air quality guideline of 10 ug/m^3 and India experienced one of the steepest increase in PM 2.5 concentrations since 2010. The report projected the concentration to increase to 48 ug/m^3 by 2050, increasing the exposure by 40 per cent, if no further action is taken. WHO's World Global Air Quality Database ranking of PM 2.5 concentration in cities shows 11 among the 12 most polluted cities globally from India, with the National Capital - Delhi being the 7th most polluted one. The urban air database by WHO in 2010 showed that Delhi has exceeded PM 10 level by 10 times at 198 ug/m^3, vehicular emissions being the major contributor followed by coal burning [2]. South Delhi is one of the prominent locations in Delhi covering an area of 247 square kilometers. The southern region of National Capital Territory comprises of a population of 27.32 lakhs (Census of Delhi, 2011) [3] suffering from very unhealthy daily average levels of PM 10 and PM 2.5 as per the Air Quality Index (AQI) reported by Delhi Pollution Control Board (DPCC) [4].

There exists a vast quantity of literature that reconfirms the hazardous impact of air pollution on health of individuals. Mukhopadhyay and Forssell [5] confirm that the close linear relationship between pollution and health exhibiting the impact of pollutants from fossil fuel combustion in India on health by applying input-output structural decomposition analysis approach. Smith [6] evaluated attributable risks and patterns of disease in India that impact health and concluded that acute respiratory infections and chronic obstructive pulmonary diseases and

Analysing the case studies pertaining to service providers in gas and petroleum industry, Konstantinos Kavvadias takes the readers to the role of disintegrated distribution generation in energy transition, where it has emerged as a cost-effective and energy-efficient mode of supplying energy. The author recommends various policies like flexible regulation to facilitate a new connection of distribution generation to electric grid, transparent market conditions and a combination of incentives to integrate this energy system and resolve all challenges of investing in the Photovoltaic (PV) system.

Addressing the drawbacks associated with smart grids, Michele Moretti et al. critically analysed the distribution grid tariffs and finally concluded that the objective should be to optimize renewable energy source of electricity in order to reduce fossil fuel dependency. Further, various sets of energy policies along with financial instruments have been evaluated, illustrating the case of European electricity market where the deployment of renewable energy created challenges for the electricity sector.

Patricia Pereira da Silva and Nuno Carvalho Figueiredo recommended the expansion of transmission grid and cross-border interconnection being coordinated with the deployment of renewable energy which enhances energy security. However, they failed to explore the factors determining cross-border cooperation with respect to conventional sources of energy which is theoretically considered as a strong strategy for energy security. With respect to renewable energy source of electricity, microgrids could be a plausible option of grid connectivity with transmission grid. In this context, Gabriella Ferruzzi and Giorgio Graditi described various microgrid models, their functioning and associated uncertainties.

The book provides a valuable discussion concerning technological and economical aspects of transition from convention energy sources to renewables. However, it falls short in addressing the role of political economy in the energy transition, mainly the role of vested interests. Diffusion of innovative technologies requires a strong network of stakeholders involved in the transition process.

Overall, the knowledge and information bestowed in the book hold a great significance for the researchers and scholars who intend to understand the need and mechanism of regulatory state paradigm in the present energy transition. The book is a useful contribution to emerging literature on energy transition.

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ROLE OF HUMAN CAPITAL IN ECONOMIC GROWTH: A COMPARATIVE STUDY OF INDIA AND CHINA

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ABSTRACT

Human capital constitutes a significant ingredient of economic growth. As more and more countries are moving on the path of growth and development one needs to explore the contribution of human capital in economic growth. Considering health and education as two components of human capital, the paper attempts to achieve three-fold objectives. First to examine the status of health and education in both the countries for the period 1970-2016, secondly to comprehend the role of public expenditure on health in economic growth and finally to examine the role played by human capital comprising of both health and education component in economic growth of both the nations. To achieve the first objective, the paper attempts to construct the Index of health and education both for India and China, also comparing it with South Asian region. Public health expenditure by government (PHE), out of pocket expenditure (OPE), Life Expectancy (LE) and Access to health care (HC access) are selected as indicators of health while educational attainment at least completed upper secondary, population 25+ (EDU) indicating the access to education, Literacy rate (LR) and number of patent applications by residents (PA) are considered as indicators of education. Both health and education indices are constructed using the Principal Component Analysis (PCA) method. The study examines the causality between the public health expenditure and economic growth for both the countries by deploying the Engle Granger Causality test using the Vector autoregression (VAR) model. Finally, an endogenous growth model is run selecting the appropriate variables, considering health and education indices as inputs. The study observes uni-directional causality between public health expenditure and economic growth, GDP granger causes PHE in both India and China. Both health and education index have positive impact on growth in India however the results of regression depict that the both health and education negatively affect the growth rate in China. The paper holds a great relevance in terms of policy implications highlighting the need for the developing nations to invest in human capital both health and education. It is crucial to comprehend the significance of accessibility of health and education by removing the political economy, making these facilities more inclusive.

Key words: *Human Capital. Public health expenditure, Economic growth, Engle Granger causality, Out of pocket expenditure.*

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Inflation rate and Poverty: Does poor become poorer with inflation?

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Abstract

This paper examines the inflation rates for the period 2005–06 and 2011–12 and concludes that inflation in 2005-06 hurts the poor more since the rise in food prices was substantial in this period and food constitutes a substantial proportion of their total expenditure. The paper observes that there was a substantial rise in Inflation which was experienced in the food grains like egg, fish, and meat, while the growth of inflation rate was observed minimal in case of beverages, footwear, and edible oil. Further, the impact of inflation on poor varied not only across both rural and urban areas but also the impact was different for different time periods. The paper also depicts shifts in the pattern of inflation rate across the expenditure classes between 2005–06 and 2011–12 and establishes inverse association between inflation rate and expenditure in the year 2005-06 for both rural and urban areas while the relationship was completely distinct in case of 2011–12 for both rural and urban areas. The study clearly reveals that bottom thirty percent of the population in rural areas observes same inflation rate as their urban counterparts for the year 2005-06. Finally, the paper concludes that the impact of inflation is not only commodity specific but also decile class specific. Further, the impact of inflation is observed to be different for rural and urban areas. This establishes the role of policy and government intervention through the public distribution scheme favoring the poor section with the aim of minimizing the gap of the impact of inflation experienced by poor and rich.

Keywords: Inflation rates, Total Expenditure, Decile classes, Public Distribution Scheme.

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स्त्री अस्मिता के प्रश्न और आदिवासी कविताएं

डॉ. अनीता मिंज
असिस्टेंट प्रोफेसर, हिन्दी विभाग,
दौलत राम महाविद्यालय, दिल्ली विश्वविद्यालय,
नई दिल्ली।

सारांश- आदिवासी समाज में स्त्रियों की प्रारंभिक दशा काफी हद तक ठीक थी। कुछ सामाजिक अंधविश्वासों, बुरी आदतों आदि के कारण कभी-कभी स्त्रियों को सामाजिक एवं मानसिक यातनाएं झेलनी पड़ती थी। इसके बावजूद समाज में लैंगिक भेद नहीं था। किंतु कुछ दशकों से आदिवासी क्षेत्रों में बाहरी घुसपैठियों, आर्थिक उदारीकरण आदि के कारण स्त्रियों के प्रति लैंगिक अपराधों में बढ़ोतरी हुई है। जिससे आदिवासी स्त्रियां अपनी अस्मिता की प्रति सचेत होने लगी हैं। आदिवासी स्त्रियों का आत्मबल पुरुषवादी वर्चस्व को तोड़ने की पहल करता है। वे पुरुष से 'स्त्री-मन' को 'स्त्री-दृष्टि' से देखने की बात करती हैं। प्रकृति की तरह स्त्री की 'सृजन-शक्ति' पुरुषत्व दंभ को ललकारती दिखलाई देती है। स्त्री-अस्मिता के ये सार्थक प्रश्न आदिवासी स्त्रियों की नारी चेतना को एक नई दृष्टि प्रदान करते हैं।

बीज शब्द : - आदिवासी कविता, स्त्री अस्मिता, बाहरी हस्तक्षेप, सामंतवाद, प्रतिरोधी चेतना, मुक्ति की आकांक्षा।

प्रस्तावना- भारतीय समाज में प्रारंभ से स्त्रियों की महत्वपूर्ण भूमिका होते हुए भी वे हाशिए पर रही हैं। यही कारण है कि आज वैश्वीकरण की दौड़ में विभिन्न साहित्यिक चर्चाओं में 'अस्मिता-विमर्श' एक महत्वपूर्ण आंदोलन के रूप में उठ खड़ा हुआ है। आज' अस्मिता-विमर्श' हर क्षेत्र में एक चुनौती देता दिखाई पड़ रहा है। जो निजी पहचान को बचाए रखने की जद्दोजहद है। अस्मिता 'अस्मि' शब्द से बना है, जिसका अर्थ है- 'मैं हूं' अर्थात् व्यक्ति या समाज की पहचान। उसके अस्तित्व, मूल्यों, संस्कृति, भाषा, अधिकार, आकांक्षाएं, सपने, लिंग आदि के बारे में दुनिया के समक्ष अपना दावा ठोकना।

पिछले कुछ दशकों से आदिवासी समुदाय या गैर आदिवासियों द्वारा इस समाज की पहचान, जीविका संकट, भाषा, संस्कृति, स्त्री की पहचान इत्यादि विषयों को लेकर लेखन एवं विमर्श जारी है। आदिवासी समाज में स्त्रियां हर कर्मक्षेत्र में पुरुष की भागीदार बनती हैं। घर-बार, हाट-बाजार, खेत-खलिहान हर क्षेत्र में स्त्रियां अपनी भूमिका निभाती हैं। पूर्वोत्तर में जहां 'मातृसत्ता समाज' है, वहां आदिवासियों में स्त्री 'सूर्य' की प्रतीक मानी गई है। जिसमें कठोरता की बजाय ब्रह्म का तत्व अधिक होता है- "प्रकृति के सूर्य जैसे शक्तिशाली प्रतिमान को स्त्री मानना एक मुकम्मल सोच को प्रतिपादित करता है। इसमें पुरुष की 'हेजेमनी' नहीं है।"[1] लेकिन इधर कुछ सालों से आदिवासी क्षेत्रों में बाहरी लोगों के आगमन से आदिवासी समाज में स्त्रियों के प्रति लैंगिक भिन्नता, असमानता जैसे भेद पनपने लगे हैं। जो आदिवासी समाज के भीतर के सौंदर्य को नष्ट करने में तुले हुए हैं। जिससे आज आदिवासी स्त्री लेखन भी सजग हो चुका है। आदिवासी स्त्री 'स्त्री अस्मिता' के प्रश्न उठाने लगी हैं । क्योंकि

In the process of studying the problem of ecotourism development in the regions, dic analysis and regional methods were used.

lts The Pop district of Namangan region has a unique ecosphere. Using the natural ential of the region, it is possible to achieve the economic development of the district in the ure. The aforementioned figures and figures state how environmentally friendly zones are so mportant to human life and how they live and how important it is tomaintain a healthy lifestyle, to adapt to the standards.

Conclusions According to the results of research, strategies for the application of public and private partnership mesenisms have been developed to accelerate the development of ecotourism in the regions. For the development of ecotourism in the region it is necessary to create wide opportunities for the establishment of ecotourism objects, legalization, development of tourism for private entrepreneurs. In future, it will be possible to create socio economic development of the regions, create new jobs, based on the capacities of our regions.

Key Words: Ecotourism, Ecotourism Objects, Pop District, Ecotourism Infrastructure, Likert Scale.

JEL:R11, R12, D01, D84

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Factors Affecting the Expenditure on Different Goods Across Households in Rural and Urban India

R. Ahalya [1]

In this paper, the pattern of conswnption expenditure on various household goods like food, entertainment and medical expenses is analyzed. Further, the various socioeconomic factors affecting the expenditure share of various types of food items in the total expenditure on food are studied. The major factors considered in the paper are household occupational class, total monthly per capita expenditure (MPCE) of the household, the household size, average years of education obtained by the household members and the gender of the household head. A left censored Tobit regression is used to look at the impact of these factors on consumption shares of different commodities for rural and urban areas separately. The National Sample Survey 's round of Employment and Unemployment data is utilized for the purpose of the study. The results indicate that households having a better occupational class, higher MPCEand more years of education spend more on commodities and food items that are generally considered as luxury or high value items by the households.

Keywords: consumption, occupation, education, food.

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Labour Issues and the Impact of Migration on Kerala Agriculture

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Zinc Oxide Nanostructures Fabricated under Extremely Non-Equilibrium Plasma Conditions

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Keywords: Zinc Oxide, Nanostructures, Plasma assisted deposition, Optical band-gap, Photoluminescence.

Abstract. In the present work, extremely non-equilibrium, high temperature and high density argon plasma is used for producing ions from pellet of zinc oxide (ZnO) fitted on top of anode. These ions along with energetic argon ions move vertically upward in a fountain like structure in post focus phase of plasma dynamics and material ions get deposited on the glass substrates placed at 4.0 cm from anode top. This process of production of material ions from ZnO pellet leads to nucleation and nanostructures formation with one and two bursts of focused plasma. The surface morphology studied using scanning electron microscopy shows the formation of nanostructures with mean size about 8 nm. The structural properties of nanostructures in X-ray diffraction pattern show [100] and [002] planes of hexagonal ZnO. Photoluminescence studies show peaks related to defect transitions. The band-gap of nanostructures found from Tauc plot is smaller than that of the bulk ZnO. The resultant morphological, structural and optical properties of nanostructures suggest the possible applications in visible optoelectronic devices.

Introduction

The nanostructures are the ideal systems for studying transport mechanisms in one-dimensional systems for developing new generation nanodevices with high performance. The compound semiconductors of II-VI group such as zinc oxide (ZnO) has received intense attention due to its remarkable combination of physical and optical properties. ZnO has wide band gap of 3.37 eV, it has high exciton binding energy (60 meV) and it also provides the diverse growth of morphologies. These properties make ZnO, a key material in the fields of nanotechnology and wide band-gap semiconductor [1,2]. The nanostructures of ZnO show shift in the band gap due to the quantum confinement effect. This shift of the band gap results in the application of the nanostructures in the devices operated in the shorter wavelength range. This property is useful for the fabrication of UV light emitting devices from ZnO nanostructures. In addition, the high electrical conductivity and optical transmittance of ZnO in visible region render the ZnO nanostructures an ideal candidate for applications like transparent conducting electrodes in flat panel displays and window layers in solar cells [3].

The fabrication of ZnO nanostructures have been reported by several techniques such as RF sputtering [4], pulsed laser deposition [5], metal organic chemical vapor deposition [6], thermal evaporation [7], electrochemical [8] etc. The fabrication of ZnO nanostructures on silicon and quartz substrates using modified dense plasma focus (DPF) device have been reported earlier by Malhotra et. al. [9] in which the change in morphological and optical properties of ZnO nanostructures were observed upon changing the substrate from silicon to quartz. Optical band-gap studies have not been reported by Malhotra et. al. [9] which is necessary to determine the applications of fabricated ZnO nanostructures in optoelectronic devices over a specific optical region. Thus, it is necessary to explore the change in morphological, structural, optical etc. properties of ZnO nanostructures when fabricated on glass substrate.

In this paper, we reported the fabrication of ZnO nanostructures on glass substrate using ions of ZnO generated by hot, dense and extremely non-equilibrium argon plasma produced in modified DPF device. Morphological, structural and optical properties of fabricated ZnO nanostructures have been presented. The optical band-gap studies were also carried out to determine the spectral range of the optoelectronic devices.

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Monoclinic Zirconium Oxide Nanostructures Having Tunable Band Gap Synthesized under Extremely Non-Equilibrium Plasma Conditions †

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Abstract: Zirconium oxide (ZrO_2) is a wide and direct band gap semiconductor used for the fabrication of optoelectronic devices. ZrO_2 based optoelectronic devices span a wide optical range depending on the band gap of ZrO_2 material. The band gap of ZrO_2 can be tuned by fabricating it to the nanoscale. In this paper, we synthesized the ZrO_2 nanostructures on quartz substrate using ZrO_2 ions produced by the ablation of ZrO_2 pellet due to high temperature, high density, and extremely non-equilibrium argon plasma in a modified dense plasma focus device. Uniformly distributed monoclinic ZrO_2 nanostructures with an average dimension of ~14 nm were obtained through X-ray diffraction and scanning electron microscopy studies. The monoclinic phase of ZrO_2 nanostructures is further confirmed from photoluminescence (PL) and Raman spectra. PL spectra show peaks in ultra-violet (UV), near-UV, and visible regions with tunable band gap of nanostructures. A similar tunability of band gap was observed from absorption spectra. The obtained structural, morphological, and optical properties are compared to investigate the potential applications of ZrO_2 nanostructures in optoelectronic devices.

Keywords: nanocrystalline materials; zirconium oxide; synthesis; luminescence; energy band gap

1. Introduction

Zirconium oxide (ZrO_2) is an interesting semiconducting material with a wide band gap, which has been studied extensively to explore its fundamental properties for making highly efficient devices. The band gap of ZrO_2 decreases with the increase of the processing temperature, which makes it more conductive, and hence it can be used in applications-oriented research. ZrO_2 has a high melting point, high mechanical and thermal resistance, high dielectric constant, and low electrical conductivity. ZrO_2 is also chemically stable with excellent hardness and biocompatibility, which renders it as a suitable candidate to be used for chemical, optical, dielectric, and mechanical applications [1–3]. ZrO_2 has the potential to be used in making fuel cells [4], protective coatings for mirrors [3], and optoelectronic devices [5]. ZrO_2 possess a high dielectric constant, which makes it an ideal candidate for the replacement of conventional gate oxide in field effect transistors in the future generation nanoelectronic devices.

The physical properties of ZrO_2 are influenced significantly by its crystal structure. ZrO_2 exists in three polymorphic phases depending upon the growth temperature, that is, monoclinic (exists at low temperatures below 1150 °C and is a thermodynamically stable phase), tetragonal (exists at intermediate temperatures within the range of 1150–2370 °C), and cubic (exists at very high temperatures greater than 2370 °C) [6]. The monoclinic crystal structure, being the

Metal-Oxide-Semiconductor Capacitors Fabricated on Zirconium Oxide High-K Gate Dielectric Nano-Layers

Onkar Mangla, Savita Roy

Abstract*— In this study, we have fabricated zirconium oxide (ZrO_2) nanolayers on silicon substrates by ablation of ZrO_2 pellet due to interaction with the high temperature, high density and extremely non-equilibrium argon plasma in a modified dense plasma focus device. ZrO_2 nanolayers are fabricated with two bursts of focused plasma on silicon substrates placed at distances of 4.0 cm and 5.0 cm from anode top. The thickness of nanolayers is found to be ~ 30 nm and ~ 20 nm for 4.0 cm and 5.0 cm substrate distances, respectively. Scanning electron microscopy (SEM) studies show formation of uniform nanolayers with nano-size structures of average size ~ 26 nm and ~ 19 nm for 4.0 cm and 5.0 cm substrate distances, respectively. Atomic force microscopy analyses further confirms the size and morphology of nanolayers obtained in SEM results. Current-voltage and capacitance-voltage measurements are done in Al-ZrO_2-Si metal-oxide-semiconductor (MOS) capacitor configuration. Fabricated MOS capacitors have low leakage current density of about 1.72×10^{-8} A/cm^2 at 1 V and capacitance density of about 2.2 μF/cm^2. The conduction mechanisms which governs the electrical properties of MOS capacitors are found to be field/tunnel emission and Schottky emission in low and high electric field regimes, respectively. The fabricated MOS capacitors have improved electrical properties in terms of low leakage current and high capacitance density as compared to others reported in literature which is advantageous for next-generation MOS nanoelectronic devices.

Keywords: Zirconium oxide; nanolayers; dense plasma focus; metal-oxide-semiconductor; nanoelectronics.

INTRODUCTION

The next-generation nanoelectronic devices require miniaturization of metal-oxide-semiconductor field effect transistors (MOSFETs), which is obtained by reducing the thickness of gate dielectric to sub-100 nm range [1,2]. The gate dielectric which was preferred in MOSFETs is silicon dioxide (SiO_2) before the sub-100 nm technology node. In sub-100 nm technology node SiO2 should be further scale down to have a thickness below 2 nm. The scaling of SiO_2 below 2 nm causes high leakage current and reliability issues such as tunneling [1-3]. In next-generation MOS technology this problem can be alleviate by using materials having high-κ (high dielectric constant) as gate dielectric. High-κ material when used as gate dielectric will results in equivalent capacitance even with physically thicker layer. The high-κ materials used presently as gate dielectric are having several drawbacks like low mobility and interface defect etc. which leads to undesirable carrier scattering [4] and degrade the performance and quality of next-generation MOS devices. Thus, it is necessary to investigate new high-κ material for MOS device technology.

Several high-κ materials such as titanium dioxide [5], tantalum oxide [6], aluminum oxide [7], hafnium oxide (HfO_2) [8], lanthanum oxide (La_2O_3) [9] and ZrO2 [10] have been used as gate dielectric to replace SiO_2. Out of the several high-κ material, HfO_2 is the most explored material for gate dielectric and it also shows improved electrical properties which make it one of the suitable high-κ material for gate dielectric. On the other hand, ZrO_2 is less explored material as gate dielectric but it possess several electrical and structural properties which are superior than HfO2 such as high-κ value of about 26, wide band gap of about 5.7 eV, stable with silicon substrate and gate electrode metals. This makes ZrO_2 more suitable and desirable gate dielectric material than HfO_2. However, the electrical properties of fabricated MOS capacitor are also depends on the method of fabrication of dielectric material.

ZrO_2 thin film for MOS capacitor applications has been deposited by several techniques such as atomic layer deposition [11], e-beam evaporation [12], plasma enhanced chemical vapor deposition [13] and sputtering [14]. Among them plasma based techniques are advantageous because they use ion implantation for deposition. In the similar manner, we have used the modified dense plasma focus (DPF) device making use of high-temperature, high-density and extremely non-equilibrium argon plasma for the ablation of solid target material. The modified DPF device has already been used for deposition of HfO2 [8] and La_2O_3 [9] for MOS capacitor applications.

In this paper, we reported the fabrication of ZrO_2 nanolayers on silicon substrates through material ions generated due to ablation of ZrO_2 pellet by hot, dense and extremely non-equilibrium argon plasma in a modified DPF device. The nanolayers are comprehensively analyzed for their morphological properties using scanning electron microscopy (SEM) and atomic force microscopy (AFM). MOS capacitors fabricated on ZrO_2 nanolayers are analyzed for their electrical properties using current-voltage (J-V) and high frequency capacitance-voltage (C-V) measurements. The obtained results show improvement in MOS nanodevice

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STUDY OF MORPHOLOGICAL, STRUCTURAL, OPTICAL AND TRANSPORT PROPERTIES OF GALLIUM NITRIDE NANODOTS FABRICATED UNDER EXTREME PLASMA CONDITIONS

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Abstract - In the present paper, we reported the fabrication of gallium nitride (GaN) nanostructures on sapphire substrates through the ions of GaN. These GaN ions are generated due to the interaction of GaN pellet with hot, dense and extremely non-equilibrium argon plasma in a modified dense plasma focus device. In the process of fabrication two bursts of focused plasma were used and the sapphire substrates were placed at distances of 4.0 cm and 5.0 cm from the top of central anode. Morphological studies using scanning electron microscopy reveals formation of nanodots having average diameter ~ 71 nm and ~ 35 nm at 4.0 cm and 5.0 cm distances, respectively. Formation of nanodots have been further confirmed in transmission electron microscopy results. X-ray diffraction pattern show peaks corresponding to hexagonal GaN. Photoluminescence spectra show emission peaks corresponding to band edge, blue and UV emissions. Optical absorption studies reveals increase in optical band gap of nanodots from that of bulk GaN. Transport studies using Hall measurement indicate n-type nature of fabricated GaN nanodots. The obtained optical and transport properties of GaN nanodots suggest the potential applications of nanodots in GaN based nano-optoelectronic devices.

Keywords - Gallium Nitride, Dense Plasma Focus, Nanodots, Photoluminescence, Hall Measurement, Optoelectronic Devices.

I. INTRODUCTION

III-V compound semiconductors have gained considerable attention due to their applications in wide range of devices such as high power electronic devices [1] and ultraviolet (UV) and visible optoelectronic devices [2-4]. Among the several III-V compound semiconductors, III-V nitride based semiconductors are identified as potential candidates because of their desirable electronic and optical properties, thermal and chemical stability and doping capabilities. These properties of III-V nitride based semiconductors make them more suitable for optoelectronic device applications. The III-V nitride based semiconductors are available in both n- and p-type forms which make them suitable for blue-green light emitting diodes (LEDs) and near-UV laser diodes (LDs) [5]. Out of the all III-V nitride based semiconductors, gallium nitride (GaN) has attracted the interest of researchers due to its unique optical and electronic properties. GaN has a wide direct band gap of 3.41 eV at room temperature and is a promising material for short wavelength optoelectronic devices, such as LEDs and LDs. In addition, GaN is also useful in making high power and high temperature operation devices, on account of its high melting temperature, high breakdown field, and high saturation drift velocity [6,7]. GaN when fabricated at nanoscale show novel properties due to quantum confinement effect which render GaN nanostructures suitable candidate for applications in photovoltaic, LEDs and various nanodevices [8]. The applications of GaN nanostructures depend upon the morphology and optical properties. However, the morphology and optical properties are strongly depend upon the method of fabrication of GaN nanostructures. Several chemical and physical methods have already been used to fabricate wide range of morphologies of GaN nanostructures [9,10]. Apart from chemical and physical methods variety of plasma-based methods have also been used to fabricate GaN nanostructures [11-14]. Many of the above mentioned techniques suffer from several disadvantages as they need either high temperature in the furnace for synthesis or require long reaction time or require heating or biasing of substrates or annealing of deposited material. Modified dense plasma focus (DPF) device which is a source of hot, dense and extremely non-equilibrium argon plasma, when used for nanofabrication can overcome the shortcomings of the above mentioned techniques.

In addition to the method of fabrication the morphology and other properties of GaN nanostructures are also depend on the use of a compatible substrate. In general, the substrate should have similar lattice constant and thermal parameter for the growth of high quality GaN nanostructures. Sapphire is one of the substrates possessing these qualities and also it is the most used substrate for fabrication of GaN nanostructures due to its hexagonal symmetry and high temperature stability (~ 1000 ºC) [15]. In the present study, we fabricated GaN nanodots on sapphire substrate using the ions of GaN produced by the hot, dense and extremely non-equilibrium argon plasma in a modified DPF device. The fabricated nanodots are further analyzed to study their morphological, structural, optical and transport properties. The obtained results have been discussed and compared with earlier work done on glass, quartz and silicon substrates [16].

Interface modification for enhancing the conduction mechanisms in 2,2',7,7'-tetrakis(N,N-diphenylamine)-9,9'-spirobifluorene (Spiro-TAD) Nano layers for optoelectronic applications

Omwati Rana, Ritu Srivastava, M.N.Kamalasanan, M.Husain, M.Zulfequar

Abstract— ***Hole transport properties of 2,2',7,7'-tetrakis(N,N-diphenylamine)-9,9'-spirobifluorene (Spiro-TAD) have been analyzed by studying the J-V characteristics of hole only devices at different temperatures and nano layer thicknesses of Spiro-TAD in the devices. The conduction processes were understood by using Richardson Schottky (RS) thermionic model and found injection limited behaviour. When an optimised nano layer of F4TCNQ was inserted between the organic layer and metal electrodes, the injection energy barrier at metal/organic interface was found to reduce significantly. By the optimised nano layer of F4TCNQ, completely removal of interface barrier is possible. It has been observed that the J-V characteristics of interface modified devices were well fitted through space charge limited conduction (SCLC) with electric field and temperature dependent charge carrier mobility model. The obtained values of hole mobility by varying electric field and temperatures were well fitted with both Gill's model as well as Gaussian disorder model within the experimental accuracy. Mobility parameters obtained from J-V measurements were comparable to those reported from Time of flight (TOF) technique and field effect transistors (FETs) measurements. These results show that it is possible to tune the conduction mechanism in various optoelectronic devices by modifying their interfaces and remove interface barriers which are detrimental to the efficiency and stability of these devices.***

Keywords: Charge Transport; Injection Limited Conduction; SCLC; Hole Mobility; Gills Model; Gaussian Disorder model

1. INTRODUCTION

During few decades, Organic semiconductors have covered a broad range of electronic devices because of ability to manufacture large area and flexible devices at very low cost. All electronic devices like light emitting diodes (LEDs), field-effect transistors (FETs), photovoltaic's (PVs), lasers, sensors, memory chips and integrated circuits [1-7] are included in this range. As huge amount work has been done on organic devices for technological and commercial applications. Still there are major issues related to controlling the lifetime and reproducibility of these devices.

Performance and life time of an organic device basically depends upon major three factors: as i) the efficiency of charge carriers injection/extraction from electrodes to organic layers [8-9] ii) Charge carrier mobility of materials [10] iii) Morphological stability of organic layers (which require high glass transition temperature ($T_{g)}$ organic materials)[11]. In order to fulfil these requirements, thermally stable with high charge carrier mobility organic materials should be develop which having good injection efficiency at the interfaces.

As a result, many structural modifications have been done through in developing new organic materials which possessing high glass transition temperature (T_g)[12-13]. One of the good quality approach introduced by Salbeck and group by introduction of Spiro-type linkages, making covalently bridged orthogonal structural configurations which can reduce crystallization tendencies efficiently which leading to exhibiting higher values of *T*g without influencing the mobility of materials [14-15]. For example, while linking two charge transport moieties (for instance, two identical TAD, TAD stands for *N,N,N',N'* tetraphenylbenzidine) through a spiro-carbon centre resulting spiro-compound, 2,2',7,7' tetrakis(diphenylamino)-9,9'-spiro-bifluorene (Spiro-TAD) with raising the glass transition temperature T_g =70^0C (TAD) to 133^0C(Spiro TAD) due to the increase in steric demand and effectively hinders crystallization[16]. Because of thermal stability, spiro linked compounds found applications in various organic devices i.e solar cells, OLEDs and TFTs [17-19].

Further, in organic devices, Injection of charge carrier at the interfaces (anode/organic layer or organic layer/cathode) mainly controls by the alignments of energy-level at the

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प्रेमचन्द के उपन्यासों की नारियाँ और नवजागरण

डॉ. अनीता मिंज
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स्त्री शिक्षा, स्वावलंबी नारी, जागरूक एवं निडर नारी, राजनैतिक भागीदारी, नारी स्वतंत्रता।

ABSTRACT

प्रेमचंदयुगीन काल संक्रांति का काल था। फलस्वरूप नवजागरण का प्रचार-प्रसार सभी क्षेत्रों में जोरों पर था। प्रेमचंद जी भी इससे अछूते नहीं रहे। उनके उपन्यासों में नारियां भी उत्तरोत्तर सभी क्षेत्रों में जागरूक दिखाई पड़ती हैं। यही कारण है कि वे राजनीति, स्त्री शिक्षा, स्त्री स्वतंत्रता, तलाक़ आदि सभी मुद्दों पर बातचीत के साथ ही बराबरी की भागीदारी दिखलाती हैं। प्रारंभिक उपन्यासों में थोड़ा बहुत शोषण, अत्याचार आदि झेलती हैं पर उत्तरोत्तर उनके उपन्यासों में नारियों का जागृत एवं नवचेतन रूप दिखाई पड़ता है।

प्रस्तावना

प्रेमचंद काल संक्रांति का काल था। यूरोपीय नवजागरण के फलस्वरूप भारत में भी सामाजिक, आर्थिक, राजनैतिक क्षेत्रों में क्रांति की शुरुआत हुई। हिंदी क्षेत्रों में नारी जागरण का आरंभ 20वीं सदी के प्रारंभ में विभिन्न धार्मिक, सामाजिक, सांस्कृतिक आंदोलनों के कारण हुआ। तत्कालीन समाज में उपेक्षित, पद-दलित, अनेक रूढ़ियों एवं अंधविश्वासों से जकड़ी भारतीय नारियों की मुक्ति के लिए विचारकों ने सुधार का काम आरंभ किया। विभिन्न सामाजिक संस्थाओं के विचारकों ने नारियों में अपने अन्याय के प्रति जागरूक करने का काम किया। जिससे स्त्रियों में जागरूकता आने लगी। आर्य समाज, ब्रह्म समाज, प्रार्थना समाज, थियोसोफिकल सोसायटी, कांग्रेस, गांधी जी आदि संस्थाओं एवं विचारकों ने स्त्रियों की उन्नति को समाज एवं देश की उन्नति से जोड़ा। इन्होंने नारी मुक्ति आंदोलन को विशिष्ट स्थान दिया।

नवजागरण के फलस्वरूप नारी सुधार एवं जागरण का विकास उत्तरोत्तर बढ़ता गया। राजनीतिक क्षेत्र में अंग्रेजी साम्राज्य के बढ़ते शोषण एवं सामन्ती व्यवस्था के पतन के कारण जनता में असंतोष की लहर बढ़ती जा रही थी। नवजागरण की चेतना ने राजनीतिक क्षेत्र में भी नयी क्रांति फैलायी। परिणामतः सन् 1857 में प्रथम सिपाही विद्रोह हुआ। हलांकि राजनीतिक क्षेत्र में क्रांति असफल सिध्द हुई किन्तु विद्रोह की चिनगारी प्रज्ज्वलित कर गई। धीरे-धीरे राजनीतिक, सामाजिक, सांस्कृतिक सभी क्षेत्रों में स्वाधीनता की लहर फैलने लगी। वर्षों तक गुलामी से शोषित, पीड़ित देश ही नहीं, अपितु दबी, सहमी एवं अनेक समस्याओं से ग्रस्त नारी वर्ग में भी मुक्ति की उत्कंठा दिखाई दी। इस संबंध में अनेक समाज सुधारकों के अलावा महात्मा गांधी, ईश्वरचन्द्र विद्यासागर, महात्मा ज्योति राव फुले, तिलक, अगरकर, गोखले आदि राजनीतिक नेताओं ने भी नारी स्वतंत्रता में अपना भरपूर सहयोग दिया। नारी जागरण के विविध पहलुओं को हम प्रेमचंद के उपन्यासों के माध्यम से देख सकते हैं जिनमें प्रमुख हैं।

स्त्री शिक्षा 20 वीं सदी के भारतीय नवजागरण के समाज सुधारकों एवं धर्म प्रचारकों के प्रयास से भारतीय नारियों में पुनरुत्थान का आरंभ हुआ। 'स्त्री शिक्षा के प्रचार से उच्च एवं संभ्रान्त परिवार की महिलाएँ विदेशी शिक्षा प्राप्त कर वर्षों की दासता एवं रूढ़ियों के प्रति जागरूक हुई। उन्होंने अपने अधिकारों को पहचानना एवं प्रगति और विकास के क्षेत्रों में अग्रसर होना शुरू किया। प्रारंभ में नारियाँ स्वयं सामाजिक बंधनों को तोड़ना नहीं चाहती थीं क्योंकि उनमें अशिक्षा के कारण सामाजिक रूढ़ियों के प्रति अटूट श्रद्धा एवं विश्वास था। पर्दे की बुरी प्रथा स्त्रियों के विकास के मार्ग में मुख्य बाधा थी। समय के अन्तराल एवं विशेषकर-सामाजिक सुधारकों और स्वाधीनता आंदोलन के कारण स्त्रियों की मानसिक सोच में बदलाव आना शुरू हुआ।

स्त्री शिक्षा के प्रचार से स्त्रियों के मानसिक एवं आत्मिक विकास में अत्याधिक सहयोग मिला। सर्वप्रथम ईश्वरचन्द्र विद्यासागर ने बालिका विद्यालय की स्थापना की। शिक्षित होने से नारियों में बौद्धिक जागरूकता आयी। स्त्रियों की दयनीय स्थिति में सुधार लाने के लिए 'पंडिता रमाबाई' पहली महिला थीं जो विधवा होने के बाद उच्च शिक्षा प्राप्त कर शिक्षिका बनीं। 'गोपाल कृष्ण देवधर' ने स्त्री की उन्नति के लिए श्रीमति 'रामाबाई रानाडे के नेतृत्व में सेवासदन संस्था' (1909 ई.) खोली। इसकी प्रथम अध्यक्षा श्रीमती रामाबाई हुई। 'सेवासदन में स्त्रियों को अपनी रुचि के अनुसार स्वावलम्बी बनने के लिए गृह विज्ञान, अध्यापिका बनने एवं औषधि विज्ञान से संबंधित शिक्षा दी जाती थी। उन्होंने ही सन् 1902 में 'हिन्दू लेडीज सोशल एण्ड लिटरेरी क्लब' की स्थापना की। डॉ. कर्वे ने 1916 ई. में 'महिला विश्वविद्यालय पूना' की स्थापना की। उन्होंने 1917 ई. में स्त्रियों के लिए 'शिक्षिका ट्रेनिंग कॉलेज खोला, जिसमें स्त्रियों की उन्नति एवं सम्मान के लिए उन्हें हर तरह की शिक्षा दी जाती थी। 'पंडिता रमाबाई ने 1892 ई. में विधवाओं के लिए 'शारदा सदन खोला। उन्होंने विधवाओं को शिक्षा प्राप्त कर शिक्षिका बनने के लिए प्रेरित किया जिससे वे स्वतंत्र रहकर आदर एवं सम्मान का जीवन जी सकें। वे नारियों की हर तरह की शिक्षा (व्यावहारिक, नैतिक, आर्थिक) की तरफदारी करतीं थीं। उन्होंने वैदिक कालीन स्त्रियों का उदाहरण देकर महिलाओं एवं पुरुषों को सामाजिक कार्यों में बराबर का हिस्सेदार बताया। इन्होंने बाल-

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Historical Waves of Oral History:
Reflections on New Trends and Changing Practice

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Abstract

The practice of history as we conceive of it today began with the transition from orality to literacy, which led to written records and the earliest works we recognize as history. But the utility and validity of written and orally transmitted evidence depends on its user for the particular purpose intended. It is the duty of the historian to shift evidence of all nature to draw his own inferences where oral history is no more or no less valuable than other sources. The gradual acceptance and validity of the oral evidence emerged with scientific inventions as tools – portable tape recorders, videotapes, films and CDs – for repository of orally transmitted evidence especially after the Second World War. Gradual waves and changing practices influenced oral historians to continue to favor audio over video as their recording equipment of preference, partly through habit and concerns about the intruding presence of a camera (and camera operator), but also because of cost and skill deficit.

So, using this approach of new trends and waves of oral history, let us examine the ethical and methodological implications of database and indexing software, of putting our interviews on the internet, and of engaging with tech capitalism. Oral history interviewing and interpretation are, ideally, intentionally slow processes, while digital technology prides itself on its speed. This leads to the question: How do we reconcile the two?

Keywords: Waves, Ethics, Digital, Methodology, Oral history

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A review on sustainable routes of synthesis and applications of Cuprous Oxide Nanoparticles and their Nanocomposites.

Sushma Yadav,[a,b] Arti Jain[b] and Priti Malhotra [b*]

Nature acts like a "Bio-Laboratory" consisting of plants, algae, fungi, yeast *etc*. which are composed of bio-molecules. These naturally occurring bio-molecules play a vital role in the synthesis of Cuprous oxide (Cu_2O) nanoparticles (NPs) and their nanocomposites (NCs) with distinct shapes and sizes, thereby acting as a driving force for designing safer, greener and sustainable routes using less hazardous chemicals. The present review focuses on the eco-friendly protocols for synthesis of Cu_2O NPs and their NCs, characterisation techniques and various applications in organic catalysis, biosensing, environmental remediation and medicinal chemistry. The pivotal role of Cu_2O NPs and their NCs in catalysing coupling reactions (C-C and C-N), multicomponent, oxidation-reduction reactions and heterocyclic reactions have been higlighted. It emphasises its role in sustainability of the environment and its range of versatility in heterogenous catalysis. Furthermore, their use in biosensing (electrochemical detection) generates special interest in bioscience and clinical diagnosis. Their significance ensures to build a bridge between academic research and safety of the surroundings.

Introduction

In the recent past, metal and metal oxide nanomaterials[1-2] have received a great deal of attention and have mobilized various synthetic routes. The wide range of efficiency and versatility of these nano materials have further promoted their designing and has also initiated the tailoring of suitable size and morphology of metal and metal oxide NPs. Synthesis of nanoscale transition metal oxides[3], such as tin oxide, iron oxide, titanium oxide, copper oxide, *etc*., are of significant interest owing to their enhanced catalytic activity, high thermal conductivity, excellent antibacterial/antimicrobial activity, easy availability of economical & up-scalable synthetic routes and non-toxicity. Among various transition metal oxides, production of Cu_2O NPs and their NCs is of special interest in the scientific field as well as in industrial field, due to their various applications such as gas- sensing[4], solar cells[5], antibacterial agent[6], catalysis[7], antifouling coating[8] *etc.* In modern times, antifouling paints are formulated with Cu_2O NPs along with other chemicals to act as biocides[9] which are

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Biocatalyst CAL-B catalyzed synthesis of modified nucleosides: An overview

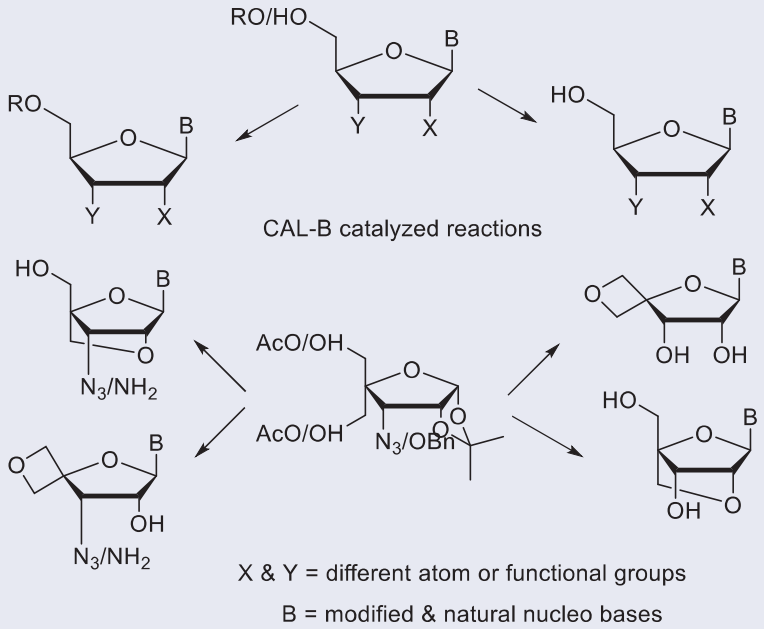
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ABSTRACT

Nucleosides are valuable biologically active compounds, which display antitumour and antiviral activities. Various types of bioactive nucleosides are designed to improve their therapeutic efficacy, However this strategy faces the difficult selectivity issues of nucleoside chemistry. Therefore, the goal of this review is to give an idea of the opportunities provided by biocatalyst CAL-B procedures in the preparation of different types of bioactive nucleoside compounds. The function of Candida Antarctica lipase-B (CAL-B) in organic synthesis is reviewed. This enzyme has been found to be a principally efficient and robust lipase catalyzing an unexpected variety of reactions including many different regio- chemo, and diastereo-selective synthesis. Moreover, the structure of Candida Antarctica lipase-B is an example of an enzyme for which its specificity has been predicted based on acylation and deacylation mechanism on substrates.

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EXAMINATION OF THE MODERATION EFFECT OF GENERATIONS ON BUYING BEHAVIOR OF WOMEN: A SPECIAL FOCUS ON FASHION APPAREL

RENU YADAV[*], SUJATA KHANDAI[**] AND S.P. SINGH[***]

Abstract

The demand for fashion apparel by consumers these days is at its peak, which has caused a paradigm shift in the consumers' preferences and the retail industry. This paper is an attempt to check the impact of selected factors such as store characteristics, product characteristics, and external factors on the buying behavior of women. This paper attempts to find the moderation effect of generation on buying behavior. Therefore, for this purpose of research, data has been collected from 300 respondents and statistical tools EFA, CFA, and moderation effect has been calculated. The results of the study show no significant difference between Gen X and Gen Y. Further research needs to be conducted to evaluate the liking and preferences of consumers in the places of different cultural backgrounds for finding out the similarities and differences. As a retailer of apparels, these insights can be incorporated in the policy formulation to make the purchases a real time customer delight.

Keywords: *Fashion Apparel, buying behavior, Gen X, Gen Y.*

INTRODUCTION

For consumers, apparel plays the role of a non-verbal communication channel which allows messages to be created and understood. (Aunty and Elliott, 1998:109; Acosta, 2012). Apparel is generally considered to be a highly-engaged shopping item that consumers often buy for its symbolic meaning, image enhancement or psychological satisfaction and is also a category of product known to reflect social life, aspirations and the fantasies of the consumer.

Apparel function as symbols that indicate status, gender, social group allegiance and personality. (Craik, 2009). From the consumer's point of view, fashion apparel is a way of self-expression. When consumers purchase apparels, they purchase an identity. (Tungate, 2008) Fashion constitutes an important societal part of the individual's well-being. Through the right choice of apparel, it is possible for an individual to improve his or her self-esteem and acceptance by other people. (Easey, 2009). The buying behavior of the urban middle and upper class Indian consumer, to a large extent, has been greatly influenced by the West. The Indian consumer has become much more receptive and experimental in their perspective towards western fashion and thus, foreign brands. Foreign brands have thus received a positive reception from Indian consumers.

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Self and Nation in the Light of Karma: A Critical Analysis of W. B. Yeats's Plays *Cathleen ni Houlihan* and *Purgatory*[1]

Pawan Kumar

W. B. Yeats's involvement with philosophical and mystical practices throughout his lifetime, and the influence that these pursuits had on his literary and dramatic art have been widely studied and documented by critics and scholars. However, the poet-playwright's curious inquiry into the philosophical traditions of the East, particularly India, can be read as furnishing at least two significant outcomes for the poet and his writings. Firstly, the Eastern philosophical systems provided a compelling reflective ground to Yeats's own ideas about the complex relationship between body, human action, soul and spirit in the context of Irish identity, history and politics. Secondly, it points to his fervent quest for a spatio-temporal pushing of the boundaries of the purpose and meaning of literature, art and philosophy: in Yeats's oeuvre, one finds a fusion of the philosophical discourses of the West and the East towards the creation of a novel and potentially universal symbolic system.

Of particular interest in this study is Yeats's interpretation and application of the theory of karma: the entangled correlation of the endless cycle of birth, worldly existence and action, death, after-life and rebirth. A close study of Yeats's literary work, his letters, and his notes and commentaries in some of his manuscripts indicate that Yeats used his understanding of the philosophy of karma as one of the significant matrices of some of his most profound poetic and dramatic works. The paper critically analyzes two plays of Yeats, namely *Cathleen ni Houlihan* (1902) and *Purgatory* (1938), from an Indian philosophical perspective to shed light upon how the Indian philosophy of karma significantly influenced as well as help shape Yeats's own outlook. A detailed study of the aforementioned plays from two different phases of Yeats's literary trajectory (as well as Irish history) will shed light on the development of Yeats's political and creative mind, particularly his adaptation and interweaving of the Eastern philosophical paradigms in his literary works. The two plays share some common concerns: both the plays carry significant philosophical undertones; both of them dwell upon the struggles of the Celtic tradition and culture for recognition and survival on the one hand, and the political conflict of Ireland on the other; and again, the central plot of both the plays revolves around the ideas of intention and subsequent action.

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Rabindranath Tagore: Nation and Nationalism

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Abstract
Many thinkers such as Gandhi, Savarkar, and Tilak in India have propounded their views on Nationalism in different ways. Rabindranath Tagore is one such cosmopolitan philosopher whose idea of nationalism finds a distinct place in the whole debate about the very idea of nationalism. His idea of nationalism was never restricted to India only instead it had worldwide appeal. Tagore would never fit in the kind of discourse that is taking place in contemporary India in the name of nationalism often said and misquoted as '*Hindu nationalism'*. He was against the exclusionary features and self-aggrandizing character which is often found in various discourses on nationalism. He found the elements such as chauvinism, aggression, the feeling of others and false pride... very common in the ideas of nationalism and therefore, he vehemently discredited it. For Tagore such features in nationalism were not in the interest of humanity at large. This is evident from his archetypal work, '*Nationalism*'. However, if we look deep into the works and ideas of Tagore regarding nationalism, he considered it to be good as long as nationalism serves the interests of the poor and deprived people. Thus, opposition of the British authority for the reason that they are causing inhuman exploitation and impoverishment of the country, he would gladly associate and love to be in the league of nationalists. He vehemently opposed to any kind of racial and undemocratic behaviors of Englishmen to Indians. But if the schema of nationalism was merely self-determination from the British authority just because they are not Indian, he would never stand with such an idea. Tagore and Gandhi had a very attention-grabbing dialogue on various themes and he disagrees with Mahatma on numerous counts courteously. Tagore's disagreement with Gandhi on *'Swadeshi'* which was an essential tool of Gandhi in the fight against the British clout, Tagore found it irrational. This paper would underline the ideas of Tagore vis-à-vis nationalism at length and would also critically analyze the debate between Gandhi and Tagore.

Keywords: Rabindranath Tagore, Nation, Indian Nationalism, Internationalism

1. Introduction

Before we examine Tagore's idea of nationalism, it would be prudent to first comprehend as what he intended by the very notion of nation. Nation according to Tagore was not defined by ethnicity, geography, language or any other external factor, as many us would believe, but by a shared tradition, purpose and commonality of being (Chaudhuri 2017). There should be no ambiguity that he discarded the idea of a nation where the nation becomes more influential and greater against the people who created it. This idea of nation was often endorsed by the colonizer countries that saw the nation above its citizens. The European nationalism always placed the nation above people and therefore, nation not the people of the nation were at the helm of day to day affairs. Thus, national security, national pride, economy, power subsumed the interests of ordinary people such as their living conditions, health, education, etc. (Patnaik 2016).

He saw the birth of nationalism in the various European countries as the result of technological advancement and modern science. He demonstrated various negative fallouts of the nationalism which took birth in Europe and impacted internally and at the international arena. In his legendary lecture on *Nationalism* which he delivered in 1916, he said that west's success in the field of science and technology has led to dehumanization and increasing greed for power. Nationalism instilled unbridled lust for power and money within the society which resulted in continuous degradation of moral values, dignity and severe condition of the labor class. This race for power and money encouraged colonizers to move beyond their territory and search for colonies where they can exploit the resources to accomplish their unending lust for wealth (Chakrabarty 2009).

In a letter dated 1909-1910, he said,

"And what is the harvest of your civilization? You do not see from the outside. You do not realize what a terrible menace you have become to man. We are afraid of you. And everywhere people are suspicious of each other. All the great countries of the west are preparing for war, for some great work of desolation that will spread poison all over the world. And this poison is within our own selves. They try and try to find some solution, but they do not succeed, because they have lost faith in personality of man" (Tagore, The English Writings of Rabindranath Tagore: A Miscellany 1994).

In the Indian context, Tagore was convinced that there was no word like 'nation' in the Indian languages. Nationalism in India like in Europe was an urban phenomenon in the 19th century. He was fundamentally against any such attempt made in the name of nationalism, for nation or patriotism, to mobilize people for the so-called national cause. In a letter to his friend A.M Bose, he said,

"*Patriotism cannot be our final spiritual shelter. I will not buy glass for the price of diamonds and I will never allow patriotism to triumph over humanity as long as I live*." (Selected Letters of Rabindranath Tagore 1997).

For him the fight that India was taking against the British rule was not the fight to take the nation back and decolonize the political authority; it was rather a spiritual fight, which aimed liberation of individuals from meshes of national

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Relevance of Writings and Speeches of Vivekananda's in Modern World

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Introduction

Swami Vivekananda was not only a saint or yogi or a monk or a spiritualist or a vedantic philosopher of great rank but he was also a great man of letters in the field of oration and speech. He has great gift of deliberation and his arguments always are reflected in his speeches which he delivered all around the world. He showed great perfection in his articulation and always maintained a great height as far as his words about his spiritual experienced are concerned. When he became the disciple of Sri Ramakrishna, Sri Ramakrishna made a perfect prophesy about his future. He said that this boy Narendra will become a great representative of Indian philosophy and spiritualism one day. When Vivekananda stood to deliver his lecture in the World Parliament of Religion in Chicago, it created a clamour among the audience and nearly seven to eight thousand people present in the hall suddenly stood from their seat to welcome a young yogi who spoke his first words, "Sister's and brothers of America".

These words attracted the entire mass present in the hall because such kind of connectivity is not visible in the western society. In India, there is great respect for every religion and people are very tolerant and show great respect and honour for the fellow people belonging to different religions. In the World Parliament of Religion in Chicago in 1893 there were a large number of speakers who delivered their lectures on different topics but they failed to show any kind of connectivity with the audience. But Vivekananda, a man from Indian soil came up and grabbed the attention of the people by his opening lines of his famous speech. Mrs. S.K. Blodgett

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VIVEKANAND'S NATIONALIST VIEWS AND ITS RELEVANCE IN TODAY'S INDIA

Swami Vivekananda mission was both national and International. A lover of mankind, he strove to promote peace and human brotherhood on the spiritual foundation on the Vedantic Oneness and existence. A mystique of the highest order Vivekananda had a direct and infusive experience of reality. He derived his ideas from the unfailing source of wisdom and often presented them in the soul - stirring language of poetry. His inspiring personality was well known both in India, America and European countries during the last decade of the 19th century and the first decade of the 20th country. The unknown monk of India suddenly leapt into fame at the parliament of religions held in Chicago in 1893.

Before Chicago right from his childhood to parliament of religion he read both Indian and foreign books of famous writers. His some friends well known all over the world were famous in those days. Some names may be mentioned here William James, (The Harward philosopher) named the Swami the paragon of Vedantist. Max Muller and Paul Deussen, The famous orientalist of the 19th century held him in genuine respect and affection. Romain Rollald showed, "great music, phrasal in the style of Beethovn, stirring rhythms like the march of handed choruses."

Under the background of above mentioned towering personality of Swami Vivekananda we may come to the conclusion that basically Vivekananda was a spiritual leader but he was in true sense regarded as his mother god and tried his whole life to solve the basic materialistic problems of India. As such we may say that his nationalist views may be explained in details and relevance may be found in modern India.

Under the background of above mentioned towering personality of Swami Vivekananda we may come to the conclusion that basically Vivekananda was a spiritual leader but he was in true sense regarded as his mother god and tried his whole life to solve the basic materialistic problems of India. As such we may say that his nationalist views may be explained in details and relevance may be found in modern India.

Nationalist views of Vivekananda

Like writer Hegal Vivekananda was on the view that in life of every nation there is one main element as for example in the history of India religion had been a creative element in the past or even today. As such a foundation stone of religious theory of nationalism was led by him. In future Vipin Chandra Pal and Maharshi Arbind supported his views.

From this point of view the political thought of Swami Vivekananda may be discussed under three subpoint-

(a) Spiritual or religious theory of nationalism (Cultural Nationalism) may be regarded as the first contribution of Vivekananda like Bankim Chandra Chatarjee he was of the view that India is a treasure of Daivik Power, this feeling is found in writings and speeches of nationalist of India and specially in Bengal.

(b)His second contribution to political thought is the theory of freedom. He was of the view that the whole world is seeking freedom regularly. Thus development of a country cannot be achieved without the light of freedom. Besides spiritual freedom, he was supporter of materialistic freedom also. He derived the theory of freedom from holly Indian script Upnishad. In Upnishad there is mention of physical, mental and spiritual freedom.

(c)His third contribution is political thought is message of strength and fearlessness. In other words in the language of political science this contribution may told as "Theory of Resistance." As such in comparison to political freedom and social justice Swamiji gave message of strength. In other words, only Strength is a religion. From the political point of view to give the message of political

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भारतीय सांस्कृतिक राष्ट्रवाद के अग्रदूत : स्वामी विवेकानंद

चन्द्र प्रकाश* व डॉ0 अरुण कान्त सिंह**

बचपन में विल्लय, विरेश्वर, नरेन्द्र बाद में सच्चिदानंद और उत्तर भारत भ्रमण के दौरान स्वामी विवेकानंद के नाम से आजीवन विख्यात इस योद्धा, संन्यासी एवं युग नायक का जन्म कलकत्ता के दत्त परिवार में सोमवार, पौष संक्रांति, दिनांक–12 जनवरी 1863 को सूर्योदय से छः मिनट पहले हुआ था।

स्वामी जी का प्रतिभादिप्त तरूण मुख मंडल, विशाल युगल नयन, पाँच फीट साढ़े आठ इंच का सुगठित लावण्मय शरीर, चलने–फिरने की राज्योचित भंगिमा तथा अत्यंत भद्र, निश्चल, सरल व्यवहार के प्रभाव से उनके संपर्क में आने वाला हर व्यक्ति उनके निकट आत्मीयता का अनुभव करता और उन्हें प्रेम करने से स्वयं को रोक नहीं पाता था।

ऐसे युग नायक के व्यक्तित्व का गठन गुरू, गीता और गंगा की त्रिवेणी से हुआ था। भगिनी निवेदिता की पुस्तक 'The Master as I saw Him' के अनुसार गुरू का अर्थ रामकृष्ण, गीता का अर्थ शास्त्र और पुस्तकें तथा गंगा का अर्थ पुण्य भूमि भारत है।

स्वामी विवेकानंद के व्यक्तित्व का संपूर्ण बल भारतीय राष्ट्रवाद पर था। उन्होंने धर्म का उदेश्य लोगों के कल्याण या भलाई के रूप में बताया। अतः अपनी पुण्य भूमि भारत और संपूर्ण मानवता के कल्याण को ध्यान में रखकर जीवन पर्यन्त उन्होंने जो व्याख्यान दिए और जो कार्य किए उससे उनकें राजनीतिक और राष्ट्रवादी विचारों की झलक मिलती है। अतः संक्षेप में स्वामी विवेकानंद के राजनीतिक विचारों की विवेचना निम्नलिखित उपशीर्षकों के अंतर्गत की जा सकती है।

राजनीतिक चिंतन के दार्शनिक आधार : विवेकानंद अद्वैत वेदांत के महान प्रतिपादक थे। वे एक महान आध्यात्मवादी और सृजनात्मक विभूति थे। भारत के नैतिक और सामाजिक पुनरूत्थान के लिए उन्होंने एक अनुप्रेरित कार्यकर्त्ता के रूप में अपना संपूर्ण जीवन बलिदान कर दिया। यदि राजा राममोहन राय, केशव चंद्र सेन और गोपाल कृष्ण गोखले का विश्वास था कि इंग्लैंड का भारत में एक विशेष संदेश है।

विवेकानंद के दर्शन के तीन मुख्य स्त्रोत माने जाते हैं–

(क) वेदों तथा वेदांत की महान परंपरा : शंकराचार्य ने भी इन्ही ग्रंथों से अपने दर्शन की प्रेरणा ली थी। तीन अन्य भारतीय मनीषियों रामानुजाचार्य, वल्लभाचार्य और माधवाचार्य के विषय में भी यहीं कहा जा सकता है किन्तु विवेकानंद मेधा के धनी थे। उन्होंने भारतीय और पाश्चात्य दर्शन की लगभग सभी पुस्तकों का अध्ययन कर लिया था। ब्रिटिश शब्दकोष (Encyclopedia Britannica) के ग्यारह खंडों पर विवेकानंद ने अधिकार कर लिया था किन्तु आध्यात्मिक गुरूओं की तुलना में उनकी बुद्धि समन्वयकारी थी। अतः वेदांत की व्याख्या की उनकी अपनी विशेषताएँ थी।

(ख) गुरू रामकृष्ण के साथ संपर्क : विवेकानंद के दर्शन का दूसरा शक्तिशाली स्त्रोत रामकृष्ण परमहंस के साथ उनका संपर्क था। रामकृष्ण आधुनिक युग के एक महानतम संत और रहस्यवादी थे। विवेकानंद में रहस्यवादी अनुभूतियों गुरू रामकृष्ण द्वारा ने ही समाहित की थी, किन्तु विवेकानंद में दार्शनिक और धार्मिक उपदेश दोनों का सम्मिश्रण था। 1893 में शिकागो धर्म महासभा में उनके द्वारा दिए गए भाषण इसके प्रमाण हैं।

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Impact of the BCIM in India, China and South Asian Nations

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As referenced before, the BCIM venture depends on five connections: exchange, foundation, speculation, capital and individuals. A correction of the antiquated sea silk course, the BCIM centers around expanding exchange and rebooting geopolitical connections, hence building up itself as a financial development motor.

Challenges: Sub-Regional Complexities

All nations of the BCIM are worked in various parts which can possibly increment intra-nation monetary improvement. For example, Myanmar has situated itself to be an essential merchandise exporter and gives bottomless modest work. India is one of the Asian nations driving in sending out administrations. China has the upper hand of being the biggest assembling exporter on the planet. Bangladesh is occupied with both help fares and low-end fabricating products. Furthermore, the area is loaded up with monstrous customary and sustainable power sources.

So, the exchange among BCIM part states represents five percent of all out BCIM exchange correlation with ASEAN where the all-out intra-provincial exchange is 35 percent. One of the reasons of the low measure of exchange might be because of political questions inside the district. For quite a long time, geo-political clashes have reliably impeded exchange connections as well as hindered enhancements in provincial financial conditions. For example, the battle between the Myanmar Army and the Myanmar National Democratic Alliance on ethnic Kokang rebels, arranged close to the Chinese outskirt, presents dangers to the system. The area of South Asia is in emergency in light of the verifiable political debates among Pakistan and India that began with the establishing of the territory of Pakistan in 1947. The correlation by Saira Khan on the example between the Indo–Pakistan emergency in the pre-atomic and atomic periods shows that interstate emergencies have steadily declined in the pre-atomic time. In any case, during the atomic time, the recurrence of emergencies has been increasing. The BCIM venture even got postponed because of the proposed association between the BCIM–CPEC. The Sino–Pakistan's CPEC understanding has proposed associating the BCIM through the Kashmir involved by Pakistan. Indeed, even China–India relations falter in South Asia over Arunachal Pradesh, compounding pressures during a month-long standoff between the two armed forces.

From an improvement and network point of view, the Chittagong Port in Bangladesh can transform into a center to give administrations to Northeast India, Myanmar, Southeast China, Bhutan, Nepal, and Bangladesh. The Bay of Bengal (BoB) is arranged in a vital geographic area and is significant for the BCIM venture which associates China with the southern Asian nations. Stressing the criticalness of the geological area of Cox's Bazaar, Japan has likewise propelled the BoB mechanical

भगवतीचरण वर्मा के उपन्यासों में नारी-विमर्श

– डॉ. संतोष सैन

भगवतीचरण वर्मा स्पष्टवादी, स्वतन्त्र, भावुक व संवेदनशील साहित्यकार थे। साहित्यकार अपने को निरन्तर समाज से अधिकाधिक सम्पृक्त करने का प्रयत्न करता है। यही कारण है कि वर्मा जी का उपन्यास-साहित्य एक शतक वर्षों के सामाजिक जीवन और परिवर्तनशील मानव-मूल्यों की गाथा को अपने में समाहित किये है। वर्मा जी के उपन्यासों में सामाजिक, सांस्कृतिक और राजनीतिक जीवन की विकृतियों पर व्यंग्य-प्रहार किया गया है। भगवतीचरण वर्मा के साहित्य की यह एक प्रमुख विशेषता है कि उन्होंने समाज को उसकी यथार्थ स्थिति से अवगत कराते हुए, मानव-मन की गहराइयों को थहाकर सामाजिक समस्याओं पर अपने उपन्यासों के कथानक का निर्माण किया है।

भगवतीचरण वर्मा ने भारतीय समाज के परिवर्तनों को सजग व्यक्ति और सजग साहित्यकार की दृष्टि से देखा-परखा है। वह व्यक्ति और समाज दोनों की पारस्परिक सापेक्षता को स्वीकारते हुए भी व्यक्ति की अपनी पृथक सत्ता को महत्व देते हैं। वे समाज और व्यक्ति को एक-दूसरे का प्रतिद्वंद्वी न मानकर एक-दूसरे का पूरक मानते हैं। उनका मानना है, ''व्यक्ति से समाज बनता है - यह सत्य है, लेकिन समाज में ही तो व्यक्ति का अस्तित्व है, व्यक्ति समाज का अविच्छिन्न भाग है।'' (सीधी-सच्ची बातें, पृष्ठ 313) इस प्रकार स्त्री और पुरुष के पारस्परिक सहयोग द्वारा समाज का सृजन होता है। उपन्यासकार भगवतीरचरण वर्मा ने समाज के विविध वर्गों से नारी पात्रों का चयन कर उपन्यासों में सजीव चित्रण किया है। ये सभी नारी पात्र समाज में व्याप्त कुरीतियों, विकृतियों, जटिलताओं को प्रस्तुत करने के कारण विभिन्न क्रिया-कलापों तथा स्वभावों से युक्त होने के कारण अनेक रूपों में मुखरित होकर आकृष्ट करते हैं।

प्रत्यक्ष रूप में नारी वर्मा जी के रचना-केन्द्र में न रहते हुए भी अपने अनेक सामाजिक प्रश्नों के साथ उनके उपन्यासों के कलेवर में किसी-न-किसी रूप में उभरी हैं। यों वर्मा जी ने स्पष्ट रूप से कहीं पर भी नारी-विषयक अपनी विचारधारा का खुलासा नहीं किया है, फिर भी जो कुछ उनका नारी-विषयक चिंतन प्राप्त होता है उसके आधार पर यही कहा जा सकता है कि वर्मा जी नारी के सबल अस्तित्व और व्यक्तित्व के हिमायती रहे हैं।

वास्तव में वर्मा जी नारी को अस्तित्व और व्यक्तित्वहीन, विवश और परतंत्र रूप में नहीं देखते हैं अपितु पुरुष की सहयोगिनी, समभागिनी और व्यक्तित्व से पूर्ण नारी की कामना करते हैं। वह पत्नी का पति के जीवन में लय होकर सम्पूर्ण आत्मसमर्पण करना जीवनहीनता मानते हैं।

वर्मा जी ने अपने उपन्यासों में दो प्रकार की नारियों का वर्णन किया हैं - एक परम्पराजीवी

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आपका बंटी में अभिव्यक्त स्त्री-पुरुष सम्बन्ध

डॉ. नीतू गुप्ता[1]

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आपका बंटी लेखिका मन्नू भंडारी का ऐसा उपन्यास है जिसमे आधुनिक समय में स्त्री-पुरुष के बदलते संबंधों की व्याख्या की गयी है। भारतीय समाज में वैवाहिक सम्बन्ध सात जन्मों का बंधन माना जाता है, किन्तु यह अवधारणा उस स्थिति में कैद बनकर रह जाती है जहाँ एक भी पक्ष दूसरे से अलगाव की भावना रखता हो। पति-पत्नी में विश्वास के स्थान पर यदि अहं आकर टिक जाये तो सम्बन्ध का टिके रहना असंभव है। जिस दौर में लेखिका ने उपन्यास की रचना की उस दौर में तलाक जैसी अवधारणा भारतीय समाज के लिए नयी एवं असहज थी। पुरुष समाज तो फिर भी इसे मुक्ति का रास्ता मान ले किन्तु स्त्री के लिए ये सामाजिक एवं निजी स्तर पर असहनीय निर्णय है। ऐसे में यदि वह अपने स्वाभिमान को बचाये रखने के लिए अपने पति से अलग हो भी जाये किन्तु तलाक को सहजता से स्वीकार नहीं कर पाती। तब उसका एकमात्र सहारा होता है वैवाहिक सम्बन्ध का परिणाम, उसकी संतान।

यही उपन्यास की नायिका शकुन के जीवन की गति है। स्वाभिमान को बचाये रखने एवं वैवाहिक जीवन में से किसी एक को चुनने की जद्दोजहद में आधुनिक परिवारों का अस्तित्व संकट में पड़ता जा रहा है। पढ़ी-लिखी आधुनिक स्त्री पति से सम्मान की अपेक्षा करने लगी है,जहाँ पहले पति के घर में रोटी और रहने की जगह मिलना ही पर्याप्त होता था अब स्त्री ने स्वयं के लिए इन दोनों चीजों से एक कदम आगे बढ़कर आत्मसम्मान एवं अस्तित्व को तलाशना आरम्भ कर दिया है,जिसे पुरुष समाज स्वयं के लिए एक चुनौती के रूप में देखने लगा है। पुरुष के लिए सबसे सटीक लड़की वह होती है जो प्रत्येक कदम पर उसके अहम को सहलाती रहे, जहाँ अहम को सहलाने में ज़रा सी भी चूक हुई समझिये रिश्तों की परिभाषा ही बदल जाती है। ये स्थिति संभवतः मीरा की अजय के साथ है और जीवन का एक लम्बा दौर अकेले गुजारने के बाद समान स्थिति शकुन की भी होने लगती है, इसलिए उसे बंटी अपने और डॉ जोशी के बीच में दीवार की तरह लगने लगता है। इस दीवार को हटाकर अपनी जिंदगी सामान्य करने की इच्छा से वह बंटी को अजय के पास भेज देती है।

उपन्यास को पढ़कर लगता है कि पुरुष को अभी और वक्त चाहिए नारी को परिवार एवं समाज में सम्माननीय स्थान पर देखकर स्वयं को सामान्य स्थिति में रखने के लिए। क्योंकि लम्बे समय तक औरतें घूँघट और परदे के पीछे दबीं-ढकीं रहीं। जिससे पुरुषों के घर की इज्जत भी छिपी रही, पुरुषों की दृष्टि में यह नारी का आदर्श रूप था। सही मायनों में वह घर की रौनक थी। लेकिन अब जब वही रौनक घूँघट और परदे से बाहर आने के लिए छटपटाने लगी है तो पुरुष समाज का हाजमा दुरुस्त होना लाज़मी है। आधुनिक समाज में नारी से यह अपेक्षा की जाती है कि वह यदि आर्थिक रूप से आत्मनिर्भर भी है तो भी उसे अपनी कमाई ख़ुशी-ख़ुशी अपने पति को सौंप देनी चाहिए।अगर कहीं स्त्री ने थोड़ी सी जगह भी अपने लिए बचा ली तो पुरुष की प्रताड़ना के लिए उसे तैयार हो जाना चाहिए। उपन्यास की नायिका भी इसी अहंवाद की शिकार होती है। लेखिका एक स्थान पर उल्लेख करते हुए लिखती हैं-" तुम जानती हो, अजय बहुत ईगोइस्ट भी है और बहुत पजेसिव भी। अपने -आपको पूरी तरह समाप्त करके ही तुम उसे पा सको, अपने को बचाये रखकर तो उसे खोना ही पड़ेगा।"[1] यहाँ स्पष्ट तौर पर लेखिका ने पुरुष समाज की खोखली मानसिकता को उघाड़कर रख दिया है।

प्रेमचंद की कहानियों में दलित समाज

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प्रेमचंद की कहानियों में समग्र भारत की छवि दिखाई देती है। जिसमें भारतीय समाज की कुरूपताओं के साथ-साथ प्रेम, हर्ष- उल्लास, ठिठोली, गांव की मिट्टी की महक, शहरी जीवन की समस्या, पारिवारिक-संबंध, मूक जानवरों के प्रति अपनत्व का भाव दिखाई देता है । प्रेमचंद की कहानियों को पढ़ना भारतीय साहित्यिक-सांस्कृतिक विरासत से रूबरू होना है।

ओम प्रकाश वाल्मीकि प्रेमचंद के साहित्य पर प्रश्न करते हैं कि "दलितों की पीड़ा, उनका दुख-दर्द, उनकी चेतना, उनका संघर्ष साहित्य में संवेदना का अधिकारी बनकर अभिव्यक्ति नहीं पा सका"।[1] यह निश्चय ही चिंता का विषय है। दरअसल प्रेमचंद की कहानियों पर गांधी का प्रभाव था। गांधी के आगमन से स्वतंत्रता आंदोलन को जन आंदोलन का स्वरूप मिला, लेकिन गांधी ने निम्न वर्ग को अधिकार संपन्न करने की कोई प्रक्रिया नहीं चलाई। गांधी सामाजिक ढांचे को बदले बिना निजी जीवन की मिसाल और नैतिकता से सामाजिक संबंधों को बदलना चाहते थे। प्रेमचंद की 1930 ई॰ से पहले की कहानियों में इसी नैतिकता का आग्रह प्रबल रूप में है। परंतु 1930 ई॰के बाद की कहानियों में नैतिकता का आग्रह कम होने लगता है, क्योंकि इस समय अंबेडकर भारतीय समाज के अछूते वर्ग की आवाज को उठाते हैं, जो अभी तक मूक और दया का पात्र थे। इसी कारण प्रेमचंद की 1930 ई॰ के बाद की कहानियों में दलित पात्रों को जगह मिली है। प्रेमचंद दलित पात्रों में वेदना और तर्क तो जागृत करते हैं, परंतु उसे आक्रोश में बदल नहीं पाते हैं। इसी वजह से प्रेमचंद की कहानियों में दलित पात्र व्यवस्था पर प्रश्न तो करते हैं, लेकिन उसे तोड़ते नहीं हैं और अंत में ईश्वर से न्याय की भीख मांगते हैं। ओम प्रकाश वाल्मीकि कहते हैं "दलित की समस्या सीधे-सीधे धार्मिक और राजनीतिक समस्या है क्योंकि भारतीय समाज में 'जाति' एक महत्वपूर्ण व्यवस्था है जो जीवन के हर क्षेत्र को प्रभावित करती है । प्रेमचंद की रचनाओं में यह बिंदु भ्रम की स्थिति पैदा करता है वह आदर्शवादी, सुधारवादी पद्धति से इस समस्या को देखते हैं।"[2] आदर्शवाद और सुधारवाद के कारण ही प्रेमचंद दलितों को स्वतंत्र दृष्टि नहीं देते हैं। इस कारण प्रेमचंद भारतीय समाज का दलित नहीं ,बल्कि गांधी का हरिजन पैदा करते हैं ,जो भाग्यवाद को अपनाता है, नियति को कोसता है और सवर्णों से हृदय परिवर्तन की आशा करता है। प्रेमचंद की दलित कहानियों के माध्यम से इसे अच्छी तरह समझा जा सकता है। 'ठाकुर का कुआं' प्रेमचंद की ऐसी ही कहानी है। प्रेमचंद 'कुएं' को अपना विषय लेते हैं, जो भारतीय समाज के गांवों में शोषण का तंत्र है। प्रेमचंद अंबेडकर से प्रभावित नज़र आते हैं। जिसका उदाहरण इस कहानी का शीर्षक है। अंबेडकर ने सार्वजनिक कुओं पर से सवर्णों के अधिकार को तोड़ा था और सबके लिए कुएं के पानी को

भगवतीचरण वर्मा के उपन्यासों में नारी-विमर्श

– डॉ. संतोष सैन

भगवतीचरण वर्मा स्पष्टवादी, स्वतन्त्र, भावुक व संवेदनशील साहित्यकार थे। साहित्यकार अपने को निरन्तर समाज से अधिकाधिक सम्पृक्त करने का प्रयत्न करता है। यही कारण है कि वर्मा जी का उपन्यास-साहित्य एक शतक वर्षों के सामाजिक जीवन और परिवर्तनशील मानव-मूल्यों की गाथा को अपने में समाहित किये है। वर्मा जी के उपन्यासों में सामाजिक, सांस्कृतिक और राजनीतिक जीवन की विकृतियों पर व्यंग्य-प्रहार किया गया है। भगवतीचरण वर्मा के साहित्य की यह एक प्रमुख विशेषता है कि उन्होंने समाज को उसकी यथार्थ स्थिति से अवगत कराते हुए, मानव-मन की गहराइयों को थहाकर सामाजिक समस्याओं पर अपने उपन्यासों के कथानक का निर्माण किया है।

भगवतीचरण वर्मा ने भारतीय समाज के परिवर्तनों को सजग व्यक्ति और सजग साहित्यकार की दृष्टि से देखा-परखा है। वह व्यक्ति और समाज दोनों की पारस्परिक सापेक्षता को स्वीकारते हुए भी व्यक्ति की अपनी पृथक सत्ता को महत्व देते हैं। वे समाज और व्यक्ति को एक-दूसरे का प्रतिद्वंद्वी न मानकर एक-दूसरे का पूरक मानते हैं। उनका मानना है, ''व्यक्ति से समाज बनता है - यह सत्य है, लेकिन समाज में ही तो व्यक्ति का अस्तित्व है, व्यक्ति समाज का अविच्छिन्न भाग है।'' (सीधी-सच्ची बातें, पृष्ठ 313) इस प्रकार स्त्री और पुरुष के पारस्परिक सहयोग द्वारा समाज का सृजन होता है। उपन्यासकार भगवतीरचरण वर्मा ने समाज के विविध वर्गों से नारी पात्रों का चयन कर उपन्यासों में सजीव चित्रण किया है। ये सभी नारी पात्र समाज में व्याप्त कुरीतियों, विकृतियों, जटिलताओं को प्रस्तुत करने के कारण विभिन्न क्रिया-कलापों तथा स्वभावों से युक्त होने के कारण अनेक रूपों में मुखरित होकर आकृष्ट करते हैं।

प्रत्यक्ष रूप में नारी वर्मा जी के रचना-केन्द्र में न रहते हुए भी अपने अनेक सामाजिक प्रश्नों के साथ उनके उपन्यासों के कलेवर में किसी-न-किसी रूप में उभरी हैं। यों वर्मा जी ने स्पष्ट रूप से कहीं पर भी नारी-विषयक अपनी विचारधारा का खुलासा नहीं किया है, फिर भी जो कुछ उनका नारी-विषयक चिंतन प्राप्त होता है उसके आधार पर यही कहा जा सकता है कि वर्मा जी नारी के सबल अस्तित्व और व्यक्तित्व के हिमायती रहे हैं।

वास्तव में वर्मा जी नारी को अस्तित्व और व्यक्तित्वहीन, विवश और परतंत्र रूप में नहीं देखते हैं अपितु पुरुष की सहयोगिनी, समभागिनी और व्यक्तित्व से पूर्ण नारी की कामना करते हैं। वह पत्नी का पति के जीवन में लय होकर सम्पूर्ण आत्मसमर्पण करना जीवनहीनता मानते हैं।

वर्मा जी ने अपने उपन्यासों में दो प्रकार की नारियों का वर्णन किया हैं - एक परम्पराजीवी

• सहायक प्रोफेसर दौलतराम महाविद्यालय, दिल्ली विश्वविद्यालय, दिल्ली

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PHOTOCATALYTIC PROPERTIES OF BIOLOGICALLY SYNTHESIZED UNCOATED AND CALCIUM COATED ZnO NANOPARTICLES USING CUCUMBER JUICE

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ABSTRACT

Uncoated ZnO and calcium-coated ZnO nanoparticles (Ca-ZnO) were biologically synthesized using cucumber juice as a reducing and capping agent. Cucumber belongs to *Cucurbitaceae* family, is rich in water content and possesses antioxidant activity. The chemical composition and morphology of the synthesized NPs were determined by scanning electron microscopy (SEM), energy dispersive X-ray spectrophotometer (EDS), high-resolution transmission electron microscopy (HR-TEM), X-ray diffraction (XRD)and FT-IR. The spherical as well as hexagonal-shaped ZnO nanoparticles were obtained in the size range of 4-70 nm. Coated and uncoated ZnO nanoparticles were evaluated for their photo degradability of methylene blue (MB) and rhodamine B (RB) dyes. They showed nearly 100% photodegradation of methylene blue in lesser time, however, showed minimum degradation of rhodamine B dye. Calcium coating over ZnO NPs enhanced their photocatalytic properties.

Keywords: Cucumber Juice, Methylene Blue, Rhodamine Blue, Biological Method, ZnO NPs, Photocatalysts.

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INTRODUCTION

These days world is facing two major challenges associated with "P" i.e., Population explosion and Pollution. Both Ps are in the hands of human beings. Although population explosion has been controlled to some extent by awareness campaign programs, but pollution seems to be difficult in the era of rapid industrialization. Several agricultural practices as well as industrial activities like the use of pesticides, herbicides, dyes, pharmaceuticals, etc.[1-3] are the matter of concern for the scientific world and environmentalists. These anthropogenic activities lead to water and soil pollution. Organic pollutant effluents in water, textile and pharmaceutical industries, in particular, are the biggest challenges that require attention to maintain a healthy environment. Textile industries discharge dyes and pigments loaded water into natural water resources. These organic pollutants adversely disturb the ecological balance in aquatic life due to their toxicity, complexity of structure and perseverance. However, industries have been using various physical techniques such as coagulation, ion exchange chromatography, activated carbon, reverse osmosis, and ultrafiltration for their disposal.[4-5] In this regard, the development of efficient technology for water as well as soil remediation is imperative to safeguard the environment. In recent years, several nano-based technologies have been adopted due to wide applications from solar fuel, cosmetic, medicaland photocatalytic properties. Several metal/metal oxide nanoparticles such as Ag, Au, TiO_2, CuO, ZnO, etc. have been examined for their photocatalytic properties in the decolorization of textile wastewater.[6-9] These nanoparticles have frequently been used in the treatment of wastewater as they lead tothe complete mineralization of contaminants due to redox reactions.[10-11] Nanoparticles of rare earth metals have also been gaining interest because of their good optical and catalytic properties.[12-14] Among all, Titanium oxide (TiO_2)

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Study the florescence pattern of 2- Bromo-3-Hydroxy-2-Nitropropylcinnamate (BNPC) with different ions and its application as ion-sensor

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Abstract

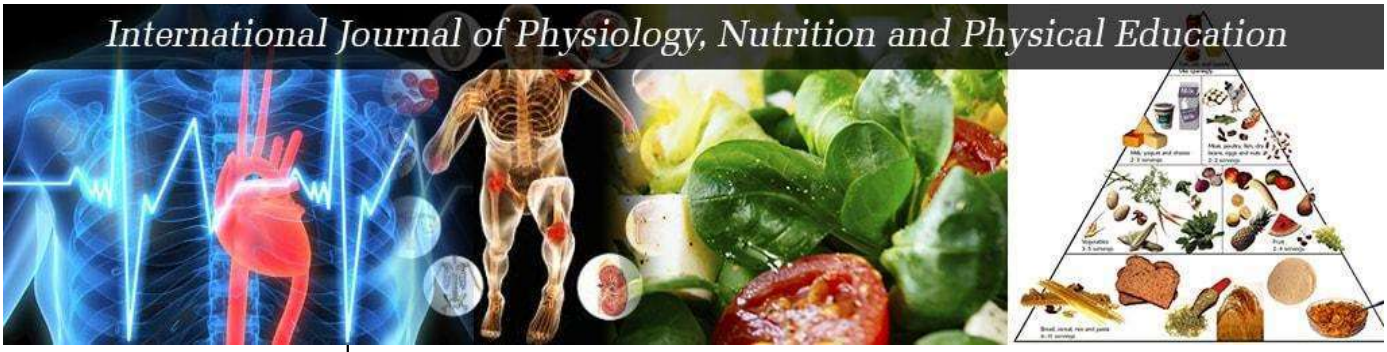
In this paper we have reported the study of the florescence pattern of 2-bromo-3hydroxy-2-nitropropylcinnamate (BNPC) with different ions. The synthesised compound was confirmed by ^{1}H-NMR, ^{13}C-NMR, FT-IR, UV-Vis. and floroscence spectra. The synthesised organic compound was treated with different metal salt for anion and cation sensing. The florescence study reveals that the synthesised compound is exhibiting chemical enhanced florescence quenching for the chloride and sulphate anion and chemical enhanced florescence quenching for iron and nickel cation. The compound can be used for sensing these ions in different solution and medium.

Keywords: florescence, chemical enhanced, quenching.

1. Introduction:

The geminal bromonitroalkanes possess antifungal activitywas suggested by Zsolnai[1] and Hodge, Dawkins and Kropp[2]. Bronopol (2-bromo-2-nitro-1,3-propanediol) is an organic compound that is used as an antimicrobial. It is a white solid and in commercial samples appears yellow. The first synthesis of 2-bromo-2-nitro-1,3-propanediol was reported in 1897. The Boots Company PLC invented Bronopol in the early 1960s and studied its first applications as a preservative for pharmaceuticals. Because of its high activity against bacteria and low mammalian toxicity at in-use levels, especially Gram-negative species[3]. It was being adopted as an antimicrobial in numerous different industrial environments like paper mills, oil exploration, and production facilities, as well as cooling water disinfection plants. Bronopol is employed as a good preservative agent in client merchandise, as well as a wide variety of industrial applications (industrial water system

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Relationship between structural and functional ability of Volleyball Players

Baljeet Singh and Azad Singh

Abstract
The aim of the study was find out the relationship between structural and functional ability of volleyball players. For the purpose of the study twenty (20) subjects were selected randomly from different colleges of the Institute of Professional Studies, Gwalior, (M.P.) all the subjects were state level players who have participated in various state level Volleyball competitions. The age group of the subjects ranged between 18 to 28 years. The test use in this study for the collection of data volleyball playing ability Modified Brady Wall Valley Test were selected because they were found to be most reliable and have been used very often in the professional of physical education and sports. Under this test following criteria were measured standing height, weight, Arm Ratio, Speed, Strength, Endurance and playing ability of the subjects. The data pertaining to standing height, weight, for arm and Upper Arm Ratio and Strength was collected in the indoor stadium of Institute of Professional Studies, Gwalior
(M.P.). To find out the relationship of selected structural and functional variables to the Volleyball playing ability single Shot research design was applied. To find out the relationship of selected structural and functional variable, the Karl Pearson product moment Correlation was use to test the hypothesis and level of significant was set at 0.05. Within the limitations of the present study it is concluded that there is no significance relationship exist between two structural variables i.e. Weight and for and Upper Arm ratio with Volleyball playing ability.

Keywords: Relationship among structural, functional abilities

Introduction
Physical activity is an inherent trait of human being. It develops its own in a natural way. It becomes all the way imperative to identity the nature and the degree of this natural talent and nature modify and refine it to get the cherished outcome. The children perform a lot of activities such as running Jumping, Throwing, Catching, Kicking, Striking etc. these activities are known as natural or universal skills because they seem common to all the people all over the globe irrespective of geographical, regional, national or racial barriers. These natural abilities ultimately develop into more and more complex and specific sports' skills. The acquisition, modification and perfection of these skills due to the increased capabilities of the individual that come with grow and development. The extent or the degree of these natural traits differs from person.
This skill combines together and develops into complex forms of highly specific movement obtained through rigorous and strenuous practice and special training. They lay foundations for the fundamental skill and the ultimate complex sports technique. Modern sports are the outcome of long and concerted efforts through improvement, modification and refinement of this simplest form over the ages.
Competition is a product of modern times. It is a challenge which motivate, stimulates and inspire the individual to run faster, jump higher and through farther and to strive to do better than before and to exhibit greater strength, endurance and skill to dominate others. In the modern world of sports, the competition attach greater significant to winning as the philosophy of participation in the field of games and sports has undergone a notable change.
Volleyball which is an excellent all-around team sports has been widely accepted as highly competitive as well as a recreational games, throughout the world. It is now recognized as one of the most breath tacking and dramatic sports of the Olympics both of the players and spectators

Mapping Runaways: A Qualitative Examination Of Psychological Differentials In Attachment

Ashima Choudhary, Srishti Kapoor and Kshitija Wason

Men, women and transgender all have been affected by the social structures brought on by the society. Children have been the most affected as they are the most vulnerable and dependent section of the society. These exploitations hinder the growth of the children that leads to behavioral changes and children runaway to escape these situations. Missing children is a major issue in India that needs more concern and systematic attention. There are approximately 47 million runaway and homeless adolescents on the streets of India. Present Research is an exploratory Indian study to examine the psychological aspects of running away among the children of India. The sample comprises of 50 runaway children (25 males and 25 females) residing in a non-governmental organization. The Mean age of the sample is 13.44 years. Qualitative measures were formulated and data was collectedthrough activities in an interactive process so that insight could be garnered about the children's thought processes in an indirect manner. Responses were transcribed and thematic analysis was done. Our findings cover the differences among male and female runaway children through the lens of psychological constructs of attachment, personality and attitude. The study has implications for intervention-based programs and restitution of these children and it provides insight into the social factors as well as psychological wounds that would be beneficial in the healing process.

"Children, especially those who feel caged in the homes of their parents, often seek to take flight"

Introduction

India is known for its rich culture, multiple religions and its diversity, all these leading to a culture valued for its different value systems and heritage. India is evolving but it still holds onto certain systems. A rigid hierarchical system has led to an unbalanced power structure, which has resulted in exploitation of all sections of the society. Men, women and transgender all have been affected by the social structures brought on by these social systems. However, children have been the most affected as they are the most vulnerable and dependent section of the society. These exploitations hinder the growth of the children physically, mentally and emotionally. This leads to behavioral changes and children runaway to escape these situations temporarily or permanently. Some children run away from their homes multiple times even after being rescued. In the real world, these children after running away face many difficulties and atrocities such as human trafficking and forced labor. They live by rag picking, doing petty crimes, selling of articles on traffic signals, drug peddling, and if they are left with no option they get into begging (Mangoli & Attar, 2016). Therefore, it is important to understand their perils and help these children so that they can have a normal childhood. Missing children is a major issue in India that needs more concern and systematic attention. Based on State Police Records, it has ben calculated that every year more than 44,000 children are reported missing all over the country. Of these, around 11,000 remain untraced. It has been found that many cases of missing children may never be reported because families of these children are from marginalized background and may not have access to report a case of a missing child and therefore the number of untraced children might be much higher.In 2012 the Delhi police received approximately five to seven cases a day of children running away from their homes reported Delhi police, PRO Rajat Bhagat. Most of the children are from secluded and sheltered regions and they run off to big cities like Delhi, Mumbai, Hyderabad, Kolkata and so on.

"According to data from the National Crime Records Bureau (NCRB), in India, a child goes missing every eight minutes and almost 40% of these children have not been found." It has been found that girls are as likely as boys to runaway. An NGO, CRY (Child Rights and You) estimated

KEYWORDS:Agency, Attachment,Peer Influence and Runaway children

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ROLE OF BRAND HATE ON THE RELATIONSHIP OF CONSUMER PERSONALITY TRAITS AND BRAND LOYALTY

Sunita Gupta*, Pankaj Gupta, Renu Yadav*****

Abstract: *This research examines relationship between consumer personality traits comprising of extraversion, agreeableness, openness to experience, and conscientiousness and brand loyalty. Further, this relationship is tested by introducing a mediating variable namely Brand hate. Brand hate is the negative emotional effect of the consumer towards the brand. Convenience sampling was used to collect the primary data of the respondents. The study is carried out on a sample of 250 respondents. Theoretical model was tested through structural equation modelling using SPSS 24 and Amos 22. It is found that all personality traits variables studied have a direct relationship with brand loyalty. Mediation results indicate that brand hate fully mediates the relationship amongst extroversion-brand loyalty and conscientiousness-brand loyalty. Furthermore, partial mediation of brand hate exists between agreeableness-brand loyalty and openness to experience-brand loyalty. This research presents new perspectives for constructing a prudent model of consumer personality traits and brand loyalty by incorporating brand hate as the mediator. Findings, implications, and limitations are discussed towards the end of the paper.*

Keywords: *Consumer Personality, Brand Hate, Brand Loyalty, Personality Traits*

INTRODUCTION

As customers, one prefers not just to buy those products that are really needed, but also those products which one perceives as being congruent with his/her "self-concept." An individual wants such products which could reflect with one's personality. Marketers are taking a note of it and offering products that exceed customer's expectations (Breschi, 2019). This influences customer to make repeat purchases, which ultimately leads to brand loyalty. But, what if a brand does not meet the expectations of the customer? What if customer start developing hate for a certain brand? Does this affect the relationship between what customer perceives about themselves and what makes them loyal to a certain brand?

It would be appropriate to state that personality of an individual helps in determining his/her purchase behavior. Studies conducted in the past provide evidence for the same (Azzadin et al., 2012; Onu & Garvey, 2014; Udo-Imeh, 2015; Middlebrook, 2019). Personality pertains to distinctive psychological attributes that give rise to consistent and long-lasting reactions towards one's surroundings (Kotler, 2010). Traits such as extraversion, openness, agreeableness, conscientiousness, and neuroticism, describes personality of an individual (John & Srivastava, 1999). These five factors, when combined together, came to be known as the OCEAN model of personality (Costa & McCrae, 1992). According to (Mulyanegara, Tsarenko & Anderson, 2009), extraversion is a trait that characterizes itself as enthusiastic, confident, and highly emotionally expressive. Consciousness comprises of thoughtful and goal-oriented behaviour (Mulyanegara et al., 2019). Agreeableness is predicated on characteristics including benevolence, companionship, generosity, and selflessness (Costa & McCrae, 1985). Neuroticism is described as a tendency to encounter uncomfortable and disconcerting thoughts, feelings as well as emotions (Shaver & Brennan, 1992). Openness is described as being receptive to newer ideologies, thoughts, and experiences and has been directly connected to innovation and creativity (Shaver & Brennan, 1992).

Since each individual has a distinct blend of personality traits and each one is unique, they may encounter different emotions and thoughts and behave differently in the same scenario (Durukan & Bozaci, 2011). So, can this combination of characteristics, helps in identifying whether an individual will stay loyal to a brand or not? (Lin, 2010; Durukan & Bozaci, 2011) agree to this statement. Relationship, both

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CONSUMERS' BUYING BEHAVIOR TOWARDS POINT-OF-SALES PROMOTION:A LITERATURE REVIEW

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ABSTRACT

Retailers and manufacturers, today are more interested in gaining an insight into consumers' buying behaviour through promotional instruments at point of purchase, in-store displays to getnovelclienteles and maintain the prevailing ones. This study gives an insight into the liaisonamongst consumers' buying behaviour and point-of-sales promotion techniques used by various dealers and manufacturers.

KEYWORDS: Consumers' Buying Behaviour & Promotion Techniques

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Original Article

INTRODUCTION

Point-of-sales promotion tools are basically interimimplements intended towards producing an fast and instantaneous sales effect. Retail outlets endeavour to sway the consumers' behaviour by hurlingstrikingpersuasivedrives and at the same time familiarisingtheir consumers about deviations in their prices. These techniques significantly stimulate the consumers' buying behaviour which is driven by the product's charm, concealedanxiety of not getting such deals again and in-store shopping stimulation and excitement.

Numerous point-of-sale promotional instruments are implemented by the vendors or manufacturers tostimuluate the purchase behaviour of consumers' positively. Businesses reach customers through their goods and services. To reach patrons, copiousdoings are implemented, which is nothing but advertising and promotion. Marketing guides the tide of merchandises and facilities from producers towards the consumers. Marketplaces, nowadays are tremendously competitive, consequently, anassortment of point-of-sales promotion schemes (monetary and non-monetary) should be employed to stand out among the contenders, rise in the number of consumers and also stimulate their buying behaviour. Promotion isthe forte of marketing.

LITERATURE REVIEW

Rowley (1998) defined promotion as one of the substantialaspects in the marketing mix. It certifies that shoppers are cognizant of the merchandises offered by either retailers or producers.

Banerjee (2009) explained promotional campaigns as an instantaneous tool to stimulate demand for goods. It includes promotionalpropositions which provide additionalturnover or earnings.

Brassington and Pettit (2000) described the main feature of sales promotion tools is that these instrumentsprovides value for money for consumers. They have the capability to attract new and keep loyal

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IMPULSE BUYING BEHAVIOUR IN RETAIL STORES: AN EMPIRICAL STUDY

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Abstract: India is the fifth largest global destination in the retail segment. The retail industry of India has been gradually experiencing a modification with many retail stores being built and operational. Indian consumers experience impulse buying tendency while visiting retail stores. The objective of this research is to investigate the influence of severaldemographic variables of respondents on impulse buying behaviour of consumers. The data was collected using structured questionnaire through convenient sampling. The data was analysed using SPSS version 23 and Smart PLS. Factors influencing the customers while shopping, such as their demographic profiles, annual income, frequency of visits, etc. are some of the facets that would be studied in this paper.

Keywords: Impulse Buying Behavior,.

Introduction

Is impulse buying certainly a spontaneous choice by the customer or simply an unplanned shopping? According to Kollat and Willett(1967), unplanned purchases are triggered by exposure to in-store provocations. Impulse buying behaviour has been emerging as an interesting concept lately in economies such as China and India. Primarily, impulse buying behaviour was deliberated to be unplanned or an unintentional buying (Clover, 1950; West,1951) which advanced sales and earnings.

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Review Article

Understanding the predisposing risk factors of young suicide

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ABSTRACT

Suicide is an unfortunate multifactorial problem impacting families and communities. Many young lives are lost every year due to suicide. There is an urgent need to understand the multifactorial risk factor mechanisms providing vulnerability to suicidal behavior for early detection of impending incidents, monitoring, and prevention. This review aims to give an insight into the various biochemical and genetic markers along with the associated socio-economic factors and mental disorders which contribute to increased suicide risk. The role of different neurotransmitter-associated pathways such as serotonin, gamma aminobutyric acid (GABA), and norepinephrine pathway, and pathways involving the hypothalamic-pituitary-adrenal (HPA) axis, lipid metabolism, and neuroinflammation in suicide ideation and risk have been explored. Understanding of these predisposing factors and associated pathways could help identify the risk and lead to the development of drugs/ treatment to prevent suicides.

Keywords: Suicide, Risk factors, Biochemical markers, Genetic markers, Neuroinflammation, Socio-economic factors, Mental disorders, Substance abuse

INTRODUCTION

Suicide is a very sad and unfortunate event done at a personal level which leaves never-ending pain for the family and friends and indirectly impacts society and the country as a whole. Suicide is defined technically as self-directed injurious behavior with the intention to die and resulting in death. It is different from a suicidal attempt which is a non-successful action and from suicidal behavior, which is a self-directed intention to harm oneself.[1] Suicide is the third leading cause of death in 15-19 years old. As per World Health Organization (WHO) data, 8 lakh people die due to suicide every year.[2] Suicide rates vary substantially between different regions of the world depending on multiple factors and one of them is financial parameter as more than 80% of all suicides occur in countries having low or middle-income.[3] Suicide mortality rates vary from 15.6 per 100,000 in inhabitants of South-East Asia to 5.6 per 100,000 in the Eastern Mediterranean region. The youth, which falls in the age group of 15-29 years, is found to be the most vulnerable group. They find themselves unable to cope up with many new challenges of life. They are at a stage of life when they have to develop their own identity, build self-esteem, acquire new skills, and gain academic excellence to build up a career, self-independence, and confidence to survive. At the same time, they are undergoing physiological and psychological changes. In today's times, the social media and the self-projection to the outside world are putting added pressures. Alcohol and substance abuse is also increasing among the youth. All these factors together impact the mental status of a young mind.[4]

Disruption of various biochemical pathways, such as serotonin, gamma aminobutyric acid (GABA), and norepinephrine pathway, responses such as stress response involving hypothalamic- pituitary- adrenal (HPA), immune response leading to neuroinflammation, and change in molecular homeostasis can lead to increased vulnerability to suicide.[5] Other factors such as socio-

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The Increased Risk of Elderly Population in India in COVID-19 Pandemic

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ABSTRACT

Increase in life expectancy and decline in mortality rate has resulted in a very fast growth rate of elderly population in India. Poor economic condition, low literacy and poor hygiene make the elderly in India at much higher health risk. Most people above the age of 60 suffer from chronic diseases such as, respiratory diseases, cardiovascular diseases (CVD), diabetes, hypertension, dementia, etc. In addition, impaired Immune system associated with old age makes them more susceptible to various infections. The elderly population in India has been the most vulnerable group in COVID-19 pandemic, contributing to ~ 53% of the reported fatalities due to COVID-19. The SARS-CoV-2 virus interacts with angiotensin-converting enzyme 2 (ACE2) on the host cell surface with its S (spike) glycoprotein and then undergoes endocytosis. Inside the cell, the virus replicates and triggers the release of cytokines which can induce an inflammatory response. Chronic increase in systemic inflammation has been seen in the elderly, which is further aggravated on SARS-CoV-2 virus infection. Patients with chronic respiratory diseases have shown significant increase in ACE-2 expression which may increase viral load in case of COVID-19 infection. COVID-19 patients also show elevation of cardiac troponins (cTnI) which puts CVD predisposed patient at a higher risk. The elderly in our country need extra care to be protected from diseases and proper disease management in case of disease manifestation.

Key words: Elders, COVID-19, ACE2, Immunity, Comorbidity

INTRODUCTION

As old age sets in, people above the age of 60 are considered elders. The elderly population in India has steadily increased and has almost doubled in the past 20 years. (Figure 1). [1] While the overall population of India is projected to grow by 40 per cent from 2006 to 2050, the elderly population is projected to grow by 270 percent. Hence, the aging population is expected to surpass the population of children in another 20 years. [2]

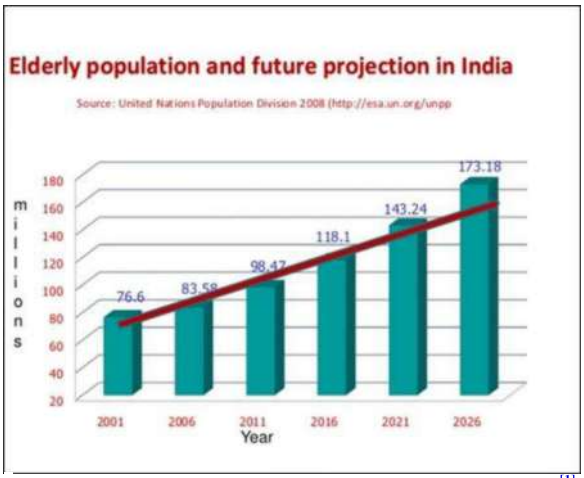


Figure 1. Elderly population and future projection in India. [1]

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Anthropometric Markers as a Paradigm for Obesity Risk Assessment

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Background: Quantification of obesity/adiposity is feasible with different anthropometric characteristics along with the bioelectrical impedance analysis techniques. Recent advancements are now witnessing development of further computations derived from previously established measures to gauge obesity. **Objective:** Main aim of our study was to evaluate the association of anthropometric determinants of obesity with body compositional adiposity variables, and thus identifying the best marker among them emerging out as the probable predictor for compositional adiposity. **Participants and Setting:** 550 female participants within the age of 18 to 23 years were enrolled under this study attending graduation course at University of Delhi. Ethical clearance was received from the institutional head. Informed written consent was taken from every participant. **Design:** All the body measurements were recorded by trained staff using standard techniques. Derived measurements were calculated further. **Analysis:** Data, hence, gathered was undertaken for descriptive and inferential statistical analysis with SPSS 20.0. **Variables Measured and Results:** WHR over-estimated the count for those at risk compared to waist circumference and WHtR. Skeletal muscle fat associated negatively with all anthropometric adiposity indicators. BMI, BAI, WHtR and waist circumference related closely with all body composition cum obesity markers compared to WHR, CI and ABSI. BAI overrated the risk for fat determining body composition parameters the most followed by BMI. ABSI revealed an underestimated risk for augmenting fat content in body, compared to other markers. **Conclusion and Implications:** It is difficult to establish with compliance as to which of the measures used in the study could better predict the perils of obesity but it could be ascertained that some of the newly verified anthropometric adiposity indicators could be administered for determining clinical situations after further validation.

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RESEARCH ARTICLE

INDIA SEEMS TO BE BETTER PLACED IN FIGHTING AGAINST COVID-19: A REVIEW

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Key words:-
COVID-19, Mortality, Pandemic, India

Abstract

When the whole world is reeling under a severe impact of Covid 19, India which is 4 times more populous than US and many other developed nations, is not so severely hit by the epidemic. Despite India's very low per capita income and poorly ranked healthcare system in the world, it has escaped the brunt of the pandemic. Generally epidemics exhibit exponential growth at the beginning but the initial delay and lower mortality have been ensued from many intriguing possibilities such as high geographical temperatures, high immunity due to poor hygiene, BCG vaccinations and lower average age of the population The ongoing review presents a brief perusal of the probable causes for the initial containment of the pandemic and its potential in India.

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Introduction:-

COVID19 is an acronym for Corona Virus Disease of 2019 which is a disease of the virus SARS CoV2 that emerged from the city of Wuhan in China. It has now spread across different nations all over the world [1].

India is a neighboring country and shares its political borders with China, the country from where the first case of infection came to be known. There has been an endless constant battle between countries to fight against the spread of the disease and safeguard its citizens since January'2020 when the virus was first noticed by the World Health Organization (WHO) [1].

Even though India is a populous country with the second highest population in the world, it has been better in controlling the spread of Coronavirus which being highly contagious continues to be a bigger threat to India which has 17.7% of the total world population [2].

Indian government has taken all necessary steps to ensure that the country is well prepared before it's too late by providing improvement in testing kits, labs, medical facilities and building of quarantine centers as India doesn't hold a good ranking in terms of its medical facilities.

By 25th May' 2020, the number of cases reported worldwide were 5,387,650 out of which 344,549 have died. The maximum number of cases has been reported in United States (1,642,021). Other countries after U.S. with maximum number of cases are, Brazil (363,211), Russia (344,481), United Kingdom (259,559), Spain (235,772), Italy

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JBC ARTICLE

The unfoldase ClpC1 of *Mycobacterium tuberculosis* regulates the expression of a distinct subset of proteins having intrinsically disordered termini

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Edited by Ursula Jakob

The human pathogen *Mycobacterium tuberculosis* (Mtb) harbors a well-orchestrated Clp (caseinolytic protease) proteolytic machinery consisting of two oligomeric segments, a barrel-shaped heterotetradecameric protease core comprising the ClpP1 and ClpP2 subunits, and hexameric ring-like ATP-dependent unfoldases composed of ClpX or ClpC1. The roles of the ClpP1P2 protease subunits are well-established in Mtb, but the potential roles of the associated unfoldases, such as ClpC1, remain elusive. Using a CRISPR interference–mediated gene silencing approach, here we demonstrate that *clpC1* is indispensable for the extracellular growth of Mtb and for its survival in macrophages. The results from isobaric tags for relative and absolute quantitation–based quantitative proteomic experiments with *clpC1*- and *clpP2*-depleted Mtb cells suggested that the ClpC1P1P2 complex critically maintains the homeostasis of various growth-essential proteins in Mtb, several of which contain intrinsically disordered regions at their termini. We show that the Clp machinery regulates dosage-sensitive proteins such as the small heat shock protein Hsp20, which exists in a dodecameric conformation. Further, we observed that Hsp20 is poorly expressed in WT Mtb and that its expression is greatly induced upon depletion of *clpC1* or *clpP2*. Remarkably, high Hsp20 protein levels were detected in the *clpC1(−)* or *clpP2(−)* knockdown strains but not in the parental bacteria, despite significant induction of *hsp20* transcripts. In summary, the cellular levels of oligomeric proteins such as Hsp20 are maintained post-translationally through their recognition, disassembly, and degradation by ClpC1, which requires disordered ends in its protein substrates.

Stringent control of protein expression in a pathogen during regular growth condition, as well as in response to extracellular stimuli during infection, is an important determinant of its virulence (1). Proteostasis, a process of maintaining homeostasis for cellular proteins, primarily relies on the synthesis, folding, trafficking, and degradation of proteins (2). Most intracellular proteins constantly undergo degradation and resynthesis. The overall rate of synthesis and degradation decides the shelf life of proteins in the cell, which varies from a few minutes to days (3). In addition, although certain proteins can be overexpressed to multiple orders of magnitude, many proteins are dosage-sensitive, and their overexpression beyond a threshold limit is detrimental for bacterial growth, which must be taken care of by the respective protease machinery (4).

Proteolysis is an essential quality control system of the cell which maintains the level of cellular proteins by involving various proteases. Although general proteolysis is involved in removal of misfolded or damaged proteins, regulated proteolysis works under specific signals. In the cell, proteostasis requires a consorted activity of ATPases associated with diverse cellular activities (AAAs) and proteases. Typically, the multisubunit protease complex consists of the proteolytic component and regulatory ATPases. The ATPases chiefly perform the maintenance function (5), whereas proteases act as final executioners in the life cycle of proteins (6). Known cases of such multicompartmentalized systems such as Clp (caseinolytic protease), Lon protease, or 20S proteasome reveal that the executory nature of proteases is managed by their fundamental architecture comprising of multisubunit chambered structure with a central pore, whereas associated ATPases such as ClpX, ClpA, ClpC1, or 19S proteasome, which are commonly known as unfoldases, recognize, unfold, and translocate the prospective substrate proteins into the proteolytic chamber (7). Hence, studying these diverse proteins will be pivotal in completely understanding the overall protein homeostasis in a cell.

Mycobacterium tuberculosis (Mtb), the causative agent of tuberculosis in humans, stands among the most dreaded and successful human pathogens while silently encompassing the majority of world's population (8). Recent estimates of the absolute concentrations of the annotated proteins in Mtb reveal that 90% are scarcely expressed within a range of 2 orders of magnitude (9). These observations indicate that a large fraction of mycobacterial proteome is tightly regulated. Complex evolution and years of adaptation has empowered Mtb with unique proteostasis network. Although mycobacteria are endowed with a range of chaperones such as GroEL1, GroEL2, DnaK, DnaJ, GrpE, and ClpB involved in regulating the native conformation of protein, presence of Clp, FtsH, and proteasome-like machinery ensures adequate execution of erroneous or terminally exhausted proteins. Although FtsH, a membrane protease, and Pup-proteasome system play crucial roles in mycobacterial survival during various stresses and infection, respectively, the Clp machinery is the standalone cytosolic

This article contains supporting information.

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RESEARCH ARTICLE | *Liver and Biliary Tract Physiology/Pathophysiology*

Nanoformulated SOD1 ameliorates the combined NASH and alcohol-associated liver disease partly via regulating CYP2E1 expression in adipose tissue and liver

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Gopal T, Kumar N, Perriotte-Olson C, Casey CA, Donohue TM Jr, Harris EN, Talmon G, Kabanov AV, Saraswathi V. Nanoformulated SOD1 ameliorates the combined NASH and alcohol-associated liver disease partly via regulating CYP2E1 expression in adipose tissue and liver. *Am J Physiol Gastrointest Liver Physiol* 318: G428–G438, 2020. First published January 13, 2020; doi:10.1152/ajpgi.00217.2019.—Enhanced free fatty acid (FFA) flux from adipose tissue (AT) to liver plays an important role in the development of nonalcoholic steatohepatitis (NASH) and alcohol-associated liver disease (AALD). We determined the effectiveness of nanoformulated superoxide dismutase 1 (Nano) in attenuating liver injury in a mouse model exhibiting a combination of NASH and AALD. Male C57BL6/J mice were fed a chow diet (CD) or a high-fat diet (HF) for 10 wk followed by pair feeding of the Lieber-DeCarli control (control) or ethanol (ET) diet for 4 wk. Nano was administered once every other day for the last 2 wk of ET feeding. Mice were divided into *1*) CD + control diet (CD + Cont), *2*) high-fat diet (HF) + control diet (HF + Cont), *3*) HF + Cont + Nano, *4*) HF + ET diet (HF + ET), and *5*) HF + ET + Nano. The total fat mass, visceral AT mass (VAT), and VAT perilipin 1 content were significantly lower only in HF + ET-fed mice but not in HF + ET + Nano-treated mice compared with controls. The HF + ET-fed mice showed an upregulation of VAT CYP2E1 protein, and Nano abrogated this effect. We noted a significant rise in plasma FFAs, ALT, and monocyte chemoattractant protein-1 in HF + ET-fed mice, which was blunted in HF + ET + Nano-treated mice. HF + ET-induced increases in hepatic steatosis and inflammatory markers were attenuated upon Nano treatment. Nano reduced hepatic CYP2E1 and enhanced catalase levels in HF + ET-fed mice with a concomitant increase in SOD1 protein and activity in liver. Nano was effective in attenuating AT and liver injury in mice exhibiting a combination of NASH and AALD, partly via reduced CYP2E1-mediated ET metabolism in these organs.

NEW & NOTEWORTHY Increased free fatty acid flux from adipose tissue (AT) to liver accompanied by oxidative stress promotes nonalcoholic steatohepatitis (NASH) and alcohol-associated liver injury (AALD). Obesity increases the severity of AALD. Using a two-hit model involving a high-fat diet and chronic ethanol feeding to mice, and treating them with nanoformulated superoxide dismutase (nanoSOD), we have shown that nanoSOD improves AT lipid storage, reduces CYP2E1 in AT and liver, and attenuates the combined NASH/AALD in mice.

AALD; catalase; cytochrome P450 2E1; ethanol; superoxide dismutase

INTRODUCTION

Alcohol-associated liver disease (AALD) is diagnosed in 2 million Americans each year, accounting for 44% of all liver-related deaths. It is the second leading reason for liver transplantation in the United States (26), making AALD a significant public health burden. Nonalcoholic steatohepatitis, another liver pathology that is often associated with obesity, is the third most common indication for liver transplantation in the United States (5). Emerging evidence suggests that the severity of AALD and its progression to steatohepatitis are strongly enhanced by obesity (7, 11). Oxidative stress is a major risk factor in AALD and obesity-related NASH (reviewed in Refs. 21, 46). Mounting evidence suggests that obesity (visceral fat accumulation) and insulin resistance are strongly associated with the severity of AALD (2, 12, 25, 30, 31, 35, 36). Therefore, it is important to study liver injury in a two-hit model involving obesity and ethanol (ET) feeding.

Emerging evidence suggests the importance of adipose tissue (AT) in AALD. An intimate link exists between AT lipolysis and the development of AALD (13, 42, 48). ET promotes AT lipolysis thereby leading to mobilization of free fatty acids (FFAs) to liver. The FFAs are reesterified and stored in the liver leading to hepatic steatosis, an initial event in the pathogenesis of AALD (49). Thus it is reasonable to postulate that in the presence of excess body fat, chronic ET consumption causes increased mobilization of FFAs from AT to liver. It should be pointed out that superoxide generated during CYP2E1-catalyzed ethanol metabolism has an important role in ethanol-induced liver injury (1, 44). Moreover, ethanol

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RESEARCH ARTICLE

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Abstract

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Even though India is a populous country with the second highest population in the world, it has been better in controlling the spread of Coronavirus which being highly contagious continues to be a bigger threat to India which has 17.7% of the total world population [2].

Indian government has taken all necessary steps to ensure that the country is well prepared before it's too late by providing improvement in testing kits, labs, medical facilities and building of quarantine centers as India doesn't hold a good ranking in terms of its medical facilities.

By 25th May' 2020, the number of cases reported worldwide were 5,387,650 out of which 344,549 have died. The maximum number of cases has been reported in United States (1,642,021). Other countries after U.S. with maximum number of cases are, Brazil (363,211), Russia (344,481), United Kingdom (259,559), Spain (235,772), Italy

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Effect of adiphenine hydrochloride on the structure of bovine serum albumin: Spectroscopic and docking study

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ABSTRACT

The interaction of adiphenine hydrochloride (ADP) with bovine serum albumin (BSA) has been investigated by fluorescence, time resolved fluorescence, UV–visible, FTIR and tensiometric technique. Molecular docking has also been done to show the available binding sites on BSA for ADP. Critical micelle concentration (cmc), surface excess (Γ_{max}), the minimum area per molecule (A_{min}), and molar free energy at the maximum adsorption attained at cmc (G_{min}) were evaluated to study the interfacial properties of ADP. Fluorescence spectroscopy was used to observe the effective quenching mechanism between BSA and ADP which was further confirmed by time-resolved fluorescence spectroscopy. Different thermodynamic parameters such as molar enthalpy (ΔH), molar Gibbs free energy (ΔG), and molar entropy contribution (ΔS) were evaluated by using van't Hoff equation which showed that the binding mechanism was enthalpy driven and the major forces involved between ADP and BSA interaction are van der Waals and hydrogen bonding. UV–vis spectroscopy results showed the complex formation between ADP and BSA. Synchronous fluorescence spectra reveal that there is a slight effect of ADP on the fluorescence intensity of tyrosine but a significant effect on tryptophan residue of BSA. FTIR results suggested the ADP induced conformational changes in BSA. In addition, the molecular docking and competitive binding results showed that the ADP molecule binds with BSA on Sudlow site I (subdomain IIA). The esterase-like enzymatic activity study revealed that the ADP inhibits the enzymatic activity of BSA.

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1. Introduction

The most significant role of bovine serum albumin (BSA) is the distribution and metabolism of numerous biologically active compounds like drugs and natural products [1,2]. Also, BSA binds to compounds that are able to alter heat denaturation [3] of the protein such as free fatty acids, lipids [4]. It is a large globular protein (66,500 Da) specifically constituted of 583 amino acid residues that form sub-domains by paired 17 disulfide bonds [5–7]. Architecturally, it consists of three domains I, II and III. Each domain is further subdivided into two sub-domains (A and B). BSA comprises of two tryptophan residues, Trp-134 and Trp-212, in the domains I and II, respectively. The Trp-134 is situated close to the protein surface in a hydrophilic environment, whereas Trp-212 is found within the protein pocket surrounded by a hydrophobic environment [8]. One of the main focuses of biophysical research is to study the interaction of small molecules (e.g., drugs) with biomacromolecules like proteins which aids to enhance our understanding about drug pharmacokinetics, the unbound drug concentration and its distribution and elimination. In general, the drug-albumin interactions are mostly dynamic and reversible processes with quick dissociation of bound drug molecules from the drug-protein complex. Such interactions are usually mediated by one or two primary (higher affinity) binding sites along with a varied number of secondary (lower affinity) sites [9].

There is plethora of literature available on the thermodynamics, aggregation characteristics, and surface properties of serum albumin-ligand binding [10,11] including several tricyclic antidepressant drug-serum albumin interaction [12]. Also, lot of work

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RESEARCH ARTICLE

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Esterase activity and interaction of human hemoglobin with diclofenac sodium: A spectroscopic and molecular docking study

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Abstract

To get an idea about the pharmacokinetics and pharmacodynamics, it is important to study the drug-protein interaction. Therefore, herein, we studied the interaction of diclofenac sodium (DIC) with human hemoglobin. The binding study of nonsteroidal antiinflammatory drug, DIC with human hemoglobin (HHB) was done by utilizing fluorescence, UV–visible, time-resolved fluorescence and far-UV circular dichroism spectroscopy (CD). Various thermodynamic parameters such as enthalpy change (ΔH), entropy change (ΔS), and Gibbs free energy change (ΔG) were also calculated. CD results showed that DIC induces secondary structure change in HHB. Fluorescence resonance energy transfer was also performed. Additionally, it was also observed that DIC inhibits the esterase-like enzymatic activity of HHB via competitive inhibition.

KEYWORDS

diclofenac sodium, esterase activity, human hemoglobin, quenching, time-resolved fluorescence

1 | INTRODUCTION

Drugs have been used by mankind of late. There are multiple uses of drugs, which include treatment of various diseases and recreational purpose. Various drugs have come in market, which induce a sense of calm and tranquility. It has been found that certain drugs called narcotics have the addictive effect although they help in relieving pain as well. In past several decades, the interaction of drugs with proteins has extensively been studied.[1,2] However, the studies of interaction of proteins with nonsteroidal antiinflammatory drugs are still in scarcity. The interaction of proteins with drugs plays a vital role in adsorption, distribution, metabolism, and transportation of various drugs, nutrients, and other important exterior and interior molecules.[3] The importance of surfactants and drugs in various interdisciplinary research areas is increasing day by day including their studies on biomolecules.[4–6] Also, the understanding of binding of drugs with proteins is important to get an idea about pharmacodynamics and pharmacokinetics of drugs.[7] Patel et al. recently reported that the presence of urea at blood concentration level enhanced the binding between diclofenac and bovine serum albumin.[8] Tang et al. revealed that 3,4,5-tri-O-Caffeoylquinic acid binds strongly with human serum albumin with 1:1 binding ratio at 298 K.[9] Protein-drug binding may result in change in the conformation of protein. These conformational changes impair the normal functions of the protein in vivo. As the bound drug cannot diffuse from blood to target tissues, the therapeutic potential of drug is dependent on the unbound concentration of the drug in the blood.[10,11] Strong binding reduces the free drug concentration while as weak binding shortens the life time of drug and thus affects its proper distribution.[12,13] Therefore, the study of drug–protein interaction is of prime importance as it may prove fruitful in understanding the pharmacokinetics and pharmacodynamics of drugs.[10] Further, designing of new drugs poses a great difficulty to pharmaceutical industry as the new drugs have to go through various trials including treating healthy individuals in clinical trials for long

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Research Article

Jyoti Sharma and Ajay Kumar*

Continuous abstract wavelet transform on homogeneous spaces

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Abstract: The support of a wavelet transform associated with a square integrable irreducible representation of a homogeneous space is shown to have infinite measure. Assumptions are illustrated and supported by examples. The pointwise homogeneous approximation property for a wavelet transform has been investigated. An analogue of Heisenberg type inequality is also obtained for a wavelet transform on a wavelet group.

Keywords: Abstract wavelet transform, square integrable representation, Heisenberg type inequality

MSC 2010: Primary 43A85; secondary 65T60, 42C40

1 Introduction and preliminaries

The Fourier transform is a powerful tool for signal representations and feature detection in signals. Using Fourier analysis, we may analyze a signal or function by fragmenting into different components and utilizing them to reconstruct. A problem involved in using Fourier analysis is that we only have frequency resolution of the signal but not the time resolution. This issue can be tackled by using other transforms such as a Gabor transform and a wavelet transform. Continuous wavelet transform has been widely used in signal and image processing for investigating time-varying frequency. Unlike Fourier analysis, wavelet analysis expands functions not in terms of trigonometric polynomials but in terms of wavelets, that are generated in the form of translations and dilations of a fixed function called the admissible wavelet. Wavelets obtained in such a manner have special scaling properties. They are localized in time and frequency, permitting a closer connection between the function and its coefficients. These have been recently studied in harmonic analysis in [1, 3, 5, 8, 13].

We are interested in group theoretic developments of the construction of a continuous wavelet transform. Our purpose is to study some characterizations of functions, that can serve as scaling functions.

We now state some basic definitions and properties of a wavelet transform on arbitrary homogeneous spaces. For a detailed study, see [1, 3, 5].

Let G be a locally compact group with left Haar measure μ and H be a closed subgroup of G. The left coset space G/H is a homogeneous space under the quotient topology. Also, G acts on G/H via $(g, aH) \to gaH$. We assume that $\Delta_H = \Delta_G|_H$, where Δ_G and Δ_H are the modular functions of G and H, respectively. For the pair (G, H), a rho function is a continuous function $\rho\colon G \to (0, \infty)$ such that $\rho(gh) = \rho(g)$ for all $g \in G$ and $h \in H$ (see [7, p. 65]). Let $\mathcal{U}(\mathcal{H}_\pi)$ be the group consisting of all unitary operators on some Hilbert space $\mathcal{H}_\pi$. A continuous unitary representation of the homogeneous space G/H is a map π from G/H into $\mathcal{U}(\mathcal{H}_\pi)$, for which $gH \to \langle \pi(gH)\xi, \eta\rangle$ is a continuous map from G/H to $\mathbb{C}$ for each $\xi, \eta \in \mathcal{H}_\pi$ satisfying

$$\pi(gkH) = \pi(gH)\pi(kH) \quad \text{and} \quad \pi(g^{-1}H) = \pi(gH)^*,$$

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Advances in Applied Clifford Algebras



Clifford Valued Shearlet Transform

Jyoti Sharma and Shivam Kumar Singh*

Communicated by Eckhard Hitzer

Abstract. This paper deals with the construction of $n = 3 \bmod 4$ Clifford algebra $Cl_{n,0}$-valued admissible shearlet transform using the shearlet group $(\mathbb{R}^* \ltimes \mathbb{R}^{n-1}) \ltimes \mathbb{R}^n$, a subgroup of affine group of $\mathbb{R}^n$. The admissibility conditions for a nonzero Clifford valued square integrable function have been obtained. Various properties such as reconstruction formula, orthogonality relation, isometry and reproducing kernel have been dealt. As an application, Heisenberg type uncertainty principle for Clifford shearlet transform has been derived.

Mathematics Subject Classification. Primary 42C40, 15A66; Secondary 94A12.

Keywords. Clifford Fourier transform, Clifford shearlet transform, shearlet group, uncertainty principle.

1. Introduction

The Fourier transform is extensively used in the field of signal processing. The representation of a signal using Fourier transform is helpful in solving many problems. But, Fourier transform does not reflect how the frequencies of a signal vary with time and it is very difficult to tell where a certain frequency has occurred. To tackle this problem one can use time-scale or space-scale representation of signals known as wavelet transform.

As oppose to Fourier analysis, wavelet analysis expands functions not in terms of trigonometric polynomials but in terms of wavelets, which are generated in the form of translations and dilations of a fixed function called the mother or admissible wavelet. Wavelets obtained in this way have special scaling properties. In particular, they are localized in time and frequency, permitting a closer connection between the function being represented and their coefficients.

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Astha Chauhan and Rajan Arora*

Solution of the Riemann problem for an ideal polytropic dusty gas in magnetogasdynamics

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Abstract: The main aim of this paper is, to obtain the analytical solution of the Riemann problem for a quasi-linear system of equations, which describe the one-dimensional unsteady flow of an ideal polytropic dusty gas in magnetogasdynamics without any restriction on the initial data. By using the Rankine-Hugoniot (R-H) and Lax conditions, the explicit expressions of elementary wave solutions (i. e., shock waves, simple waves and contact discontinuities) are derived. In the flow field, the velocity and density distributions for the compressive and rarefaction waves are discussed and shown graphically. It is also shown how the presence of small solid particles and magnetic field affect the velocity and density across the elementary waves. It is an interesting fact about this study that the results obtained for the Riemann problem are in closed form.

Keywords: contact discontinuity; dusty gas; magnetogasdynamics; rarefaction wave; Riemann problem; shock wave.

1 Introduction

In recent years, the solutions of Riemann problem for a system of conservation laws have grabbed the undivided attention of the researchers from the theoretical and numerical points of view in real gas flow, gas dynamics, magnetogasdynamics, shallow water flow, etc. In the case of the Euler equations, the Riemann problem corresponds to the so-called shock-tube problem, a fundamental physical problem in gas dynamics. One can go through the book [1] for its detailed discussion. The Riemann solution consists of three waves with single contact discontinuity as the middle one and the remaining two are shock or rarefaction waves. All the features of the solution of the Riemann problem such as shock waves, rarefaction waves and contact discontinuity appear in the form of characteristics. Therefore, it is convenient for the researchers/readers to understand the conservation form of Euler equations. The solution of the Riemann problem gives an idea of the wave structure of a system of non-linear hyperbolic differential equations. In recent years, the solutions of Riemann problem in gas dynamics have been obtained extensively by many researchers [2–4]. Lax [5] obtained the solution of the Riemann problem for the case when the difference between the initial states V_r and V_l, $\|V_l - V_r\|$ is sufficiently small, where V_r and V_l are the vectors of conserved variables to the right and left of $x = 0$ separated by a discontinuity at $x = 0$, respectively. Dafermos [6] established the existence of the solutions of the Riemann problem for a hyperbolic system of conservation laws by the viscosity method. Giacomazzo and Rezzolla [7], and Romero et al. [8] determined the exact solutions of the Riemann problem in magnetohydrodynamics. Ambika and Radha [9] solved the Riemann problem in a non-ideal gas. They have determined the explicit form of solutions of shock and rarefaction waves, and also derived the necessary and sufficient conditions on the initial data from which existence and uniqueness of the solution for shocks and rarefaction waves are determined. Recently, Gupta et al. [10] studied the Riemann problem in magnetogasdynamics for a non-ideal polytropic gas and derived the explicit form of solutions of shock waves, simple waves and contact discontinuity. The effects of non-idealness and dusty gas particles on the compressive and rarefaction waves are discussed by them. Wang [11] studied the Riemann problem for generalized Chaplygin gas dynamics. The stability of the Riemann solutions with respect to the initial data is also discussed by him. Bernetti et al. [12] studied the Riemann problem for the shallow water equations with a piecewise constant bottom geometry and obtained the self-similar solution. Uniqueness of the solution is also discussed by them. Shen [13] solved the Riemann problem for Chaplygin gas dynamics with a Coulomb-like friction term. He derived the generalized R-H conditions for delta shock wave and shown that in Riemann solutions, the delta shock wave

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Regular Article



Similarity solutions for the strong shock waves in magnetogasdynamics with the effect of monochromatic radiation

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Abstract In this paper, the method of invariance of Lie group is used to find the similarity solutions of the cylindrical shock waves for one-dimensional unsteady flow in magnetogasdynamics in the presence of monochromatic radiation. The density is assumed to be non-uniform ahead of the shock. The radiation flux is assumed to move through the gas. It is also shown that how the radiation parameter, ambient density exponent, ratio of specific heats (adiabatic constant) and the initial magnetic field strength affect the profiles of the flow variables. It is found that the shock wave decays in the presence of strong magnetic field and shows reverse behavior in the case of monochromatic radiation, i.e., the shock wave grows faster in the presence of radiation. To obtain the similarity solutions and the profiles of the flow variables, numerical calculations are performed using the software package MATHEMATICA.

1 Introduction

Most of the physical phenomena in our world are essentially nonlinear and can be described by the mathematical models in the form of partial differential equations (PDEs). These PDEs play an important role in many areas of physics: astrophysics, gas dynamics, combustion theory, cosmology, etc. With the help of the basic laws of mechanics and thermodynamics, the theoretical foundation of gas dynamics is formed. Study of propagation of the shock wave in the presence of monochromatic radiation is a topic of great importance as these phenomena are well marked in disassembled nature of the absorption of the energy. "At rest, when a gas occupies a half space bounded by a fixed plane wall, and the radiation flux moves through the gas in the direction of the wall with constant intensity on unit area, then from the instant of arrival of the radiation at the wall, a shock wave propagates out from the latter in the opposite direction of the radiation flux energy which is absorbed in the zone between the wall and the shock wave. Also, the radiation is not absorbed into the undisturbed medium. In this case, the gas does not radiate itself and part of the incident radiation flux reaches the wall without interacting with it. This phenomenon is called monochromatic radiation [1]." The

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RESEARCH ARTICLE

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Lie symmetry analysis, optimal system, and generalized group invariant solutions of the (2 + 1)-dimensional Date–Jimbo–Kashiwara–Miwa equation

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In this work, Lie group theoretic method is used to carry out the similarity reduction and solitary wave solutions of (2 + 1)-dimensional Date–Jimbo–Kashiwara–Miwa (DJKM) equation. The equation describes the propagation of nonlinear dispersive waves in inhomogeneous media. Under the invariance property of Lie groups, the infinitesimal generators for the governing equation have been obtained. Thereafter, commutator table, adjoint table, invariant functions, and one-dimensional optimal system of subalgebras are derived by using Lie point symmetries. The symmetry reductions and some group invariant solutions of the DJKM equation are obtained based on some subalgebras. The obtained solutions are new and more general than the rest while known results reported in the literature. In order to show the physical affirmation of the results, the obtained solutions are supplemented through numerical simulation. Thus, the solitary wave, doubly soliton, multi soliton, and dark soliton profiles of the solutions are traced to make this research physically meaningful.

KEYWORDS

adjoint matrix, Date–Jimbo–Kashiwara–Miwa (DJKM) equation, exact invariant solutions, Lie symmetry analysis, optimal system of subalgebras

MSC CLASSIFICATION

76M60; 22E60; 17B80; 17B45

1 | INTRODUCTION

Nonlinear phenomena play a vital role in the area of applied mathematics. Such phenomena occur in fluid mechanics, biology, viscoelastic materials, and so on. These nonlinear phenomena are expressed in terms of nonlinear Partial Differential Equations (PDEs). Many researchers are trying to solve these nonlinear PDEs through analytical and numerical techniques because of their great applications in real life. In the recent years, many direct methods have been developed to find the exact solutions of PDEs such as Backlund transformation method,[1] the exp-function method,[2,3] the inverse scattering method,[4] the auxiliary equation method,[5] the direct algebraic method,[6] the modified extended direct algebraic method,[7] the F-expansion method,[8] the Kudryashov method,[9] (G'/G)-expansion method,[10] Lax Pair,[11] novel test function method,[12] and Lie symmetry method.[13-16] Lie symmetry method was first introduced by Sophus Lie[17] in 1881. In this method, the number of independent variables is reduced to obtain Ordinary Differential Equations (ODEs). These ODEs are solved numerically or analytically to obtain the solution of given equation.

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ORIGINAL PAPER

Self-similar solutions of cylindrical shock wave in a dusty gas

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Abstract: Self-similar solutions are determined for one-dimensional unsteady and cylindrically symmetric flow, driven by a moving piston in a dusty gas. Solid particles of the gas are continuously distributed. The medium has been taken uniform. It is supposed that the equilibrium condition for the flow holds and the piston continuously supplied the variable energy input. Solutions are determined for both types of flows, i.e., for isothermal flow and adiabatic flow. The effects of different values of the non-idealness parameter, magnetic field, mass concentration and the density ratio of the solid particles with the initial density of the mixture are shown in detail. A comparison has been shown between the adiabatic and isothermal flows. Numerical calculations have been done to obtain the flow profiles of variables. The computational work has been done using the software MATLAB.

Keywords: Shock waves; Similarity solutions; Dusty gas; Magnetic field

PACS Nos.: 43.25.Cb; 47.40.Nm

1. Introduction

Study of the propagation of shock waves is very important because this phenomenon is well marked in the disassembled nature of the absorption of energy. The study of propagation of strong shock wave has always been given undivided attention by the various research groups in the field of science. Particularly, it is useful in nuclear science, plasma physics, geophysics and astrophysics. Converging shock waves are generated naturally in collapsing spheres and by the sudden release of energy such as explosions. The higher the increase in pressure and temperature, the stronger the shock. Shocks waves are observed at many places like in the snapping of belts, nature and laboratory, etc. The strong converging shocks play an important role in the field of material synthesis, where the hardness, phase and other properties of a material are changed because of shock compression. Shock formation occurs naturally in different physical situations such as supernova explosions, stellar winds, photo-ionized gas and collisions between clumps of interstellar gas. Shocks are ubiquitary throughout the universe and quite useful in generation of energy.

Shock waves are essentially the waves propagating at the velocities which are higher than the speed of sound. Shock waves sharply raise the pressure and temperature of the medium. Shock waves are very thin, and the thickness of shock wave is about 10^{-7} m for air at ambient conditions. The propagation of shock wave produced by the sudden point explosion in an ideal gas has been analyzed by several authors (see [1–3]). The first work on the converging shock waves was done by Guderley [4]. He has studied cylindrical and spherical powerful shocks in the neighborhood of the center of the cylinder axis. Later, the propagation of shock waves has been studied by Grover and Hardy [5]. Their work shows an exposition of a self-similar solution to the hydrodynamic equations in planar symmetry. They have taken a medium of exponentially varying density and presented the solution which describes an explosion in the atmosphere. Verma and Singh [6] studied the magnetogasdynamic spherical shock wave. The effects of magnetic field on velocity, density and pressure are discussed by them.

The study of the shock wave in a dusty gas (i.e., a mixture of small solid particles and non-ideal gas) is a topic of great importance due to its wide applications to lunar ash flow, coal-mine blast, bomb blast, nozzle flow, volcanic explosions, underground explosions, supersonic flight in the dusty air, the formation of polluted crystals, metalized propellant rocket, star formation and many other problems of

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Invariance analysis, exact solutions and conservation laws of (2+1)-dimensional dispersive long wave equations

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Abstract

In this article, some new exact explicit solutions of (2+1)-dimensional dispersive long wave (DLW) equations are obtained by using the similarity transformation method under some restrictions imposed on the infinitesimals. This method reduces the dimension of PDEs by one after applying once. By choosing the suitable values of arbitrary functions involved in the expressions of infinitesimals, the system of PDEs is converted into the system of ODEs with the help of similarity variables. Under the suitable choice of arbitrary constants, the graphical representation of the obtained solutions are shown in order to highlight the importance of the study. The adjoint table, conservation laws and optimal system of DLW system are also obtained.

Keywords: dispersive long wave (DLW) equations, similarity transformation method, infinitesimal generator, adjoint equations, conservation laws, similarity solutions

(Some figures may appear in colour only in the online journal)

1. Introduction

Theory of nonlinear evolution equations attracts the attention of physicists and mathematicians because of their applications in real life problems. Many researchers are trying to find the exact solutions of these complex phenomena in many field of science and engineering such as plasma physics, biology, chemistry, nonlinear optics, fluid dynamics etc. The complex phenomena are modeled in the form of nonlinear partial differential equations (PDEs). There are so many powerful and efficient methods that have been derived to solve these PDEs like Hyperbolic tangent method [1], Homogeneous balance method [2], Inverse scattering transformation [3] and Lie symmetry method [4–7] etc. The Lie symmetry method, which was first introduced by Lie [8] in 1881, is one of the powerful and reliable method to solve PDEs.

In this article, the Lie symmetry technique is used to find the explicit solution expressions of the (2+1)-dimensional dispersive long wave (DLW) equations which is of the form [9]:

$$\begin{aligned} u_{yt} + v_{xx} + (uu_x)_y = 0, \\ v_t + u_x + (uv)_x + u_{xxy} = 0. \end{aligned} \tag{1.1}$$

1.1. Formation of the DLW system

The integrable DLW equations are given as [10]:

$$\begin{aligned} u_t = -v_x - \frac{(u^2)_x}{2}, \\ v_t = -(uv + u + u_{xx})_x, \end{aligned} \tag{1.2}$$

where $u(x, t)$ is the horizontal velocity and $v(x, t)$ is the deviation height of the surface wave, which propagates along x-axis. This system of equations has been derived in context of water waves which propagates in infinitely long channels having finite constant depth. Then, to cover the situation of open seas or wide channels, two different extensions of this

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Kajal Sharma, Rajan Arora, Astha Chauhan* and Ashish Tiwari

Propagation of Waves in a Nonideal Magnetogasdynamics with Dust Particles

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Abstract: In this article, we use the surface theory and compatibility conditions to describe the behaviour of wave propagation and their culmination into a shock wave in nonideal reacting gas with dust particles. The one-dimensional steepening of waves has been considered. A Bernoulli-type transport equation for the velocity gradient has been obtained. A numerical approach is used to explain the effects of van der Waals excluded volume of the medium, the ratio of specific heats, and the mass concentration of the solid particles on the shock wave.

Keywords: Breaking of Waves; Dusty Gas; Magnetic Field; Singular Surface Theory.

1 Introduction

Mathematicians and physicists have developed a great interest in the study of nonlinear waves because of its applications in many areas such as plasma physics, astrophysics, aerodynamics, nuclear science, etc. The field of shock waves has become very interesting not only because of its great scope in research area but also of its practical applications, as it is successfully used in medical field also. The investigation of shock waves is important for the point of view of research and practical applications.

The wave is considered as moving surface under which the variables and their derivatives undergo certain kind of discontinuities that are carried along by the surface. These discontinuities are bound to be interrelated. The relations that connect the field variables and their derivatives are known as compatibility conditions. These relations are defined along both sides of the discontinuity surface. These conditions have arisen because of the dynamical conditions that define the properties and behaviour of the material. The compatibility condition of first kind is known as Rankine–Hugoniot jump conditions. This set of compatibility conditions, which is a consequence of conservation laws, holds across the discontinuity surface. The relations between the first-order derivatives of the field variables on the two sides of the discontinuity surface and its speed of propagation are known as compatibility condition of first order. The compatibility conditions for the second- and higher-order derivatives can be obtained with the assumption of smooth wavefront. The geometrical and kinematical compatibility conditions of first and second order were developed by Thomas [1]. The growth and decay of discontinuities have been studied by Coleman and Gurtin [2]. When the wave steepened, the singular surface theory has been studied by Shyam et al. [3]. Chadha and Jena [4] investigated different modes of wave propagation using the compatibility conditions and singular surface theory suggested by Thomas.

When the energy of the electric field is much smaller than that of magnetic field, then all the electromagnetic quantities can be expressed in terms of magnetic field, and then only the interaction between gas-dynamic field and magnetic field can be considered. Such analysis is known as a magnetogasdynamics. Many investigators are interested in the propagation of shock waves influenced by strong magnetic field. Arora et al. [5] have studied the shock waves in magnetogasdynamics using similarity method. Pandey et al. [6] have obtained the exact solutions of magnetogasdynamics using Lie symmetry analysis. A detailed study on weak shock wave in nonideal magnetogasdynamics has been done by Nath et al. [7]. Chaturvedi et al. [8] described the evolution of weak shock wave in two-dimensional steady supersonic flow in dusty gas. The evolution of compression pulses in magnetohydrodynamics has been studied by Sharma [9]. The self-similar solutions of exponential shock waves and imploding shocks in nonideal magnetogasdynamics and the weak discontinuity in radiative magnetogasdynamics have been described by Singh et al. [10–14].

The study of fluid flow containing dust particles has grabbed undivided attentions by the researchers due to its wide applications in environmental and industrial fields

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ORIGINAL PAPER

Steepening of waves in non-ideal reacting gas with dust particles

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Abstract: In this paper, the surface theory and compatibility conditions are used to describe the behavior of wave propagation and their culmination into a shock wave in a non-ideal reacting gas with dust particles. The one-dimensional steepening of waves is considered. A Bernoulli-type transport equation for the velocity gradient is obtained. A numerical approach is used to explain the effects of van der Waals excluded volume of the medium, radiation parameter, ratio of specific heats and dust particles.

Keywords: Singular surface theory; Compatibility conditions; Dusty gas; Reacting gas; Breaking of waves

1. Introduction

Study of propagation of nonlinear waves has become a very interesting topic for both the mathematicians and the physicists because of their applications in geophysics, nuclear science, fusion reaction, astrophysics and in the motion of satellites, etc. When the nonlinear waves propagate in a medium, certain kinds of discontinuities are encountered, known as shock waves or acceleration waves. Shock waves also play an important role in the medical field. The wave is considered as moving surface under which the variables and their derivatives undergo certain kinds of discontinuities that are carried along by the surface. These discontinuities are bound to be interrelated. The relations connecting the field variables, or their derivatives on the two sides of the discontinuity surface, are known as compatibility conditions and arise due to the dynamical conditions that determine the behavior of the material medium. The first set of compatibility conditions, namely Rankine–Hugoniot jump conditions, is a consequence of the conservation laws that hold across the discontinuity surface. Furthermore, those relation which connects the first-order derivatives of the field variables on the two sides of the discontinuity surface with its speed of propagation is known as compatibility condition of first order. The compatibility conditions for the second- and the higher-order derivatives can be obtained with the assumption of a smooth wavefront. The geometrical and kinematical compatibility conditions of first and second order were developed by Thomas [1]. The growth and decay of the discontinuity in fluid were investigated by Coleman and Gurtin [2]. Many researchers have investigated the behavior of shock waves in fluids using the singular surface theory, and their research work can be seen from ([3–8]).

In 1981, Ying et al. [9] showed the relation between the structure of the solution of reacting gas and that of Riemann problem. The Riemann problem for reacting gas has also been studied by Chorin et al. [10]. Barenblatt et al. [11] investigated the dependency of the solution of the problem on the radius of the corresponding pipe, from where the gas flows. The advancement of discontinuities in reactive gas has been described by Torrisi [12], and the determination of the location of weak discontinuity of a similarity solution across a similarity line has been done in [13]. Medvedev [14] has done deep research in polytropic gases and constructed shock polars for analysis of reflection conditions. Groppi et al. [15] used the relaxation-time kinetic model to analyze the shock structure in reacting gas mixture.

Study of the fluid flow in a dusty gas has become a very interesting topic because of its wide applications in the industrial fields and environment such as volcanic explosion, supersonic flights, underground explosions, star formation, nozzle flow, the formation of polluted crystals and so on. Many researchers have shown the effects of the dust particles on the propagation of shock waves in the medium. Carrier [16] studied the motion of shock waves under the effect of dust particles. Sommerfeld [17] showed the

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Kinematics of one-dimensional spherical shock waves in interstellar van der Waals gas clouds

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ABSTRACT

In this work, a system of non-linear partial differential equations, which describes one-dimensional motion of an inviscid, self-gravitating, and spherically symmetric van der Waals gas cloud, is considered. By using the method based on the kinematics of shock waves, the evolution equation for spherical shock wave in an interstellar van der Waals gas cloud is derived. By applying the truncation approximation procedure, an infinite system of transport equations, which governs the shock propagation, is derived to study the kinematics of shock waves for the one-dimensional motion. The first, second, and third order transport equations, which describe the shock strength and the induced discontinuity behind it, are used to analyze the decay and growth behavior of the shock waves in a non-ideal gas. The results are obtained for the exponent obtained from the first, second, and third order approximations and compared with the results obtained by Whitham's characteristic rule (Chester–Chisnell–Whitham approximation). In addition, the effects of the parameters of non-idealness and cooling–heating function on the evolutionary behavior of shocks are discussed and shown graphically.

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I. INTRODUCTION

Most of the physical phenomena in our world are essentially nonlinear and can be described by the mathematical models in the form of partial differential equations (PDEs). These PDEs play an important role in many areas of physics: astrophysics, gas-dynamics, combustion theory, cosmology, etc. With the help of the basic laws of mechanics and thermodynamics, the theoretical foundation of gas-dynamics is formed. Due to the high variation in supersonic motions and energetic events, shock waves are common in the interstellar medium. These events are mass losses by massive stars in their evolution (stellar winds), collision of clouds, supernova explosions, central part of star burst galaxies, etc. The study of shock waves has gained importance in many branches of continuum mechanics in the physical and mathematical points of view.

The formation of shock waves and their propagation in different media, the decay and the growth behavior of diverging and converging shocks, and their effects have been widely studied by many researchers in the literature (see Refs. 1–3). Over the past decades, many researchers and scientists have used different approximate numerical and analytical methods to examine the growth and decay behavior of the shock waves, converging and diverging shock waves, energy distribution behind the shock, etc., which can be found in Refs. 4–7. Recently, Sahu[8] studied one-dimensional spherical and cylindrical shocks generated by a moving piston in a medium of non-ideal dusty gas in the presence of an axial magnetic field under the action of heat conduction and radiation. Maslov[9] developed a tenacious analytic approach to describe the kinematics of a shock wave in an isentropic non-viscous gas by making use of the generalized functions. Russo[10] examined the properties and limitations of the generalized wavefront expansion method for the propagation of weak shock waves. Later, Anile and Russo[11,12] extended the generalized wavefront expansion method to the higher order corrections and studied the step shocks. Ramsey and Baty[13] studied

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EXPLORING THE DYNAMICS OF TEMPLE HEALING AND THE FAITH IN THE PANDIT AS A HEALER

Irene Khosla[1] and Meetu Khosla[2]

ABSTRACT

Deep-rooted within the Indian culture is a strong faith in the Almighty, that is and has always been a guiding light for those who believe. Born from this faith is the practice of spiritual healing, which is to say, the acknowledgement and understanding of the nature of God and its interpretation, and application to healing. One such technique is temple healing, where the individual bestows their trust in the temple priest or 'Pandit' to seek a solution – 'Upaay' for their difficulties in life. In the Indian culture, the Pandit is regarded as God's messenger, the one who brings a common man closer to God. The individual then tends to follow this solution rigorously. The interview method was used to gain an in-depth understanding of the dynamics of a 'Pandit' and deity relationship, the various impetus for seeking help and the type as well as the traditional meaning of 'Upaays' that are advised. For this purpose, a Pandit of a Hindu temple was interviewed. It can be said that the process of temple healing is a combination of both hoping and doing, and the present study aims to explore the complexities and dynamics of this process. The findings of the study are explained with reference to the attachment theory (Bowlby, 1969) wherein attachment to God not only provides the perception of safety and care, but also a sense of security, calmness and soothing (Glibert,2007), which inhibits the threat systems and deactivates the flight or fight responses. Hence, the attachment theory explains how one's relationship with God which is mediated through the Pandit, can influence one's psychological wellbeing.

***Keywords*: Pandit, Upaay, Temple Healing, Attachment**

INTRODUCTION

Sewn together like a string of pearls, the Indian culture is a beautifully intertwined amalgamation of diverse religions, communities and customs. This diversity is what makes India unique in its traditions and practices. The roots of these traditions and practices can be traced back to religions such as Hinduism, Jainism, Sikhism and Buddhism and more. Religion binds people together. It is a guiding light, providing individuals with the framework of a way of life. Religious practices are evoked from a strong sense of faith in God, which extends beyond praying. This faith is what many rely on in both good and bad times.

Born from this faith, is the practice of spiritual healing, which is the acknowledgement and understanding of the nature of God and its interpretation, and application to healing. One such technique is temple healing.We may have entered the 21st century, an era of advancement in all spheres of life, yet for many individuals, their belief in God is held strongly above all.

Temple as a medium of healing

The temples (Ramanujan,1973, 19-22) provide space for a transformative process by fusing the divine with devotion. *Bhakti,* which is the devotional attitude in Hinduism, a bond develops between the devotee and the deity. This interaction between the devotee and the deity creates a circle of identities. The Hindu devotion (Holdrege,1988) provides extensive and multiform discourses of the body that are very elaborate and contribute to understanding the body as pure, devotional, and ritualistic. The body mediates the interactions between the divine body, cosmos body, human body and social body. The devotional body embodies the divine and actively participates in a process of the divine and human union of the sacred and the mundane. McKim Marriott (1976) suggested that the body as a devotional body is a "processual body", where the human body has a constellation of substances and processes that are interconnected to one another through a network of transactions (Holdrege, 1998,349).

The temple visits involve ceremonies and rituals where the devotee worship in the best clothes and sit on the floor facing the deity with folded hands. There are bhajans in the background and the aroma of incense that spreads across the prayer room. The devotees either sing the bhajans/slokas (verses) along with the priests or the singers or get

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Research Paper

Psychometric validation of Ambivalent Sexism Inventory (ASI) using Rasch analysis on Indian sample

Suparna Jain[1]*, Shradha Jain[2], Manpreet Kaur[3]

ABSTRACT

This study, employing Rasch analysis, aimed at evaluating the psychometric properties of Ambivalent Sexism Inventory (ASI) using an Indian sample of 245 participants. ASI was originally developed by Peter Glick and Susan Fiske in 1996 and has since been used in many research studies measuring hostile and benevolent sexism across cultures. Due to a lack of its psychometric validation on Indian sample, it has not been used in Indian researches. In the present work, the results of Rasch analysis indicated the appropriateness of Ambivalent Sexism Inventory among Indian population. Implications of the findings are briefly discussed.

Keywords: *Ambivalent Sexism Inventory, Rasch analysis, India*

Gender is an area of research that continues to interest psychologists and sociologists across the globe. However, a gender sensitive society is still a far-fetched idea. Continuous research efforts in the direction of improving gender balance and spreading gender sensitivity are required. The state of affairs is especially poor in South Asian countries. According to the United Nations Development Programme (UNDP), 2016, they have the lowest Gender Development Index (GDI). The report stated that GDI is calculated on the basis of the disparity between the Human Development Index (HDI) of men and women -- the higher the disparity, the lower the GDI. The gender equality and women's empowerment were fundamental dimensions of human development.

India has been ranked 131st among 188 countries on HDI. India's GDI is 0.819, compared to the developing country average of 0.913. Among South Asian countries, only Afghanistan fares worse than India, in terms of gender inequality. India scored 0.563 on the gender inequality index and ranked 127th out of 146 countries (United Nations Development Programme, UNDP, 2016). The ranking portrays an “extremely high” level of gender inequality. The sex ratio of the nation has stooped to a new, worse low since independence with there being 918 girls for every 1000 boys (Census of India, 2011). Male literacy rate (83%) is higher than female literacy rate (68%) (NSSO report, 2014).

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Quick Response Code:

Viewpoint

Accelerating kala-azar elimination in India

Kala-azar or Visceral leishmaniasis (VL) has been a major public health problem in India for the last several decades. Several States such as Bihar are badly affected[1]. The disease is transmitted by the bite of an infected female sand-fly *Phlebotomus argentipes.*

The Government of India (GOI) launched a centrally sponsored kala-azar Control Programme in the endemic States in 1990-1991[2]. The programme brought a significant decline in kala-azar morbidity, but could not sustain the pace of decline for long. In 2002, The GOI set the goal of kala-azar elimination by the year 2010 which was revised to 2015[3].

Given the cross-border nature of the disease, India signed a Tripartite Memorandum of Understanding with Bangladesh and Nepal to achieve kala-azar elimination from the South-East Asia Region[3]. Elimination is defined as reducing the annual incidence of kala-azar to less than one case per 10,000 population at the sub-district (block) level in Bangladesh and India and at the district level in Nepal.

The status of elimination

The elimination programme in India is spearheaded by the National Vector Borne Disease Control Programme (NVBDCP)[2]. The strategy consists of (*i*) early diagnosis and complete case management; (*ii*) integrated vector management and vector surveillance; (*iii*) supervision, monitoring, surveillance and evaluation; (*iv*) strengthening capacity of human resource in health; (*v*) advocacy, communication and social mobilization for behavioural impact and inter-sectoral convergence; and (*vi*) programme management.

The surveillance for kala-azar includes listing of cases in every village and use of these data for planning of disease prevention and case management. For early diagnosis and case management, anyone with fever of more than two weeks and enlarged spleen and liver in an endemic area with a laboratory confirmation are treated with liposomal amphotericin B in a single dose of 10 mg/kg or with combination regimen namely paromomycin-miltefosine injection for 10 days[4,5].

The disease incidence has been declining steadily, albeit very slowly; from 13869 in 2013 to 3145 in 2019. Of the cases reported in 2019, nearly 60 per cent cases were from four States alone[6]. These included Bihar with maximum number (2416 cases), followed by Jharkhand (541), Uttar Pradesh (97) and West Bengal (87)[7].

In addition, 821 cases of post-kala-azar dermal leishmaniasis (PKDL) were reported and these were considered as the main cause of transmission in the community[6].

The GOI endeavoured to eliminate the disease by December 31, 2017 but could not achieve the target because the desired number of kala-azar cases in Bihar and Jharkhand (*i.e.,* one patient per 10,000 populations in sub-district level) could not be achieved. The State and Central governments tried hard to achieve the desired goal by December 31, 2020 – the latest target date set by the programme but this was also not achieved due to some other reason.

The definition of elimination of kala-azar is complex. Here the elimination means having to reach and maintain a target of less than one case per 10 thousand people in all endemic areas for three consecutive years at district or sub-district level[8]. The programming had three phases attack to bring down cases below 1/10,000 for three years from 2017 to 2019, maintenance of case level below 1/10,000 between 2017 and 2019 and maintain of case level below 1/10,000 beyond 2020[9]. Nepal has succeeded in maintaining that level[10]. At present, the government needs to substantially enhance programme implementation in order to eliminate kala-azar from these two States as well as from rest of the States.

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Retro-Element *Gypsy*-163 Is Differentially Methylated in Reproductive Tissues of Apomictic and Sexual Plants of *Cenchrus ciliaris*

Priyanka Rathore[1], *Soom Nath Raina*[2], *Suresh Kumar*[3]* *and Vishnu Bhat*[1]*

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Apomixis, an asexual mode of reproduction through seeds, has immense scope for crop improvement due to its ability to fix hybrid vigor. In *C. ciliaris*, a predominantly apomictically reproducing range grass, apomixis is genetically controlled by an apospory-specific-genomic-region (ASGR) which is enriched with retrotransposons. Earlier studies showed insertional polymorphisms of a few ASGR-specific retrotransposons between apomictic and sexual plants of *C. ciliaris*. REs are mainly regulated at the transcriptional level through cytosine methylation. To understand the possible association of ASGR-specific retrotransposon to apomixis, the extent and pattern of differential methylation of *Gy*163 RE and its impact on transcription were investigated in two genotypes each of apomictic and sexual plants of *C. ciliaris*. We observed that *Gy*163 encodes for an integrase domain of RE Ty3-*Gypsy*, is differentially methylated between reproductive tissues of apomictic and sexual plants. However, leaf tissues did not exhibit differential methylation between apomictic and sexual plants. Among the three contexts (CG, CHG, and CHH) of cytosine methylation, the maximum variation was observed in CHH context in reproductive (at aposporous initial and mature embryo sac stages) tissues of apomictic plants implicating RdDM pathway in methylation of *Gy*163. Quantitative PCR analysis showed that *Gy*163 transcripts are expressed more in the reproductive tissues of apomictic plants compared to that in the sexual plants, which was negatively correlated with the methylation level. Thus, the study helps in understanding the role of RE present in ASGR in epigenetic regulation of apomictic mode of reproduction in *C. ciliaris*.

Keywords: apomixis, *Cenchrus ciliaris*, Gypsy, DNA methylation, epigenetics, mode of reproduction, retro-element

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INTRODUCTION

Apomixis is an asexual mode of reproduction through seeds which bypasses meiotic division and fertilization of egg cell to produce progenies that are the replica of the mother plant (Kumar, 2017). Apomixis possesses a significant role in crop improvement because of its potential role in fixing heterosis and facilitating hybrid seeds production without the need of maintaining parental

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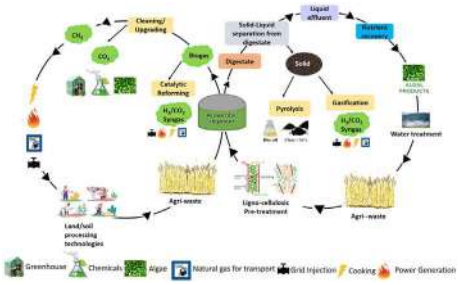
Review

Valorization of agricultural waste for biogas based circular economy in India: A research outlook

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GRAPHICAL ABSTRACT



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ABSTRACT

Environmental deterioration and the need for energy security are intrinsic problems linked with the linear economy based on fossil fuels. Recently, a transformation to a sustainable circular bio-economy is being experienced where biomass waste is being valorized for energy production as well as minimization of waste and greenhouse gas emissions. The agricultural waste, generated in vast quantities in India is a prospective feedstock for biogas production. Agri-waste to biogas based circular economy requires an integration of agri-waste management, biogas production and utilization and policy support. This paper comprehensively discusses the potential of biogas production from agricultural waste, its upgradation and utilization along with the government initiatives, policy regulations. In addition, barriers that impede the development of an efficient agri-waste to biogas based circular economy, and the future research opportunities to meet the growing needs for agri-waste management, energy production and climate change mitigation are discussed.

1. Introduction

The 17 Sustainable Development Goals (SDGs) of the United Nations were designed to motivate and facilitate the world economies to address the major challenges faced by our society and environment. At the heart of most SDGs lies the underlying principle of optimum and responsible usage of resources for purposes leading to a convincing transition to a circular economy. One of the mechanism to achieve that

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Revisiting Increasing Inequalities

Suranjita Ray

The capitalist model of development based on neo-liberal ideology since 1990s privileged an integrated global market economy that became crucial to conquer economic inflation, remove imbalances in payment, increase economic growth rate and secure stabilization of the economy. Often referred to as the second-generation reforms, economic liberalisation saw a paradigm shift from closed economy to open economy that liberalised trade, interest rates, competitive exchange rates, and fiscal flow of capital. The freedom from direct controls to make the economy vibrant brought a series of fiscal reforms such as tax reforms, derugularisation of economy, increasing privatisation of property rights, and expansion of foreign direct investment. This brought an end to several restrictions such as trade barriers, import tariffs by cutting the import duties/customs duties, regularized markets, control, license and quota, which resulted in expansion of business activities as it opened the reserved sectors for private and foreign players. Liberalisation, privatisation and globalisation as major strategic mandate for the economic policies privileged market forces that prioritised free flow of finance capital and its accumulation as the precondition for growth and development. However, while greater liberalisation increased liquidity for the world trade in capital and technology and multilateral trading system became important, we find that asymmetries and inequalities have increased across the world posing serious challenges than ever before.

Oxfam Report: Increasing Inequalities

The report 'Survival of the Richest' released by rights group Oxfam International on the first day of the World Economic Forum Annual Meeting 2023 at Davos, provokes us to rethink why and how the world has become increasingly unequal. It states that despite the challenges such as climate change, rising cost of living, Russia's war in Ukraine and COVID-19 pandemic, the world's richest have gotten richer and corporate profits are surging. The richest 1 percent have been able to grab nearly two-thirds of all new wealth worth $42 trillion created since 2020. This is almost twice the money owned by the bottom 99 percent of the world's population. It highlights that extreme poverty has increased for the first time in 25 years. The report is critical as it has not only brought to the fore multiple indicators to illustrate increasing inequalities but also argues why inequalities increased across the world.

Oxfam India's 'Survival of the Richest: The India Supplement' reveals some glaring findings that underline the widening gap between the rich and the poor in India. In 2021, while top 1 percent of the population owned more than 40.5 percent of the total wealth, the bottom 50 per cent i.e 700 million people owned around 3 per cent. What is ironical is that in 2021-22, the latter paid six times more on indirect taxes as a percentage of their income i.e approximately 64 per cent of the total Goods and Services Tax (GST) paid, compared to the former who paid 3 per cent. The report further states that since November 2022, the billionaires saw their wealth surge by 121 per cent. It underscores the paradox of development as between 2020 and 2022, the number of billionaires increased from 102 to 166 while the number of people who are hungry increased from 19 crores to 35 crores.

An increasing inequality based on gender, caste and rural and urban divide is reflected in the gap in wages earned between 2018 and 2019. The female workers earned only 63 paise for every 1 rupee earned by a male worker. The scheduled castes earned 55 per cent of what was

Mainstream Vol- 56, No. 8, February 10, 2018

The Uncontested and Contested Idea of 'New India'

Suranjita Ray

The 'New India' that would emerge by 2022 shall be free of communalism, casteism, terrorism, corruption, and nepotism. It is about violence in the name of faith is not acceptable. This was unfolded by the Prime Minister, Narendra Modi, in his address to the nation on the 70th anniversary of Independence Day. The major steps towards building a new India were underlined as the biggest strength of democracy. To name a few, demonetization was cited to reflect a firm collective will for change, to make India free from corruption. Women's empowerment due to the proposed bill to ban triple talaq, infrastructure projects, Swaach Bharat Abhiyan, Jan Dhan Yojana, doubling farmers' income by 2022, and Goods and Services Tax that gave a new boost to cooperative federalism, were highlighted as achievements that changed India. The Prime Minister pledged to make a new India that would be powerful, strong and self-sufficient in every field. He appealed that it would require the contributions of the citizens and even urged them to make sacrifices.

Ram Nath Kovind, the President, also promised the poor, *pucca* houses, access to electricity, healthcare, sanitation and education, alongside upgradation of road and railway networks, rapid and sustained growth, ample opportunities for the youth and women, and that India would be free of scourges, such as communalism, casteism and terrorism by 2022.

All possible attempts are made by the present ruling party to convince the ordinary people, to reimagine the new ways of living and rebuilding the future of India which promises to empower them as citizens of this country. The campaign *sabka sath sabka vikas* promises the common citizens their participation in the dream of building a new India that is developed and modern. The governing class has been able to capitalize on the belief that it represents the people as *Mann Ki Baat* radio broadcast convinces the people at large, that their voice reaches the government. It has generated much hope amongst the large masses that the new in India will improve their living conditions. Ironic, as this comes at a time, when the everyday experiences of the ordinary citizen where he/she is browbeaten, daunted, and dismissed, has seen increasing anxiety, insecurity, disquiet, and vulnerability amongst the large sections of society.

The idea of India that promises to work towards promoting the constitutional values, which protect the rights and liberties of its people to bring equality and justice, has and will always remain uncontested. However, while the core essentials of any nation focuses on national interest, and in the larger context, national integration becomes significant to build a nation, we see that the 'notion of nation' has been exploited in the idea of new India. The inescapable passion of the ruling political class to construct a consensus on the idea of a nation has resulted in a new narrative. To narrate a new India, which reiterates the belief - "Modi the Nation-Builder" has created the hegemony of a particular idea of the nation. The rhetoric that directly connects the leader to the nation is inherent in populism. It remind us of similar situation when 'Indira is India' became a strong message of the ruling class that legitimized a powerful leader as central for a strong nation. While the idea and practice of a nation state has always remained a subject of political intercessions, negotiations, conversations, contestations, reconceptualizations, and transformations, the dexterity of nationalist party to mentor young minds has seen a majoritarian narrative that not only establishes the ideology of the ruling class but also denies the existence of an alternative perspective, understanding, and idea of India. The narrative of the dominant political class on the project of building India as a nation wishes not to debate any idea of India that contests its perception and understanding.

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Need to Reaffirm Pluralism | Suranjita Ray

As a pluralist society, India is home to people from different castes, religions, languages, regions, communities and cultures. The Constitution of India also guarantees the citizens right to equality and prohibits discrimination based on the above differences. Therefore discriminations, hierarchies, oppression, suppression and animosities amongst various sections of society based on prejudices need to be disproved. It is pertinent that people across the castes, religion, language, ethnic communities and culture feel safeguarded.

The Prime Minister has affirmed in several of his recent speeches that people's participation must be at the core of 'Azadi Ka Amrit Mahotsav' to celebrate and commemorate 75 years of India's freedom and transition towards a progressive society. The celebrations, he stated must involve the feelings, suggestions and dreams of 130 crore countrymen. It should encompass the glimpse of the pride of Sanatan Bharat and the glory of Modern India and 'creating a vision' for India@2047. A series of events are being organised around five themes - the freedom struggle, ideas, achievements, actions and resolve at 75. The most valuable tribute to the glorious history of India's plural culture and social values is to realise an inclusive society which ensures people's involvement as an integral part of this country.

Ironically, the anti-Muslim agenda and Hindu-Muslim divide raised during the recent times has seen increasing insecurity, distrust, suspicion and fear in the air. The most obvious and visible forms of threats and sectarian violence are from thecommunal forces which assert dominance of Hindu religion and culture. Though the celebrations pledge to realise the dreams and aspirations of the martyrs of the freedom struggle, they will remain symbolic without measures to counter forces that perpetuate discrimination, dominance and hatred based on collective prejudices.

Entrenched Prejudices

We find resurgence of caste, ethnic and religious predisposition which grievously questions the commitment to democratic values. The hold of caste, ethnicity and religion to dominate and control social relation reiterates its degenerating impact. Identification of citizens by their caste and faith has seen new forms of discriminations and repressions which the minorities have been subjected to. Religious and caste consciousness are built into the cultural and social reality which sustains exclusionary practices, layered oppression and intolerance. It is embodied through laws, attitudes, behaviours, beliefs, norms, practices that reinforce the hierarchies, dominance, hegemonies, and power asymmetries. The regressive idea of one nation, one religion and one language, has provided sordid to several rhetoric of hate crimes against a particular culture, religion, caste and ethnic/linguistic/regional community which are reprehensible (Ray, 2019).It has weakened the secular democratic narrative and torn the plural social fabric of India into disjointed pieces.

The most obvious forms of prejudice internalized against certain religious communities and castes are visible in the frequent attacks and atrocities against Muslims, Christians and Dalits.Attacks on Mosques and Churches, disruption of Friday prayers offered by Muslims in the open spaces,anti-conversion laws,glorification of gharwapsi, control over food habits and cow vigilantism resulting in mob lynching and atrocities against the Dalits and Muslims, subjugating the minorities into obedience, police brutality and use of religious slurs that are obnoxious and offensive against students protesting peacefully in Jamia Millia Islamia and Aligarh Muslim University to oppose the Citizenship Amendment Act, alleging the nonconformists as anti-nationals and imposing sedition charges, seeing the Muslims as a threat to the Hindus and frequency of 'hate speech' targeting the minorities, reinforces the agenda of establishing a Hindu Rashtra. These stories have to be told repeatedly, as reminders to counter

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Budget: A Catalyst for Social and Economic Transformation

The Budget has always been interpreted as an instrument of social and economic reforms alongside an innovator of far-reaching reforms in fiscal policies. It has a vital role to play in the economy of a welfare state as it aims at bringing social and economic transformation by removing inequalities, poverty and unemployment. As an important step towards the overall development of the nation, the Budget focuses on fulfilling the dreams of every section of society, including the poor and the under-privileged—farmers, tribal people, Dalits, oppressed, and women. Therefore, the Budget presents a prospect for the government of the day to introspect its performance for the past year, and for last five years in an election year. It almost turns out to be an election manifesto of the ruling party, where the government is not only expected to outline its accomplishments but also affirm its vision for the future. Over the years, democratic participation by all stake-holders has brought greater opportunities as well as greater challenges for India's budgetary process.

Assuring few Expectations

A majority of the people who voted the Bharatiya Janata Party (BJP) to power in the 2019 elections were/are hopeful that several of their expectations would be congregated. Therefore, it was expected that with a landslide victory the ruling party would present a Union Budget to chalk out the roadmap to achieve not only its unfinished goals and objectives but also aim at fulfilling many aspirations of the people. However, a major challenge was the trajectory of a declining economic growth in the last few years from 8.2 per cent to 7.2 per cent, 6.8 per cent, and 5.8 per cent, which was the lowest at the end of the fourth quarter in 2018-19. Introducing fiscal stimulus for economic revival was difficult with the growth rate at its lowest in five years and no picking up in the investment. Both the Inter-national Monetary Fund and World Bank have lowered India's expected growth rate in the current fiscal.

Therefore, the most important need was to redraw an appropriate economic model to sustain a higher economic growth alongside focusing of social security to ensure the well-being of the people. The Economic Survey 2019 focuses on moving to a 'virtuous cycle' of savings, investments and exports to transform India into a $ 5 trillion economy in the next five years, that is, by 2024. It has projected the economic growth to pick up at seven per cent in the current fiscal, but states that a sustained eight per cent growth is important to achieve the target as a major economy. It states that decline in the Non-Performing Assets should help push the capital expenditure cycle and investment as a percentage of the GDP has to be in excess of 30-35 per cent. The approach of the Economic Survey focuses on legal reforms, ensuring policy consistency, encouraging behaviour change using behavioural economics, nourishing Micro, Small and Medium Enterprises (MSMEs), reducing cost of capital and reducing risk-return trade-off for investment. Krishnamurthy Subramanian, the Chief Economic Adviser, argues that for job creation to happen, it is the young firms that need to grow and exploit the economies. It is significant to focus on unshackling the MSMEs and enabling them to grow, thereby creating jobs and exports in the economy.

With a mission to make India a major growing economy, the Budget centres on a higher rate of economic growth for continuous years. The growth-oriented Budget encourages corporate

Impact of COVID-19 on the Most Affected States in India

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Introduction

The outbreak of the COVID-19 Pandemic has affected all the global economies including India in the last few months. In a federal structure like that of India, the states have to follow the directions of the central government however; the implementation is largely the responsibility of the state. Against this background, this paper makes an attempt to examine the impact of COVID-19 on the most affected states in India. We analyze its impact on selected states in India and discuss how challenging and complex the task is for policymakers to devise a suitable macroeconomic policy response to this unprecedented situation.

Impact on Indian Economy

Currently, the Indian economy is witnessing three kinds of shocks which are triggering a dip in economic activity and are posing to be a huge challenge.

1. Supply shock: Due to the shutdown of factories of Global Value Chains (GVCs) and logistics there is huge supply shock. This boils down to supply chain disruptions of nearly all kinds.

2. Demand shock: The demand for certain services like travel, tourism, and hospitality has reduced drastically. The demand for non-essential goods is hugely affected. Consumers are becoming more and more risk averse, hence, they cut down on all discretionary demand. Consumption expenditure and spending patterns are getting altered in the face of the outbreak of COVID-19.

3. Financial shock: Financial shock comprises shock waves to all financial markets including the stock market, real estate and other asset markets.

The impact on agriculture is diverse as it has affected supply chain of agricultural output due to limited movement of marketable surplus. The farm producers are incurring huge losses and hence the distress of small and marginal and medium farmers needs to be addressed. Such a loss of output and loss of income for large sections of the farming community will have implications on their own consumption and investment during intermediate and long terms. There is impact on the manufacturing sector in the form of a postponement of both demand and supply, the services sector faces idled capacity and lost revenues. The economy is facing a steep decline in output, per capita income levels and employment, visible across all states. A majority of rural and urban workers in India are either self-employed or casual workers. These sections of the population are especially vulnerable to unemployment and pay cuts due to the nation-wide lockdown. Majority of the cities in India have nearly two-thirds of migrant population. Shutdown of economic activity and consequent decline in wages due to the lockdown

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Financial Structure and Stability: An Empirical Exploration

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Abstract: This paper attempts to investigate empirically whether financial and macroeconomic stability of economies are significantly affected by the structure of their financial systems, viz., bank-based and market-based structures. Using panel data estimations based on data from 82 countries for the period of 1996-2012, we find that in general, bank-based financial system contributes significantly to instability of the financial sectors and currency market. We also find some evidence that within the bank-based structure, higher presence of foreign banks is positively associated with currency market pressure. Additionally, the results show that the choice of bank-based versus market-based financial structure is important for low income countries. Banks in low income countries contribute to exchange market pressures whereas stock markets leads to reduction in such pressure. In high income countries, stock markets do not significantly affect banking and currency market instability.

Keywords: Financial structure, bank-based financial system, market-based financial system, stability

JEL Classification: G0, G21, G10

1. Introduction

Financial systems perform the important function of resource allocation for productive purposes and thus facilitate enhanced economic activities. Allocation of productive resources can happen through the efficient functioning of a stock market or through the efficient intermediation of the banking sector, or both. Stock markets provide a market mechanism for obtaining funds for productive activities

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पूर्वोत्तर की आदिवासी कहानियां : विविध सामाजिक-बोध

डॉ. अनीता मिंज

सारांश

पूर्वोत्तर की आदिवासी कहानियों में वहां के आदिवासी जन-जीवन की संपूर्ण झलक मिलती है। जहां आदिवासी विकास की चरमराई व्यवस्था को ढोने पर मजबूर दिखलाई पड़ते हैं या फिर सरकार और असामाजिक तत्वों के बीच झूलते। विस्थापन, घुसपैठ, अशिक्षा, बदहाली आदि के बीच आदिवासी जीवन मंथर गति से आगे बढ़ता है। मातृसत्ता समाज होने के बावजूद आदिवासी स्त्रियों की दशा कुछ डांवाडोल दिखलाई पड़ती है किंतु परिवार से लेकर बाहरी समाज की बहुत सारी व्यवस्थाओं से रोज जूझने के कारण आदिवासी स्त्रियां स्वाभिमानी मेहनती और कर्मठ होती हैं। आदिवासी समाज के लोग अपनी भाषा, संस्कृति, परंपरा, लोकगीत-संगीत, लोक कथाएं, अपनी पहचान आदि के लिए प्रारंभ से संघर्ष करते आ रहे हैं। उनके अंदर का आत्मविश्वास है जो उन्हें नित नई स्फूर्ति और उमंग से भर देता है।

बीज-शब्द : विकास की अवधारणा, समय व समाज का द्वंद, विस्थापन, बाहरी घुसपैठ, पृथक राज्य की मांग, स्त्री अस्मिता, भाषा, संस्कृति, पहचान, आत्मविश्वास।

प्रस्तावना

भारत का पूर्वोत्तर क्षेत्र असम, मणिपुर, मेघालय, मिजोरम, नागालैंड, त्रिपुरा, सिक्किम, अरुणाचल प्रदेश इन 8 राज्यों को मिलाकर बना है। पूर्वोत्तर का यह पहाड़ी क्षेत्र अपनी अद्भुत प्राकृतिक सुंदरता के लिए प्रसिद्ध है। यह क्षेत्र आदिवासी बहुल क्षेत्र है। जिसकी अपनी समृद्ध सांस्कृतिक परंपरा, रीति-रिवाज, भाषा, आचार-विचार आदि हैं। पूर्वोत्तर आदिवासी समाज की सांस्कृतिक परंपराएं जितनी लुभावनी और रंग-बिरंगी हैं उतनी ही कठिन आदिवासी समाज की संघर्ष गाथा है। जीविकोपार्जन के साथ-साथ अपनी अस्मिता, भाषा, परिवेश, भाव-बोध आदि को बचाना एक चुनौती है। पूर्वोत्तर का आदिवासी समाज अंग्रेजों के समय से अपनी अस्मिता के लिए संघर्षरत दिखाई पड़ता है।

पूर्वोत्तर के आदिवासी लेखकों ने अपनी-अपनी मातृभाषा में अनेकों कहानियां लिखी हैं। जिसमें शेरदुकपेन (अरुणाचल प्रदेश), बोड़ो, कार्बी, तीवा (असम), मैतेई (मणिपुर), मिजो (मिजोरम), खासी(मेघालय), टैनिडे (नागालैंड), कोकबोरोक (त्रिपुरा), लेपचा (सिक्किम) आदि भाषाओं में अनेक कहानियां हैं। इन कहानियों में स्त्री अस्मिता, प्रेम, मातृसत्ता, महिलाओं को पूर्ण अस्तित्व के साथ स्वीकारोक्ति, प्रादेशिक संकट, विस्थापन, घुसपैठ, भाषा का संकट, स्वा की पहचान आदि मुद्दों पर गहराई से आंकलन किया गया है। पूर्वोत्तर की इन कहानियों में वहां के आदिवासी समाज की पूरी छवि

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Original Research Article

Polycystic ovary syndrome risk: efficacy of self-assessment test

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is a growing morbidity in young women globally. This disease has an association with several exogenous factors like irregularity of menses, hirsutism and obesity. Very few standardized self-assessment tools based on easily observable factors are available for use in the Indian population, which can help them to assess their PCOS risk accurately.
Methods: Undergraduate women of the age group 18-22 years enrolled in a university campus participated in the survey questionnaire. Nineteen questions with binary answers as "yes" or "no" were used for self-assessment test. Each "yes" was scored as one mark, and each "no" scored as zero, leading to the maximum score of 19. Scores of the women with irregular menses (test group) were compared to those of regular menses (control group). Welch's corrected t-test was used to calculate the significance at 5% between the groups. The clinical assessment confirmed the presence or absence of PCOS condition.
Results: One thousand and fifty-four women participated in the study. The study showed that 262 (24.8%) of young women reported irregular menstrual cycle. The average total score of the control group was 3.07±2.35, whereas that of the women with irregular menses was 5.93±2.86. 21 out of 28 participants, who scored high, were diagnosed with PCOS, on clinical assessment by Rotterdam criteria.
Conclusions: The self-assessment test can assess the risk of PCOS. This test has 75% sensitivity and accuracy in predicting the presence of PCOS.

Keywords: Menstrual cycle disorder, Polycystic ovary syndrome, Premenstrual syndrome, Survey, Women's health issues

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a widespread condition that afflicts 2-26% adolescent and young women globally. Several Asian countries have also shown a similar prevalence of this disease/ syndrome.[1-4] This disease is seen to be associated with endogenous factors like cysts in the ovary, ovarian dysfunction, and androgen excess. Irregular menses, hirsutism, obesity, pigmentation on the skin are some of the associated exogenous factors associated with it.[5-8] The etiology of the disease is not clear to date. Several reports have shown that genetics, environmental pollutions, and lifestyle to be the predisposing factors.[9-12] Though the morbidity of disease is seen to rise in recent years, the awareness amongst the parents and students in India remains poor.[13,14]

The seriousness of this disease becomes evident as health complications increase in the later years when they

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CASE REPORT

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Case Study: Unlocking resemblance between tuberculosis and cancer

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ABSTRACT

Tuberculosis (TB) has often been found to mimic malignancy in clinical and radiological features, and therefore it is well known as a diagnostic chameleon. Although the differences between pulmonary TB and lung cancer have been highlighted by several reports, TB often gets misdiagnosed as lung cancer and vice versa. It is therefore vital to discern the imaging results specific to pulmonary TB and its diverse forms to distinguish it from lung cancer. In the present study, a 72-year old female (HIV-negative, non-smoker), complaining of persistent cough, low chest pain, pain around kidneys and significant weight loss up to 8 kg in 4 months, was advised to undergo X-ray examination along with CT scan. The CT scan results showed manifestation of ill-defined lesions along the right main bronchus with partial atelectasis and multiple scattered centrilobular nodules in the right upper lobe. There was also a well-defined lesion at the left adrenal gland. Also, several sub-centimetre mediastinal nodes were found. The preliminary assessment by the doctor indicated lung cancer, and therefore PET scan was advised for further confirmation, also to detect any metastasis of malignancy if lung cancer is confirmed. PET scan results ruled out lung cancer; afterwards, the TB test (AFB smear) was recommended by the doctor. The final reports of the test results confirmed tuberculosis. However, this is not the only case where tuberculosis has been found to mimic lung cancer; there have been several case studies reporting misdiagnosis of TB. A correct diagnosis could only be achieved through high-imaging techniques or invasive examination. The present case expanded the clinical knowledge in the diagnosis of TB and also invigorated clinicians to consider pulmonary TB in the differential diagnosis and treatment. The study also accentuates the importance of ^{18}FFDG-PET to differentiate TB from lung cancer.

Key words: tuberculosis, lung cancer, AFB test, PET scan, lesion

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Introduction

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis* that mostly affects the lungs. According to the World Health Organization (WHO), in 2018, an estimated 10 million people were diagnosed with tuberculosis (TB) worldwide, and 1.5 million of them died from it (including 0.25 million people with HIV). India is considered a highly prevalent country for tuberculosis, with the highest TB burden (2.15 million TB cases) worldwide in 2018 (WHO, 2018 report) [1]. Globally, TB is one of the top 10 causes of death, and a leading cause from a single infectious agent (above HIV/AIDS). The diagnosis of TB is done by AFB smear testing for causative bacteria.

TB greatly mimics malignancy as clinical symptoms and radiographic characteristics of both the diseases are quite similar [2]. Since the treatment of TB and cancer is entirely different, it is critical to report more case studies to find out the distinctions between neoplasm and TB. In the present report, we describe the case of a 72-year-old woman with pulmonary TB who was on the verge of being misdiagnosed with lung cancer.

Case report

The patient had reported persistent cough, chest pain (around diaphragm), weakness and unintended severe weight loss up to 8 kg in 4 months. The CT scan of her chest and abdomen showed multiple ill-defined nodules in the pulmonary region, lymph nodes and one nodule on the adrenal gland. Although the patient did not have any symptoms of fever, dyspnoea or haemoptysis, she had a medical history of hypertension and hypercholesterolemia. The patient was a non-smoker

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A study on defect annealing in GaAs nanostructures by ion beam irradiation

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Abstract. In this study, annealing of deep level (EL2) defect in gallium arsenide (GaAs) nanostructures by argon ion beam irradiation has been reported. GaAs nanodots of diameter ranging from 15 to 22 nm were deposited on silicon substrates using the ions of GaAs generated by hot, dense and extremely non-equilibrium argon plasma in a modified dense plasma focus device. GaAs nanodots thus obtained were irradiated by Ar^{2+} ion beam of energy 200 keV with varying ion fluences from 1×10^{13} to 5×10^{15} ions cm^{-2} in the low energy ion-beam facility. The ion-beam irradiation transformed the as-deposited GaAs nanodots into uniform GaAs nanostructured films of thickness ~30 nm. The obtained nanostructured films are polycrystalline with paucity of arsenic antisite (EL2) deep level defect. The excess arsenic present in the as-deposited GaAs nanodots is the main cause of EL2 defect. Raman and photoluminescence measurements of GaAs nanostructured films indicates removal of excess arsenic, which was present in as-deposited GaAs nanodots, thereby suggesting annealing of EL2 defect from the ion-irradiated GaAs nanostructured films. The change in conductivity type from n- to p-type obtained from Hall measurement further confirms annealing of EL2 defects. The ion-irradiated GaAs nanostructured films have low leakage current due to removal of defects as obtained in current–voltage study, which corroborate the annealing of EL2 defect. The defect-free GaAs nanostructured films thus obtained have potential applications in fabrication of highly efficient optoelectronic and electronic devices.

Keywords. GaAs; ion irradiation; defect annealing; nanomaterials.

1. Introduction

Future generation nanotechnology requires nanodevices having high efficiency and improved characteristics properties for wide range of applications. The modification/alteration in the fundamental properties of materials leads to reliable devices of high efficiency. A number of researches [1,2] are available, which show improvement in the fundamental properties of materials at nanoscale. The properties of nanomaterial can be further modified/improved through several post-deposition processing obtained through number of techniques [3,4]. Ion-beam irradiation is one of the well known techniques, used for alteration in the properties of nanomaterials. These alterations are obtained in terms of defect states, which will further modify the fabricated device characteristics [4,5].

Gallium arsenide (GaAs) is one of the semiconducting materials with several fascinating properties, which are continuously modified/improved by researchers for improvement in fabricated device characteristics and for making novel devices [6,7]. The characteristics of these devices can be further improved using nano-GaAs. However, nano-GaAs suffers from several defects, which limits or suppresses the fabricated device characteristics [8]. This is to note that GaAs nanostructures are mainly suffer from the arsenic antisite (As_{Ga}) defect, present in nanostructures due to non-stoichiometric GaAs (mainly due to excess arsenic). This arsenic antisite defect introduces a deep level in the middle of the band gap and is commonly known as EL2 defect. EL2 is a deep-level defect present in GaAs nanostructures and due to this defect, the GaAs nanostructures show n-type conductivity [9,10].

It is well known that ion- and electron-beam irradiations induce several defects in the as-grown nanostructured materials [4,11]. The ion-beam irradiation can be done using swift heavy ion (SHI) and low-energy ion beam. The irradiation of GaAs nanostructures using SHI (having energy from few to tens of MeV) results in the degradation of structural and electronic properties of nanostructures in terms of surface destruction and defect formation [12–14]. Using the SHI beams of Li, B, O and Si ions of energy ranging between 30 and 100 MeV in GaAs nanostructures, it has been observed that stress-induced defects are formed, which degrade the performance of the fabricated device [12]. Dhamodaran *et al* [13] have irradiated InGaAs/GaAs heterostructures by SHI of Ag^{12+} having energy 150 MeV and observed the

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Synthesis of gallium arsenide nanostructures for solar cell applications

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ABSTRACT

Gallium arsenide (GaAs) nanostructures are fabricated on gold coated silicon substrate with the help of GaAs ions generated by high density, high temperature and extremely non-equilibrium argon plasma in a modified dense plasma focus device. The nanostructures were found to have average dimension in range of 17 nm to 21 nm. It is found that the gold acts as a nucleating agent for growth of GaAs nanostructures. Emission peak in photoluminescence spectra confirms good quality of nanostructures related to its purity. These nanostructures are found to possess the high absorption in a wide optical range which will have applications in solar cell. Hall measurements reveal high carrier concentration of ~2.4 × 10^{19} cm^{-3}. The electrical properties show open circuit voltage of 0.50 V, short circuit current density of 32.7 mA/cm^2, fill factor of 80% and efficiency ~13.12%. The obtained optical and electrical transport properties indicate that the GaAs nanostructures so obtained are the potential candidate for solar cell applications.

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1. Introduction

Preparation of semiconductor nanostructures via different techniques has been the area of considerable interest since the last decade [1–6]. Of all other semiconductors, especially, the III-V class of semiconductor like gallium arsenide (GaAs) having direct band gap of 1.42 eV attracted much attention due to its wide range of applicability in device physics [7]. GaAs is the most suitable candidate for fabrication of photovoltaic devices [8], heterostructures [9], semiconductor lasers [10] and light emitting diodes [11]. The band gap of GaAs increases at nanoscale [5], which will lead to shift in the spectral range of photovoltaic devices such as solar cell and hence it can be used in broad spectral range. It is well known that materials with larger band gap have higher open circuit voltages and fill factors (FFs), whereas low band gap materials such as GaAs leads to high photoelectric current, which results in increase in the efficiency of the solar cell. Thus, GaAs nanostructures is one of the most suitable materials for making a solar cell.

Further, it has been observed that the efficiency of solar cell fabricated using GaAs nanostructures can be increased by incorporation of gold (Au) [12]. This is because the incorporation of Au in GaAs nanostructures increases carrier (electron) concentration. The efficiency of GaAs nanostructures to absorb most of the incoming photons enable them as a material for complete spectral utilization from ultraviolet-to-visible-to-infrared. This motivated us to carry out this study in which GaAs nanostructures are deposited on Au coated p-type silicon substrates. It is reported in the literature [13] that the efficiency of solar cell can be increased by in-situ passivation of GaAs nanostructures. However, we have use modified dense plasma focus (DPF) device which is a plasma-based ion implantation method and have overcome this disadvantage of passivation. The morphological, optical and electrical transport properties are reported for solar cell applications.

2. Experimental details

GaAs nanostructures were fabricated on Au coated p-type silicon substrate using GaAs ions, which were generated by high temperature, high density and extremely non-equilibrium argon plasma in a modified DPF device. The details of modifications done in DPF device for nanofabrication and process of formation of focused argon plasma on top of central anode were reported in earlier studies [4–6,14]. The silicon substrates were coated with Au of thickness ~15 nm and ~27 nm for sample 1 (S1) and sample 2 (S2), respectively. In the present experiment, GaAs disc (99.99% purity) of diameter ~17 mm was fitted on the top of the central anode. Au coated silicon substrates were placed at a distance of 4.0 cm from top of anode. The focused argon plasma formed at top of anode ablates GaAs disc. The ablation from GaAs disc by focused argon plasma generates GaAs ions, which were deposited on Au coated silicon substrates. In the present experiment, GaAs ions hit the substrates in two bursts of focused plasma.

The surface morphology was analyzed using scanning electron microscopy (SEM) on MIRA3 TESCAN field emission scanning electron microscope. The optical absorption spectra were recorded,

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Curie temperature engineering in a novel 2D analog of iron ore (hematene) *via* strain†

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As a newly exfoliated magnetic 2D material from hematite, hematene is the most far-reaching ultrathin magnetic indirect bandgap semiconductor. We have carried out a detailed structural analysis of hematene *via* prefacing strain by means of first-principles calculations based on density functional theory (DFT). Hematene in the pristine form emerges out to be a magnetic semiconductor with a bandgap of 1.0/2.0 eV for the majority/minority spin channel. The dependence of magnetic anisotropy energy (MAE), T_C, and the bandgap on compressive and tensile strains has been scanned exclusively. It is examined that T_C depends firmly on the compressive strain and increases up to 21.1% at a compressive strain of 6% whereas it decreases significantly for tensile strain. The MAE is negatively correlated with the tensile and compressive strain. The value of MAE for all compressive strain cases is more than that of the pristine hematene. These results summarize that the studied 2D hematene has broad application prospects in spintronics, memory-based devices, and valleytronics.

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1 Introduction

Research interests in two-dimensional (2D) materials have rapidly been increasing over the past two decades.[1,2] Graphene is the first 2D material that was isolated from graphite by using the scotch tape technique in 2004 at The University of Manchester.[1] It is 200 times stronger than steel, lightweight, flexible, and more conductive than copper. Its unique superlative physical and chemical properties make it a promising material for various electronic and photonic applications.[3–5] Since 2004, many experimental and theoretical studies have been performed over graphene-based materials and they have been proved masters in almost every field especially in catalysis, electronics, photovoltaics, electrochemistry, and optoelectronics.[6,7] As a result of these tremendous applications, material scientists have started to explore the worth of 2D materials for magnetism as well. According to the Mermin–Wagner theorem,[8] long-range ferromagnetic order present in a bulk material can easily be destroyed by the thermal fluctuations for dimensions, $d \leq 2$. The animation of an aligned arrangement of magnetic moments over macroscopic length scales is the trademark of magnetism with an intuitive disturbing of time-reversal uniformity. This is frequently determined by the interplay of the adjacent spins (exchange interactions) that leads to accommodate only some specific correlative orientations among all. At zero temperature, this local order can extend over macroscopic length scales. With a rise in temperature, thermal fluctuations tend to obstruct the alignment of magnetic moments in the neighboring regions. In this way, long-range order is destroyed above the Curie temperature (T_C). This is the main parameter that decides whether the magnet can be used in numerous theoretical, experimental, and technological advances such as the study of topology, the fluctuation driven in new phases, electronic manipulation, and detection of spin.[9–12] Therefore, T_C must be at least of the order of room temperature to serve as a new platform for various technological applications. These facts disheartened material scientists; however, they have not completely given up over this area.

The other members of the family of next-generation 2D materials belong to the monolayers of CrI_3 and $CrGeT_3$ which have also been fabricated successfully.[13,14] After that, researchers regained their passion for 2D magnetism and hematene is the latest member in this category which is 2D analog of hematite ore. Hematene has several properties in common with graphene. As graphene is a thin sheet of carbon atoms, hematene is also a thin sheet of iron and oxygen atoms. Researchers at Rice University synthesized 2D hematene with the liquid-phase exfoliation technique.[15] Balan *et al.*[15] confirmed the 2D morphology of hematene with the help of

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Emergence of magnetic behavior in AB-stacked bilayer graphene via Fe-doping

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ABSTRACT

Bilayer graphene (BLG) as an electronic device has distinctive electronic properties in contrast to the monolayer graphene (MLG). The electronic and magnetic properties of BLG can be tailored effortlessly by authorizing an electric field, tacking dopant, and adatom. We have studied these properties of AB-stacked BLG on Fe-doping using a first-principles study with projector augmented wave (PAW) method under generalized gradient approximation (GGA). This doping is canvassed in three different configurations: Top, Bridge, and Hollow type. Our results manifest that the doping generates spin polarization and induces substantial magnetic moments in all three configurations. In the midst of all, the top configuration turns up energetically favorable. The genesis of magnetism begins with the interplay of Fe-3d states interacting with C-2p states in the environs of the doping site, which leads to band shifting at Fermi level (E_F) and thus inducing the magnetic response in bilayer graphene.

1. Introduction

Graphene has grabbed all the attention in its court during the last two decades as it was the first two-dimensional (2D) material, isolated in 2004 at The University of Manchester [1,2]. It is a monolayer of C-atoms with 2D hexagonal honeycomb lattice in which one C-atom forms each vertex. It has many remarkable features such as controlled carrier density, ballistic transport at room temperature, extreme high mobility, exceptional quantized Hall effect [3–8]. Its strength is 200 times more than that of steel; still, it is lightweight, flexible, and more conductive than copper [9]. Due to these exciting physical and chemical properties, monolayer graphene (MLG) proves to be a phenomenal breakthrough for all technological applications [10]. However, few shortcomings have limited its technological applications. Pristine MLG reserves a zero bandgap. It causes noise when used as an electronic component and has a feeble optical response indeed. The zero bandgap appears to be the only hurdle for its use in nanoscale electronic devices at that time [11,12]. So, distinct ventures were made to overcome these obstructions both theoretically and experimentally by introducing the Stone-Wales type defects [13–15], surface adsorption, irradiating high energy electrons, and ions. Further, the bandgap can be easily tuned by stacking two layers or multilayers together under the application of an electric field [11,12].

Lin et al. [16] examined if bilayer graphene (BLG) is substituted in place of MLG, then the noise can be vanquished easily. Wright et al. [17] scrutinized that the optical response may be improved to a great extent by replacing MLG with BLG. As a result of such anomalous and exotic properties, the researchers started exploring further BLG as an alternative for MLG. BLG is a material consisting of two layers of graphene that can exist in two forms: AA and AB. The binding energies of AA and AB stacked BLG were computed using Quantum Monte Carlo methods by Mostaani et al. [18]. They concluded that the AB-stacked structure is more stable than the AA-stacked structure. It is also a zero bandgap semiconductor like MLG, having exceptional electronic structure due to its peculiar stacking and unique carrier characteristics. Several strives were made to modulate its electronic structure. In particular, the bandgap can be altered by applying an electric field between the two graphene layers [19–21]. Similarly, the electronic and magnetic

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Magnetic-order induced effects in nanocrystalline NiO probed by Raman spectroscopy

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The magnetic-order induced effects in nanocrystalline NiO are investigated through the phonons and magnons observed in the Raman spectra. The key observations are (i) an anisotropy of the first-order transverse and longitudinal optical phonons, with a splitting on the order of 5 meV and (ii) a marked size and excitation wavelength variation of the two-magnon peak, which varies linearly with a redshift of $\sim$50 cm^{-1} with a size reduction from 105 to 30 nm. The magnon-related peaks, in contrast to the phonons, are suppressed for near-resonance laser excitations. The experimental results are interpreted in terms of the exchange interactions and strong electron-electron correlations. The magnetization measurements shows a crossover to ferromagnetism with large coercivities and magnetization with decreasing size, which is shown to be due to the thermoinduced contribution.

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I. INTRODUCTION

NiO is antiferromagnetically ordered below its Néel temperature (T_N) of 523 K, with the ordering arising out of alternating ferromagnetically aligned (111) planes that are antiferromagnetically aligned with respect to each other, and with the direction of spin alignment within each plane being accepted to be along $\langle 112 \rangle$. A transition from an antiferromagnetic behavior in the bulk to a ferromagnetic one when the size is reduced to nanometric scales makes nanometric NiO an interesting material for both ferromagnetic and antiferromagnetic (AFM) spintronics [1–3]. While spintronics conventionally relies on means to manipulate the magnetic moment of ferromagnets, antiferromagnet spintronics, which exploits the magnetic properties of antiferromagnets for their use as alternate components of spintronic devices, has been an emerging area. Understanding the size-dependent magnetization is useful both for practical applications as well as to elucidate the structure-properties correlation in antiferromagnetic oxide nanostructures. Towards this, Raman spectroscopy is a sensitive tool to probe the magnetic behavior at the microscopic level.

NiO (like MnO) presents itself as a benchmark material for a fundamental understanding of strongly correlated systems. The strong correlations arise from the Coulomb repulsions between the 3*d* electrons on the Ni ions lead to AFM ordering and a concomitant structural distortion, albeit minor ($<10^{-3}$), below the Néel temperature from a cubic rocksalt structure to a rhombohedral structure with a distortion along the $\langle 111 \rangle$ direction. However, early theoretical treatments of the lattice dynamical properties were based on shell-model calculations [4–6] and Hartree-Fock approximation [7] and neglected the effects of electron correlations. Experimental neutron-scattering studies [4,5] of the phonon spectrum were also accordingly interpreted.

Subsequent theoretical studies have however emphasized the important role of correlations in the lattice dynamics of transition-metal oxides. Massidda *et al.* [8], using *ab initio* and model calculations, proposed that the AFM ordering arising due to the strong correlation between the *d* electrons can lead to an anisotropy of the nonmagnetic properties such as the lattice dynamics. The magnetic-order induced splitting of the zone-center transverse optical (TO) phonon was estimated to be on the order of about 10% of its energy in MnO and was proposed to be similar in NiO. Experimental investigation of the first-order TO phonon anisotropy by neutron scattering [9] (possibly the only study) validated the predictions of Ref. [8]. It is however noteworthy that the magnitude of the phonon splitting ($\sim$5 meV) was the same for both NiO and MnO, despite a much smaller distortion angle (0.07°) as compared to MnO (0.6°). The TO phonon splitting reported in inelastic x-ray scattering experiments [10] was much smaller and interpreted in terms of an anisotropic polarization. Savrasov *et al.* [11] incorporated strong correlations by merging the local density approximation of the density-functional theory (DFT) with the dynamical mean-field theory. The values of the optical frequencies and the calculated LO-TO splitting agreed with Ref. [5], but differed from Ref. [4]. However, no anisotropy in the phonons was predicted. Luo *et al.* [12] introduced correlations through a Hubbard correction U to the local spin-density approximation method and determined the splitting to depend on the coupling of the phonons to J_1. While the calculated phonon splitting also agrees well with Ref. [5] for MnO, it is underestimated ($\sim$1.8 meV) for NiO. The inclusion of a Hubbard parameter to the generalized gradient approximation (GGA) of the DFT Hamiltonian in Ref. [13] led to an upshift of the phonon frequencies and also deduced a splitting in both the TO and LO phonons. Wang *et al.* [14] found an almost negligible splitting by combining

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Effect of oxygen annealing on the growth and magnetic behavior of sol-gel synthesized NiO nanoparticles

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ABSTRACT

A simple sol-gel method followed by a thermal annealing in an oxygen atmosphere was employed to prepare nickel oxide (NiO) nanoparticles from the precursor, nickel acetate. The structural characterization by X-ray diffraction confirms a cubic phase with high crystallinity and no detectable impurity. Scanning electron microscopy showed the nanoparticles to be spherical in shape with a uniform distribution for annealing at 800 °C. The transformation of the precursor to NiO and the removal of hydroxyl content after annealing were also confirmed by Raman and Fourier transform infra-red spectroscopy (FT-IR). The phonon-magnon (1P + 1 M) and the two-magnon (2 M) peak observed in the Raman spectra are signatures of the magnetic properties. The intensity decrease of the two-magnon mode with decreasing size is correlated to an increasing ferromagnetic behaviour. This type of behaviour is also supported by the magnetic hysteresis loop.
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1. Introduction

Metal oxide nanomaterials exhibit significantly chemical, mechanical, electronic, thermal, magnetic, catalytic and optical properties in comparison with the bulk and have attracted applications in solid-state sensors, electrochromic devices, heterogeneous catalysts, and lithium batteries [1,2]. In the past decades, there has been an increasing interest in the synthesis of nanosized crystalline metal oxides. NiO is a transition metal oxide p-type semiconductor with a rhombohedral crystal structure and a wide bandgap (~3.6–4.0 eV). It is antiferromagnetic in the bulk [3–5] with a Neel temperature of 523 K. The structure is transformed into a cubic one with paramagnetic behaviour [6] above this temperature. The magnetic properties of the nano- sized particles can be very different from those of the bulk materials. When the particle size of antiferromagnetic materials is reduced to correspondingly increase the surface area, the existing uncompensated spins give a non-zero net magnetic moment. Thus, NiO is a prototype material for both ferromagnetic and antiferromagnetic spintronics.

Various techniques including thermal evaporation, chemical vapour deposition, electrochemical deposition, sputtering, sol-gel, hydrothermal, and co-precipitation have been used to prepare NiO nanoparticles. In this study, we report the synthesis of NiO nanoparticles by a simple and cost-effective sol-gel technique followed by a thermal annealing at different temperatures in oxygen (O_2)atmosphere. The effect of thermal annealing on synthesized NiO nanoparticles has been analyzed through X-ray diffraction (XRD), Raman spectroscopy, Fourier transform infra-red spectroscopy (FT-IR), and vibrating sample magnetometer (VSM). The structural and phase composition of the sample was confirmed by XRD. Raman spectroscopy is used to identify the chemical and structural composition, crystalline quality, and phase. The Raman spectra exhibit modes related to phonons, magnons, and their coupling. The appearance of a Raman band at 500 cm^{-1} is due to magnetic origin. The phonon-magnon (1P + 1 M) and the two-magnon (2 M) peak observed in the Raman spectra can be used as a probe of the magnetic domains structure. The structure and sizes of nanoparticles revealed the formation of NiO nanoparticles with a size range of 30 nm and 40 nm after annealing.

2. Experimental section

NiO nanoparticles have been synthesized by a sol-gel process using the precursor nickel acetate (Ni $(CH_3COO)_2{\cdot}4H_2O$). In a typical experiment, 3.7 g of (Ni $(CH_3COO)_2{\cdot}4H_2O$) was added to 70 ml

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Annealing effects on the microstructure, stoichiometry, and ferromagnetic/antiferromagnetic fraction in NiO nanoparticles

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ABSTRACT

The effect of the annealing atmosphere (air and oxygen) and temperature on the microstructural and magnetic properties of sol–gel synthesized NiO nanoparticles is investigated. A structural refinement of the X-ray diffraction pattern show an increase in particle size, with a decrease in lattice constant and bond length with increasing annealing temperature. Air annealing leads to a larger variation in sizes as compared to oxygen annealing. For moderate oxygen annealing upto 600 °C, a Ni phase is observed which is almost undetectable for air annealing. Air annealing at 400 °C shows a high concentration of Ni vacancies which reduced with increasing temperature. The colour variation with annealing show the stoichiometric improvement. Magnetic properties are extracted from the law of approach to saturation fit of the magnetic hysteresis curves. The two-magnon mode observed in the Raman spectrum correlates with the antiferromagnetic/ferromagnetic transition which can be tailored with the microstructure.

1. Introduction

The antiferromagnetic transition-metal-oxide semiconductor NiO is an interesting material because of its high Neel temperature of 523 K. In the nanoregime, size, surface, and stoichiometry effects lead to properties that may strongly differ from its bulk counterpart. One such stark change is its magnetic behavior, as first suggested by Neel, wherein a transition from an antiferromagnetic (AFM) behavior in the bulk to a ferromagnetic one is observed when the size is reduced to nanometric scales. Thus, a bulk AFM material that exhibits zero net magnetic moments in zero applied field, can displays a detectable net magnetic moment in the nanoscale [1].

The earliest report of size dependent magnetic properties of NiO [2] demonstrated superparamagnetism and weak ferromagnetism (FM) in NiO for a particle size below 100 nm. Kodama et al. proposed a new finite-size effect to explain the anomalous magnetic behaviour (viz., large magnetic moments and coercivities and considerable hysteresis loop shifts) in NiO nanoparticles by evoking multiple (instead of two) spin configurations [3]. The magnetic properties of NiO nanoparticles prepared by various methods such as sol–gel, co-precipitation, and ball milling techniques and also under different annealing conditions have been undertaken [4–12]. He et al. showed that the saturation magnetization (M_s) and retentivity (M_r) increases whereas the coercivity (H_c) decreases with the increase of particle size between 23 and 114 nm [10]. In a previous study, we demonstrated the magnetic ordering and the AFM/FM variation through Raman spectroscopy [12]. In the nanoregime, structure, size, stoichiometry, surface effects, and cation/anion vacancies are delicately influenced by annealing conditions and determine various properties. For example, the role of the cation vacancy in ferromagnetic ordering of metal-oxide semiconductors has been studied [13,14].

The process of thermal annealing serves to reduce structural defects and improve the crystallinity. A systematic variation of the annealing atmosphere and temperature enables a modulation of the defect levels which in turn influences various properties. The annealing conditions have also been reported to influence several functionalities, for e.g. the variation of the dielectric and ferroelectric properties [15] and electrochemical properties [16]. The role of the annealing atmosphere on the conductivity and photovoltaic performance of thermally-decomposed NiO_x films was systematically examined [17,18]. The oxidising air and oxygen atmosphere were demonstrated to give superior device characteristics as compared to the reducing N_2 and inert Ar atmospheres. Further, air annealing demonstrated a better power conversion efficiency as compared to oxygen, thus highlighting the role of

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Optical Spectroscopic Investigation of sol-gel synthesized nickel oxide nanoparticles

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Abstract: Among the many antiferromagnetic oxides, NiO has attracted much attention because of its high Neel temperature of (523K). When modified to nanometre scales, NiO can exhibit magnetic properties very different from the bulk. In this work, the effects of size on the crystal structure, vibration modes, purity and morphology were studied for NiO nanoparticles obtained by a sol-gel method followed by a thermal annealing in air at different temperatures. X-ray diffraction, Raman spectroscopy, transmission electron microscopy and Fourier-transform infrared spectroscopy were used to determine the structure, crystallinity, and purity. Transmission electron microscopy determined the nanoparticles to be spherical in shape with uniform sizes in the range of 20-50 nm. The Fourier transform-infrared spectrum spectra confirmed the removal of the hydroxide content after annealing. UV-VIS absorption spectroscopy determined the bandgap to be in the range of 3.2-3.8 eV. The Raman spectra exhibits modes related to phonons, magnons, and their coupling.

Keywords: NiO, Sol-Gel method, bandgap, XRD, Raman spectroscopy.

INTRODUCTION

Nickel oxide (NiO) is a transition metal oxide p-type semiconductor with a wide bandgap ranging from 3.6 eV to 4.0 eV. These nanoparticles usually exhibit a number of unique properties, which may strongly differ from those observed in bulk materials [1]. NiO has attracted much attention due to its size-dependent crystal structure, vibration modes, magnetic and optical properties, and its applications in catalysis, battery cathodes, solid-state sensors, electrochromic devices as well as lithium ion batteries [2-4]. Raman scattering allows one to identify various contributions from phonons and magnons reflecting the effect of finite size, presence of defects and surface effects and help to identify the super exchange mechanism associated with the short- range magnetic interactions [5].

The objective of this work is to correlate the size to above mentioned properties. The synthesis of NiO nanoparticles is done a sol-gel method followed by an annealing in different temperatures. Sol-gel is an interactive convenient laboratory method because of its ease, simplicity, and cost-effectiveness. Moreover, a high yield of nanoparticles can be obtained. The as-prepared nanoparticles exhibiting nickel hydroxide structure were annealed at different temperatures and different atmospheres to form pure NiO. Systematic Raman, X-ray diffraction (XRD), Transmission electron microscopy (TEM), UV-Vis spectroscopy (UV-Visible) and Fourier transform infra-red spectroscopy (FT-IR) characterization were carried out as a function of annealing.
The structure and sizes of nanoparticles revealed the formation of NiO nanoparticles with the size ~ 68 nm after annealing. The morphology and shape of the nanoparticles were also studied with the help of TEM and Selected area electron diffraction (SAED). The Raman spectra reveal the appearance of modes related to phonons, magnons, and their coupling which can be used as a probe of magnetic domains structure. The band gap is influenced both by particle size and stoichiometry.

EXPERIMENTAL SECTION

The sol-gel synthesis of NiO nanoparticles is done using nickel acetate (Ni $(CH_3COO)_2.4H_2O$) as a source of Ni. In a typical experiment:- 3.5 gm of Ni $(CH_3COO)_2.4H_2O$ was added to 40 ml of methanol and stirred vigorously at 60 °C for 1 hr, leading to the formation of a light green coloured powder. Finally, the dried powder was annealed at various temperatures between 400 and 600 °C in an air atmosphere. The phase composition of

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ARTICLE

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Japanese invasion, war preparation, relief, rehabilitation, compensation and '*state-making*' in an imperial frontier (1939–1955)

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ABSTRACT

This paper looks at the history of *state-making* in an entangled imperial frontier. The northeastern frontier of British India was a mosaic of princely states, administered and un-administered territories. The presence of the colonial state in the region was contentious, marked by violence on one hand and philanthropy on the other. The Japanese invasion of the region during World War Two had several unintended ramifications. Wartime and post-war developments produced institutions and social experiences which facilitated the process of *state-making* in the region. Relief and Rehabilitation project of the colonial state, and later distribution of monetary compensation was not merely governed by moral or legal obligations but was part of a larger project of imperialist reconquest in Asia after the surrender of the Japanese with Manipur and Naga Hills as the base. This project also provided the postcolonial Indian state with institutions to continue the process of *state-making* of its own.

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KEYWORDS
World War Two; relief and rehabilitation; state-making; compensation; Manipur; Naga Hills; Northeast India

Introduction

This paper looks at Naga Hills, a district under the Assam government and Manipur, a princely state under the British administration with a Political Agent representing the British Empire in the durbar. The region was indirectly or partially governed through the Political Agents and Deputy commissioners, who had specific administrative arrangements with the local rajas and chieftains, and by setting up fortified bases surrounded by *untamed wilderness* which was managed through *touring*, writing *tour reports* and punitive expeditions. My paper looks at a very interesting history of Manipur state and the Naga Hills, often considered a cultural and an administrative frontier of the British Empire in South Asia, when the region experienced a major historical tremor by an invasion of the Imperial Japanese army. Naga Hills and Manipur was transformed into a fortress by the Allied army to defend the British Empire's real assets in Assam, Bengal, and beyond. This paper looks at the ramifications of militarization of the region and how it was finally brought under the direct administration of

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Quality of Life Among Elderly Women –An Empirical Study of Pathanapuram Taluk in Kollam District, Kerala

Angel M. Jose &
Dr. Rony Thomas Rajan

The world in which we are living is slowly graying. One of the characteristic features of aging and one which is more relevant to the present study is the feminization of ageing. Women live longer than men and they constitute the majority of the older population. At the global level, women comprised 55 percent of the older population. In Indian society, aged are respected since centuries, but due to westernization, industrialization, urbanization and globalization, changes are visible in India's social fabric. Today, the elderly demand that society should not only ensure independence and participation, but also provide care, fulfillment and dignity. Kerala continues to be the state where the females outnumber males per thousand. The focal point of this study is to analyze the socio-economic and health profile of the elderly women and also their quality of life. This study seeks to analyze the aging problem of elderly women and their quality of life with special reference to Pathanapuram Taluk in Kollam District of Kerala.

1. Introduction

Increasing longevity and population aging has emerged as one of the major global issues of the 21st century. The growth rate of the elderly population is more rapid in developing countries like India than developed countries. Among all the states in India, Kerala achieved a tremendous demographic transition well recognized all over the world. Kerala continues to be the state where the females outnumber males per thousand. This particularly aggravates the plight of the elderly women. Women above the age of sixty, the marginalized group have life expectancy, low income, no assets and no pension which needs greater attention, concern and care. Aging in Kerala is disproportionately a female phenomenon and this gender dimension of ageing is a significant aspect. Population ageing could have profound implications for the economies as well as the societies. The focal point of this study is to analyze the socio-economic and health profile of the elderly women and also their quality of life. So this study seeks to analyze the aging problem of elderly women and their quality of life with special reference to Pathanapuram Taluk in Kollam District of Kerala.

2. **Methodology**

Primary and secondary data are used in this study. The primary data for the study have been collected through survey conducted among elderly women (above 60 years) in three panchayaths such as Pattazhy, Thalavoor and Vilakkudy of Pathanapuram Taluk with a structured schedule. In the selection of sample items, snow ball sampling technique has been adopted and eighty samples were collected from each panchayaths. The sample size is fixed as two hundred and forty. The secondary data were sourced from books, journals, reports, newspapers and online media.

3. Review of Literature

There have been various studies in the elderly and their issues. Some of them defined the process of aging while others examined the issues of elderly. According to Edward J Stiglitz (1957) "Aging as the element of time in living". James Barren (1964) defined "Aging as an involuntary process, which operates cumulatively with the passage of time and is revealed in different organ systems, as inevitable modification of cell, tissues and fluids". The United Nations defines aged persons as those who are over 65 years old because often

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ORIGINAL

Sugarcane bagasse-facilitated benign synthesis of Cu_2O nanoparticles and its role in photocatalytic degradation of toxic dyes: a trash to treasure approach

Sushma Yadav[1,2] · Maruf Chauhan[1,2] · Divya Mathur[2] · Arti Jain[2] · Priti Malhotra[2]

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Abstract
The global water situation is highly challenging and requires immediate attention. It is pertinent to explore opportunities in wastewater treatment with an environment friendly route. An efficient method can be explored where biogenic nanoparticles (NPs) synthesized by agricultural waste can further enhance its potential in cleaning the environment. Therefore, a green, surfactant-free and sustainable approach towards the genesis of cuprous oxide (Cu_2O) was attempted. Cu_2O NPs were synthesized using Fehling's solution and sugarcane bagasse extract which plays a vital role both as reducing and capping agent. The Cu_2O NPs were characterized using Fourier transform infrared and UV–Visible spectroscopy, and their morphology was determined by high-resolution X-ray diffraction, transmission electron microscope and scanning electron microscope analysis. Their optical properties, i.e., band gaps, were calculated, and the catalytic efficiency was studied by carrying out the degradation of organic dyes [methyl orange (MO), methyl blue (MB), methyl red (MR) and Congo red (CR)] present in wastewater via spectrophotometric measurements. Simultaneously, their increasing order of degradation efficiency was found to be MR < CR < MB < MO. The mechanism of degradation of organic dyes on the surface of Cu_2O NPs was also proposed. Utilizing the agricultural waste and trapping the reducing property of its polysaccharides components in facilitating the designing of the Cu_2O NPs are a novel methodology. The current study envisages a new perspective for the purpose of environmental remediation and novel applications in photocatalysis.

Keywords Wastewater treatment · Agricultural waste · Organic dyes · Green synthesis · Photocatalyst · Cu_2O nanoparticles

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Medicinal Chemistry & Drug Discovery

Synthesis and Antitubercular Activity of 4,5-Disubstituted N^1-(5′-deoxythymidin-5′-yl)-1,2,3-triazoles

Rajesh Kumar,[a, b] Devla Bimal,[a] Kavita,[a] Manish Kumar,[a] Divya Mathur,[a] Jyotirmoy Maity,[c] Sunil K. Singh,[d] M. Thirumal,[a] and Ashok K. Prasad*[a]

Synthesis of fifteen C^4-aroyl-C^5-aryl-N^1-(5′-deoxythymidin-5′-yl)-1,2,3-triazoles have been reported starting from azidation of 5′-*p*-toluenesulfonyloxythymidine followed by azide-alkene oxidative cycloaddition reaction of the resulted 5′-azido-5′-deoxythymidine with 1,3-diarylpropenones in dimethylformamide (DMF) in the presence of tetra-*n*-butylammonium hydrogen sulfate (*n*-$Bu_4N^+HSO_4^-$, TBAHS) as catalyst in 60 to 79% overall yields. Further, they were also synthesized by one pot sequential reaction of tosylated thymidine with sodium azide in DMF and then with 1,3-diarylpropenones in presence of *n*-$Bu_4N^+HSO_4^-$ in superior yield of 70 to 95% than 60 to 79% in two step procedure. All fifteen synthesized compounds were screened for their *in vitro* anti *Mycobacterium tuberculosis* activity against sensitive reference strain H37Rv and multi drug resistant (MDR) clinical isolate 591, and found to exhibit minimum inhibitory concentration (MIC) ranging from 2 to 15 μg/mL, which was equivalent to the MIC of first line anti-tubercular drug streptomycin. All compounds qualify for their drug likeness when their physicochemical parameters were assessed using online MolSoft and Lipinski filter software, except their molecular weight. The cytotoxicity of potent compounds evaluated human monocytic cell line THP-1 by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl-2*H*-tetrazolium bromide (MTT) assay was found to be less as compared to the first line drug, isoniazid.

Introduction

Tuberculosis (TB), predominantly caused by *Mycobacterium tuberculosis* (*M. tuberculosis*) is one of the biggest health threat causing morbidity and mortality worldwide.[1] The current empiric therapy of combined use of four first-line anti-TB drugs (isoniazid, rifampicin, ethambutol and streptomycin) known as directly observed treatments (DOTS) launched by WHO requires 6–9 months of treatment and the cure rate is approximately 85%.[2] The situation of TB treatment has worsened with the emergence of new *M. tuberculosis* strains that are resistant to DOTS treatment. Cases of TB due to lethal drug-resistant strains (DR-TB), multidrug-resistant strains (MDR-TB) and extensively drug-resistant strain (XDR-TB) are on the rise, which has warranted discovery of new TB treatment regimens and chemotherapeutic agents.[3–6] Design of nucleoside based drugs capable of interfering with *mycobacterial* purine and pyrimidine metabolic pathways is a promising approach towards the future of anti-TB therapy.[4–9] Two 5′-modified lead nucleoside antibiotics, SQ641[5] and CPZEN-45[6] are currently undergoing preclinical testing as an anti-TB agent (Figure 1).

Substituted 1,2,3-triazoles have been considered as a privileged heterocyclic moiety owing to their indomitable biological potential[7] and ability to be linked to different pharmacophores to generate an array of new hybrid molecules with improved efficacy.[8–10] Herein, we describe facile synthesis of C^4-aroyl-C^5-aryl-N^1-(5′-deoxythymidin-5′-yl)-1,2,3-triazoles using two procedures, one by azidation of 5′-*p*-toluenesulfonyloxythymidine followed by condensation of azidothymidine with 1,3-diarylpropenones and the other by one-pot sequential reaction of tosylated thymidine with sodium azide in DMF and then with 1,3-diarylpropenones in presence of *n*-$Bu_4N^+HSO_4^-$ as catalyst involving oxidative azide-olefin [3 + 2] cycloaddition (OAOC) protocol in good to excellent yields. The synthesized 4,5-disubstituted N^1-(5′-deoxythymidin-5′-yl)-1,2,3-triazoles were evaluated for their *in vitro* anti-TB activity against sensitive reference strain H37Rv & MDR clinical isolate 591 and for cytotoxicity activity against human THP-1 cells by MTT assay.

Results and Discussion

The nucleoside precursor of 4,5-disubstituted N^1-(5′-deoxythymidin-5′-yl)-1,2,3-triazoles, *i.e.* 5′-azido-5′-deoxythymidine **2** was synthesized following literature procedure by selective mono-tosylation of thymidine with tosyl chloride followed by azidation of resulted 5′-*p*-toluenesulfonyloxythymidine with

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Exploring the problem of Internet Addiction: A Review and Analysis of Existing Literature

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Abstract

Anecdotal reports indicate that maladaptive patterns of Internet use constitute behavioral addiction. Internet addiction is characterized by unrestrained and awfully controlled engrossment or behaviors regarding internet access that lead to impairment, stress, dimensionally measured depression, indicators of social separation and anguish. By reviewing and analyzing approximately 100 articles we present evidence that are able to provide an overview of the main themes and proclivity covered by existing and relevant studies. The vital detection of this research unveils that many factors related to social, demographic, lifestyle changes related constructs have a bearing on the phenomenon of internet addiction strongly. This study not only reached certain conclusions for both theory and practice, but also defined future lines of research according to the gaps detected by the study's results. The main findings from this literature, though not conclusive, but will help the researcher and policymakers to obtain a better understanding and description of the problem faced by the youth and necessary to develop some remedies to lessen the addiction phenomenon.

Keywords: Internet Addiction, Compulsive Behavioral, Disorder, Health

JEL Classification Code: E22, F24

1. Introduction

The upsurge and popularity of the internet as a communication and conveyance channel has become an ever-increasing part of many people's day-to-day lives. Incorporated with the rise in popularity and usage, there have been a increasing number of reports in the popular press about the excessive use of the internet under the guise of "Internet Addiction", "Internet Addiction Disorder" (IAD) and "Internet Addiction Syndrome"(IAS). Along with new technologies, the Internet has reshaped and upgraded many facets of our lives by being integrated in the daily experience, by becoming more available, offering many services and its growing usage in every age group. Internet Live Stats, data of internet users shows that over the last 15 years, the numbers of internet users have increased by 1000%. That means approximately 46% of the world population is on the Internet today, an incredible growth compared to only less than 1% in 1995 (Internet Live Stats). At the beginning of the 21st century, the transfiguration and development of the various life spheres occurred, due to the powerful influence of the internet. In December 2017, the number of internet users worldwide reached 4.15 billion (meaning an internet penetration of 54.4 per cent), up from 394 million in 2000 and 1 billion in 2005 (According to an estimate, more than 10 new people come onto the internet every second that

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ROLE OF BRAND HATE ON THE RELATIONSHIP OF CONSUMER PERSONALITY TRAITS AND BRAND LOYALTY

Sunita Gupta*, Pankaj Gupta, Renu Yadav*****

Abstract: *This research examines relationship between consumer personality traits comprising of extraversion, agreeableness, openness to experience, and conscientiousness and brand loyalty. Further, this relationship is tested by introducing a mediating variable namely Brand hate. Brand hate is the negative emotional effect of the consumer towards the brand. Convenience sampling was used to collect the primary data of the respondents. The study is carried out on a sample of 250 respondents. Theoretical model was tested through structural equation modelling using SPSS 24 and Amos 22. It is found that all personality traits variables studied have a direct relationship with brand loyalty. Mediation results indicate that brand hate fully mediates the relationship amongst extroversion-brand loyalty and conscientiousness-brand loyalty. Furthermore, partial mediation of brand hate exists between agreeableness-brand loyalty and openness to experience-brand loyalty. This research presents new perspectives for constructing a prudent model of consumer personality traits and brand loyalty by incorporating brand hate as the mediator. Findings, implications, and limitations are discussed towards the end of the paper.*

Keywords: *Consumer Personality, Brand Hate, Brand Loyalty, Personality Traits*

INTRODUCTION

As customers, one prefers not just to buy those products that are really needed, but also those products which one perceives as being congruent with his/her "self-concept." An individual wants such products which could reflect with one's personality. Marketers are taking a note of it and offering products that exceed customer's expectations (Breschi, 2019). This influences customer to make repeat purchases, which ultimately leads to brand loyalty. But, what if a brand does not meet the expectations of the customer? What if customer start developing hate for a certain brand? Does this affect the relationship between what customer perceives about themselves and what makes them loyal to a certain brand?

It would be appropriate to state that personality of an individual helps in determining his/her purchase behavior. Studies conducted in the past provide evidence for the same (Azzadin et al., 2012; Onu & Garvey, 2014; Udo-Imeh, 2015; Middlebrook, 2019). Personality pertains to distinctive psychological attributes that give rise to consistent and long-lasting reactions towards one's surroundings (Kotler, 2010). Traits such as extraversion, openness, agreeableness, conscientiousness, and neuroticism, describes personality of an individual (John & Srivastava, 1999). These five factors, when combined together, came to be known as the OCEAN model of personality (Costa & McCrae, 1992). According to (Mulyanegara, Tsarenko & Anderson, 2009), extraversion is a trait that characterizes itself as enthusiastic, confident, and highly emotionally expressive. Consciousness comprises of thoughtful and goal-oriented behaviour (Mulyanegara et al., 2019). Agreeableness is predicated on characteristics including benevolence, companionship, generosity, and selflessness (Costa & McCrae, 1985). Neuroticism is described as a tendency to encounter uncomfortable and disconcerting thoughts, feelings as well as emotions (Shaver & Brennan, 1992). Openness is described as being receptive to newer ideologies, thoughts, and experiences and has been directly connected to innovation and creativity (Shaver & Brennan, 1992).

Since each individual has a distinct blend of personality traits and each one is unique, they may encounter different emotions and thoughts and behave differently in the same scenario (Durukan & Bozaci, 2011). So, can this combination of characteristics, helps in identifying whether an individual will stay loyal to a brand or not? (Lin, 2010; Durukan & Bozaci, 2011) agree to this statement. Relationship, both

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Personality: A Matter Of Multiple Theories

Harpuneet Singh Kohli, Sujata Khandai, Renu Yadav

Abstract: The concept of personality has been explored from a wide range of conceptual viewpoints. This research tries to bring the varied concepts of personality under one roof. The current research explains the concept of different personality theories along with the limitations of those theories, starting with psychoanalytical approach and concluding at cognitive approach. Various implications of these theories, and personality, in general have been discussed. Scope for future research is also mentioned in concluding remarks.

Keywords: Personality, Psychoanalytical approach, Trait theory, Cognitive approach.

I. INTRODUCTION

What sets an individual apart from each other? Is it just the outside of the person that makes a noticeable difference, or is there something to do with the inside also? Everyone has a different set of personality, that determines how one leads his/her life [1]. Being an asset, personality helps in shaping the day-to-day task of any individual [2]. The accomplishments and aspirations of the individual for the future can be impacted not only by one's own personality but also by the personalities of the individuals with whom they connect [3]. So, is an individual born with certain personality traits? Iacono & McGue conducted a study on 350 pairs of identical twins. The findings showed that perhaps the personalities of identical and fraternal twins were very similar to whether or not they were brought up inside the same house or raised apart. They proposed that at least some characteristics of the personality were mainly shaped by genetics [4]. On the other hand, this study found that fraternal twins shared a meager 20 percent of personality traits, while identical twins shared 50 percent traits. Hence, both the genetics as well as environmental factors come into play to make up the personality of an individual [5]. So, what external factors contribute in shaping the personality of an individual? [6] highlighted that somehow the individual's personality builds up in a social environment. A child being born in a particular society, gets used to the customs and ideologies, which have an effect on his/her personality development [7]. Culture and sub-culture factors also influences the personality of an individual. These factors pertain to some traditions, ideologies, and beliefs that are embraced in a particular society [8]. Language is also one of the factors that affect the development of an individual's personality [9]. According to them, an individual's personality is influenced by a process of dialogue with several other members via language.People often identify an individual with either great personality or a bad personality [10]. The topic of personality is far too intricate for such a generalized description because humans are too complicated and vary in their behavior with different individuals [11]. More specificity in the language is required to properly define and explain the personality of an individual. For this reason, researchers have made significant contributions in developing tests to assess or analyze personality [12]. Personality has been so extensively studied that "Personality Psychology" is considered to be a completely distinct discipline of psychology [13]. In fact, there are 2,500 personality tests developed in the U.S [14]. A simpler way to explain personality is to assume that there are two individuals of similar age, yet they have diverse interests, behaviors, thoughts, and feelings. This implies that there is

something different within them, and therefore that "something within" is personality [15]. In the book *Anatomy of personality*, [16] mentioned that if a person looks at their intentions whenever they use the term "I", they will get a decent understanding of its meaning. "I" as a term identifies one as an individual, which separate one from the others. Personality, as a term is derived from the Latin word *persona*, that pertains to the veil used by the performers in the play. In this sense, personality pertains to external and identifiable aspects of an individual that others can see [11]. On the other hand, according to [17], personality is *"the dynamic organization within the individual of those psychophysical systems that determine his characteristic behavior and thought."* Personality can indeed be described as the set of both, intrinsic and extrinsic traits which can often impact the individual's behavior [13]. In order to assess a person's personality, traits or characteristics have a predominant role to play [17]; [18]. Two different aspects of personality's definition, proves that it is a complicated process. Researchers have tried to understand the concept of personality in the past, yet it remains an area of study which can be explored [19]; [20]; [21]; [22]. This research will examine previous studies based on personality, retrieved from authentic and credible database. This review study throws light on the various personality concepts and theories developed in the past. How consistent the concepts are? What conclusions were drawn? What were the inadequacies of all those personality-based studies? What future does the personality study holds, especially in consumer behavior domain. After examining and concluding the outcomes of these studies, this research will provide guidance for future work on this subject.

II. CONCEPT OF PERSONALITY

A.The Psychoanalytical Approach to Personality

In terms of personality, Sigmund Freud, famously quoted to *"Turn your eyes inward, look into your own depths, learn to first know yourself."* The very first technique for the scientific study of personality has been psychoanalysis [23]. Psychoanalysis is the underlying unconscious forces, biologically determined sexual drives as well as aggression, and inevitable early childhood disputes or conflicts. These have been viewed to be the shapers of an individual's personality [24]. Instincts, a type of energy that converts physiological energy, that links the needs of the body to the wishes of the mind, are the basic building blocks of an

Instagram as New platform for Political Participation among Indian Youth: An Opinion Study of University Students

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Varinder Kumar**

ABSTRACT

In India, comprehensive literature on social media impacts on political engagement in real life has been published over the last decade. Some claim that social media enhances civic engagement online and offline. This research examines how Instagram's political activities influence university students' political performance in India and the actual political participation. This research also illuminates the connection between political and cultural events.An online survey (N=72) of students from the various Indian universities was conducted, including male and female undergraduates, graduates, and doctorate students. The results show that Instagram is used in political consciousness and information by the majority of students. Political efficiency is mostly based on online political involvement.

Furthermore, they believe that Instagram is an emerging platform for political participation. Finally, the study results show that Instagram's political activities strongly connect with political awareness and offline engagement.In India, younger generations are highly involved in online political events on Instagram and other social media platforms. Participants actively share their political content with friends, family and colleagues online. Instagram provides various content-sharing tools, including stories, reels, and live video sharing, which may effectively exploit during political campaigns. Youth and their political aspirants may have engaging associations through photographs and edited videos through the Instagram platform.

Keywords : Instagram, Political engagement, Political effectiveness, Social media, Political participation.

1. Introduction

Instagram is the latest platform in political messaging in election campaigns in recent years. The contact between Instagram and chat rooms has grown overthe last ten years. Instagram is the newest and fast-growing Internet Networking trend. All the political parties and candidates used Instagram in no small measure to attract young voters during the 2019 general parliamentary elections inIndia. Political communication analysts have drawn considerable attention to the recent exponential growth and popularity of Instagram use. The political effect of Instagram as a modern way to get politically aware people and connect with people on the web is of particular interest. Users will receive updates and information processing and circulating on Instagram, which is inter-dimensionally linked to multiple web links. Instagram's framework is somewhat different from mainstream media; it encourages news and knowledge to be conveyed differently. Social networking platforms like Twitter, Facebook, and YouTube and mass communication systems like mainstream newspapers and radio, and television, have been socially transformed. Hundreds of social media research' (Golan, Arceneaux, & Soule, 2019) were carried out by media and communications researchers, politicians, sociologists, and

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A Critical Analysis of Sharankumar Limbale's *Hindu: A Novel (2010)*

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Abstract

A Critical Analysis of Sharankumar Limbale's *Hindu: A Novel (2010)* This paper critically analysis Sharankumar Limbale's *Hindu: A Novel (2010)*. It is set in a small casteist village of Achalpur in Maharashtra and is translated from Marathi (2003) by Arun Prabha Mukherjee in 2010. Dalit literature has undergone a transformation in the twenty-first century and Sharankumar Limbale is an active participant in it. The paper, thus, traces this very trajectory along with providing a detailed analysis of the plethora of techniques Limbale employs to present a world of Dalits, which is not binary world but one where characters are grey and humane; where the path Dr. B. R. Ambedkar left for them to follow is not liberating enough; where the struggle against casteism is as much internal as it is external; where the women and the lower class are doubly oppressed; and where the Dalit movement's trajectory is in question. This paper then addresses these themes and tries to comprehend what Limbale tries to project through his work.

Keywords- Dalit Literature, Gender, Caste, Dalit Aesthetics, Dalit Movement.

Methods of English Language Teaching in India: From Primary to Higher Level

R Rajeshwari

ABSTRACT

This article aims to describe the methods of teaching English in India as a second language, which have been propounded till date for providing classroom instruction to enhance the second language skills of Indian learners at all levels (adults as well as children). It describes how different methods can be put to best use at different levels of learners, i.e. different 'learning stages'. It is based on teaching CBSE students of all classes as well as adult learners of English. It shows how all the methods hold their own unique place in second language teaching. It also shows how all these methods are closely interwoven and are being followed (to some extent) in our school curriculum.

Keywords: Second language teaching methods; Methods of teaching English in India.

Introduction

Since the post-method period, there has been a steady resistance to the use of any one method in second language teaching. A combination of methods is encouraged. This article aims at presenting a combination of methods that have been propounded till date, and how they can be helpful in the course of second language teaching. It is proposed that these methods be seen as a continuous process of growth, with the methods playing a unique role in the trajectory of a learner's second language development. Each method contributes in creating a naturalistic environment at consecutive levels for the second language learner. For example, a bilingual word list can be used during the initial stages, whereas communicative language teaching can be used at a later stage of the second language teaching class, once the learner has attained basic language proficiency.

People acquire their first language when subjected to environs that facilitate language learning. However, when it comes to second language, a debate arises on whether an individual method or methods or no methods should be followed for teaching the language. In a multi-lingual country like India, all languages (native languages/English) are taught as academic subjects in schools, and mostly in a similar manner. Generally, a student in India knows three languages, viz. the mother tongue, Hindi, and English. In this essay, let us see how the different methods to learn the second language benefit the students at different stages of the learning process. As Larsen-Freeman and Anderson (2011) state, the methods could be replaced by the methodological inventions to facilitate language learning.

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Elimination of single use plastic: Thinking beyond blanket ban by the government

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Abstract
The government of India has emphasized the banning of single-use plastic which is the biggest source of pollution in the country. The government has intended to ban it in a phase-wise manner. The role of citizens becomes very important in this entire ambitious project and therefore demands active participation. It is a well-settled argument that any government cannot afford to have a blanket ban on single-use plastic. Things that can be replaced are considered such as poly bags, cutlery, straws, plastic spoons, etc. however, the processed food and their packaging is still a big challenge before us. We do not have an immediate alternative to many items in which single used plastic is processed. Further, the segregation of littered single-use plastic is another challenge because littered single-use plastic acts as an obstacle when we try to recycle it.
The best solution apart from the ban endorsed by the government is our daily behavioral changes and awareness that can help a lot to reduce this menace to a significant level. This practice would not be new to this country. From the very ancient times, living in harmony with our environment is enumerated in Vedas, Upanishads and the teachings of Indian culture. This paper will explore various ways through which the problem of single-use plastic can be eradicated with the help of community service. It will analyze as to how the Government can rope in every individual in this important task. I will be using a descriptive and analytical approach to study the subject matter.

Keywords: environment, plastic, government, blanket

Introduction
Plastic has made the life of the human being easy and convenient. The lightweight durable plastic available in cheap price has made it an evil necessity in daily life. This has led to exponential growth in plastic production worldwide. However, it is a well-known fact that plastic takes thousands of years to disintegrate and therefore growing plastic waste poses a serious threat before us. Plastic waste has emerged as the biggest source of pollution in our environment and ecology than any other pollutants. Many studies have observed that most plastics are not biodegradable and after a long time this single-use plastic further turns into micro-plastics. The micro-plastics are even more harmful because they can easily pass through the water filtration system, mixed in water bodies very easily and can cause a serious threat to aquatic life. Apart from this, plastic carry bags and other items can block waterways which could, in turn, can cause a natural disaster like a flood. When we burn plastics, toxic gases emitted from burning leads to severe breathing issues. Long-time exposer to plastic burning gases can cause liver damage because gases like dioxin and furan are harmful to humans.
Single-use plastic is commonly referred to as disposable plastic, which is often used in packing, food processing, grocery bags, plastic bottles, cutlery used in agriculture and pharmaceuticals. The important point to note here is that they are mainly used once and thrown away or recycled. Recycling becomes very difficult because of the poor application of waste segregation and management. In India alone, nearly around 10,000 tonnes of plastic waste is uncollected and segregated (Koshy, 2019) [6].
Being one of the largest populations, aiming to topple China in near future in terms of population, the scenario in India regarding single-use plastic waste is not very encouraging. If we study the annual report for 2017-18 on the implementation of plastic waste management rules by central pollution control board in November 2018, we will find that we are far away behind in terms of waste management generating through the use of plastic. Our seriousness can be known from the fact that despite the fact India produces around 0.65 million tonnes of plastic every year, 22 states and Union territories do not even maintain data on plastic generation. According to the released by central pollution control board (CPCB), India produces around 25,940 tonnes of plastic waste every day of which only close to 15,000 tonnes are recycled. However, there are some encouraging data which are reflecting some positive signs. In terms of per capita consumptions of plastic in India, it is roughly close to 11 Kg per capita per annum. If we compared this data to the global average of per capita plastic consumption which is 28 Kg, we will find that in terms of plastic consumption we are far behind the global average. Similarly, if we compare per capita plastic consumption per annum of the USA and European Union which is 139 Kg and 65 Kg respectively, we are still far behind in this row. However, this should not deter our aim to reduce our per capita plastic consumption per annum to a record level.
Uttar Pradesh alone generates around 206,733.45 tonnes of plastic waste per annum but only has 34 recycled registered recycling/manufacturing units. Though the state has ordered a complete ban on manufacturing, storage, import, transportation, and sale of plastic carry bags to prevent the menace of single-use plastic. However, the has yet to form a state-level monitoring committee (SLMC) on solid waste management. Other states such as Punjab, Madhya Pradesh,

E-GOVERNANCE IN INDIA: AN OVERVIEW

Dr. Chandra Prakash[1]

Abstract:

E-governance is emerging topic of public administration and political-economy towards maintenance of good governance. Global E-Governance Survey 2020 has been published by the Department of Economic and Social Welfare, United Nation on July 10, 2020 and highlights several socio-economic dimensions of e-governance programme apart from COVID-19 impact. The UN e-government survey 2020 listed India under very high e-participation index level and high under the whole E-Government Development Index (EGDI) rank among 192 countries. During the recent years, digital platform gained a huge attention worldwide. In the period of pandemic COVID-19, it has been proven as a mode of survival for everyone, right from the direct benefit transfer (DBT) to implementation of many schemes and even inviting donations. The epidemic time proves the important contribution and role of e-platform. The e-governance is gaining due attention and Government of India takes many reforms to promote e-governance programme at the national level as well as provincial level. In the context, this article focuses on the different aspects of e-governance programme in India.

Keywords: COVID-19, Digital Governance, Direct Benefit Transfer (DBT), E-governance, India;

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संदर्भ:

आज़ादी के बाद दलितों को शिक्षा का अधिकार मिला। मूक लोगों को वाणी मिली और चेतना आई जिससे उन्होंने रुढ़ियों और अमानवीय परंपराओं को नकार दिया। आठवें दशक में हिंदी दलित कहानी ऐसे ही समय में तेज़ी से उभरती है और अपनी उपस्थिति दर्ज करती है। तब से तक दलित कथाकार अपनी कहानियों के माध्यम से स्वयं को तलाशने के साथ-साथ सामाजिक परिवेश की गंभीर चुनौतियों से भी टकराते है साथ ही, भारतीय समाज का परिचय उन स्थितियों और चरित्रों से करते है जिन्हें कभी भी मुख्यधारा में जगह नही दिया गया और उनका उपयोग वस्तु की तरह किया गया।

बीज शब्द: *दलित, शिक्षा, व्यवस्था, समाज*

प्रस्तावना

हिंदी का एक मुहावरा है 'दीपक तले अंधेरा' जिसका अर्थ होता है, दूसरों को उपदेश देने वाला व्यक्ति का स्वयं अच्छा आचरण नहीं होना। भारतीय समाज ने भी विश्व स्तर पर अपनी विविधता,संस्कृति व परंपराओं को विश्व स्तर पर पहुँचाया है,किंतु अपने ही समाज से जातिगत विद्रपताओं, विडंबनाओं व शोषण को ख़त्म नहीं कर पाया है। हज़ारों सालों से जाति के आधार दलितों का शोषण अनवरत जारी है। दरअसल, भारतीय समाज में दो तरह के संविधान संचालित होते है। पहला, जिसे मनु ने हज़ारों सालों पहले बनाया था और वर्ण-व्यवस्था को लागू किया। दूसरा, आज़ादी के बाद डॉ.भीमराव अंबेडकर ने बनाया था। अंबेडकर का संविधान सभी को समानता, स्वतंत्रता व बंधुत्व का अधिकार देता है जबकि मनु का संविधान वर्ण-व्यवस्था पर आधारित भेदभाव को जन्म देता है। रामस्वरूप चतुर्वेदी लिखते है "मनु के विधान में अंबेडकर के लिए स्थान नहीं था, या नहीं जैसा था, अंबेडकर के विधान में मनु के लिए पूरा स्थान है।"[1] मनु की भेदभावपूर्ण व शोषण पर आधारित यह व्यवस्था आज भी सवर्णों की मानसिकता में ज़हर का काम कर रही है जिससे सवर्ण संविधान को काग़ज़ी व्यवस्था मानकर इसका नकार करते है। जयप्रकाश कर्दम की 'तलाश' कहानी का पात्र इसी मनुवादी व्यवस्था से बँधा है और कहता है "संविधान से देश चलता है साहब, समाज नहीं। समाज परंपराओं से चलता है।"[2]

Study the anti-oxidant property of *Tris*-(4-phenoxyphenyl) amine

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Abstract: The present paper demonstrated the antioxidant activity of ***Tris*-(4-phenoxyphenyl) amine** versus the alcohol induced oxidative damage in albino wistar rats. In the study, the alcohol 30% exposed rats were found to be more prone to peroxidative risk as they are calculated by species of thiobarbituric acid. It was observed that, after the rats induction with 30% alcohol, concentration of lipid peroxidation has been obtained expressively ($P \leq 0.001$) high in a liver and serum, beside with concomitant substantial ($P<0.001$) reduced in enzymatic and non-enzymatic antioxidants as well as ceruloplasmin in serum along with liver, only 30% alcohol was treated.

Keywords: Antioxidants, oxidative damage, thio-barbituric acid.

Introduction: Antioxidants are the compounds which inhibits the oxidation. Any chemical reaction producing the free radicals, thereby leads to chain reaction which might harm the organism cells and is termed as oxidation. Thiols or ascorbic acids (Vit. C) terminates these chain reactions and acts as antioxidants. For balancing the oxidative stress, animals and plants maintains complex system of the overlapping antioxidants, like glutathione and enzyme such as superoxide mutase and catalase, produced internally, or the dietry antioxidant Vitamin E and Vitamin C. The antioxidants are commonly having two different groups of substrates in use: the industrial chemicals products for oxidation prevention, as well as the natural compounds present in the tissues as well as food. The industrial oxidants have varied utilization: performing as the preservatives in the cosmetics along with foods as well as in fuels as a oxidation-inhibitors. (1)The antioxidant dietry supplement has not demonstrated any improvement in human health, or to be active in preventing the disease. (2)

Examples of Bioactive Anti-oxidant compounds:

Anti –oxidants are classified as hydrophilic (soluble in water) and hydrophobic (insoluble in water. The hydrophilic antioxidant reacts with the oxidants present in blood plasma along with cell cytosol, whereas the cell membrane is prevented by hydrophobic antioxidants. (3) All these compounds can be produced in a body as well as could be found from food and other food products. (4) There are present different oxidants in the body fluids and tissues, example glutathione or ubiquinone which is mostly present in the cell, whereas few other like uric acid is uniformly distributed (below table). In some organisms antioxidants are found as well as these compounds could be significant in the pathogens along with virulence factors. (5) Interaction among the antioxidants is such a complicated issue, having most of an antioxidant compounds as well as antioxidant enzyme system with interdependent along with synergistic effect on each other (6, 7). The mode of action of the antioxidant depends on the functioning of the all members of an antioxidant system. (4) The amount of protection delivered through any antioxidant can also be governed by its reactivity to the ROS (Reactive Oxygen Species) being deliberated, the antioxidant as well as concentration status having its interacting. (4)

Many of the compounds exhibits antioxidant defence by the chelating transition metals as well as inhibit them from catalyzing the production of free radical in a cell. There is extensive evidence to implicate free radicals in the recent research and development of many of the degeneration diseases (8). The free radicals need to be implicated in causation of ailments like nephrotoxicity, liver cirrhosis, and diabetes, etc.(9) The free radicals intermediated Lipid peroxidation calculated to become a main mechanism of cellular damage as well as cellular membrane devastation.(10) Just about the most extensively examined instance will be the lipid peroxidation activated by hepatotoxin alcohol model. Generally there seems in order to be rising evidence about alcoholic toxicity might be connected with free radical related injury as well as raised oxidative stress. (11) Production of oxygen metabolites including O_2^- (superoxide), H_2O_2 (hydrogen peroxide) as well as OH^- (hydroxyl radical) is thought to be essential in the

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RESEARCH ARTICLE

Synthesis and Characterization of 2-Bromo-3-hydroxy-2-nitropropylcinnamate

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Abstract: In this paper we have reported the synthesis of 2-bromo-3-hydroxy-2-nitropropyl-cinnamate through esterification of 2-bromo-2-nitropropan-1,3-diol (Bronopol) with cinnamoyl chloride. Bronopol (2-bromo-2-nitro-1,3-propanediol) is an organic compound that is used as an antimicrobial. The synthesised compound was confirmed by ^{1}H NMR, ^{13}C NMR, FT IR, UV-Vis and Fluorescence spectra.

Keywords: Bronopol, Esterification, Antimicrobial

Introduction

The geminal bromonitroalkanes possess antifungal activitywas suggested by Zsolnai[1] and Hodge, Dawkins and Kropp[2]. Bronopol (2-bromo-2-nitro-1,3-propanediol) is an organic compound that is used as an antimicrobial. It is a white solid and in commercial samples appears yellow. The first synthesis of 2-bromo-2-nitro-1,3-propanediol was reported in 1897. The Boots Company PLC invented bronopol in the early 1960s and studied its first applications as a preservative for pharmaceuticals. Because of its high activity against bacteria and low mammalian toxicity at in-use levels, especially gram-negative species[3]. It was being adopted as an antimicrobial in numerous different industrial environments like paper mills, oil exploration and production facilities, as well as cooling water disinfection plants. Bronopol is employed as a good preservative agent in client merchandise, as well as a wide variety of industrial applications (industrial water system provides a potential environment for bacterial growth, which leads to slime and corrosion problems in many of these cases bronopol can be a highly effective treatment). Bronopol is being used as for preserving in numerous household preparations, toiletry and cosmetic, mainly as because of the high activity against Gram-negative bacteria, specifically *Pseudomonas aeruginosa* and other *pseudomonads*, which are the most common inhabitants in water and cause contamination and spoilage problems in toiletries and cosmetics[4-7]. The broad spectrum antibacterial properties

ATTRIBUTES OF BUYING BEHAVIOUR FOR FASHION APPAREL: AN EXPLORATORY STUDY

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ABSTRACT

In this paper an attempt has been made to identify the factors affecting buying behaviour of the consumers for fashion apparel in select tier-II cities of north India. With intent to achieve the objective of measuring buying behaviour of women, exploratory factor analysis has been used. Before undertaking the analysis, a pilot study was done followed by exploratory factor analysis. Data was collected from 300 women respondents from two cities of Lucknow and Chandigarh, representing generation X and Y, selected for conducting the present study. Exploratory Factor Analysis was employed for analysis. The study concludes that consumer characteristics being the crucial attribute that influences buying behaviour of women consumers followed by external factors , product attribute and store characteristics.

Keywords: Fashion, Buying Behaviour, Consumer Characteristics, External Factors

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CORPORATE RESTRUCTURING: A BUZZWORD IN TODAY'S WORLD!

Dr. Sunita Gupta*
Chavi Aggarwal**

ABSTRACT

In the wake of the COVID-19 pandemic, the scope of restructuring has increased manifolds. This is because the economy has turned completely upside down. Almost all of the industries except pharmaceuticals and essential goods have been impacted severely and are into financial distress. The covid crisis has led many corporations to file for bankruptcy and go into liquidations. Hence, restructuring business has seen a significant uptick in demand.

***KEYWORDS**: COVID-19, Pandemic, Financial Distress, Covid Crisis, Bankruptcy.*

Introduction

In Canada, on the sectorial level, it's nothing unexpected which sectors keep on being hit the hardest by business bankruptcies in Q3 2020 contrasted and Q3 2019: retail exchange (up 25%); the management of companies and enterprises (up 14%); and entertainment, arts and amusement (up 20.8%)[1].

Example: Le Château Inc.

Recently Le Château Inc. faced liquidation. Le Château is a Canadian specialty retailer and producer of solely planned clothing, footwear and accessories for contemporary and style-cognizant ladies and men, with a network of 121 ideal spots across Canada and a web based business stage overhauling Canada and the U.S. It had been running into net losses over the past 4-5 years. During H1 FY20, the Company permanently closed 6 underperforming stores. The Company breached its covenants on secured loans. The Auditor raised 'Going Concern' Doubt on July 06, 2020. Working capital deficiency stood at CAD45.7m as on July 25, 2020[1].

On October 23, 2020, the Company obtained an Initial Request according to the Companies' Creditors Arrangement Act (the "CCAA") to continue with the deliberate liquidation of its resources and wind down of its activities. Price water house Cooper Inc. has been named as screen to the Company in these CCAA procedures to manage the Company's activities during the Liquidation. On November 02, 2020, the Court gave a Liquidation Order, permitting the Company to continue with the offer of its resources and wind down of its tasks.

Objectives of the Study

- To understand the idea of corporate rebuilding, recorded foundation and arising patterns in rebuilding systems.
- To Study and Analyze Corporate Restructuring with reference to Bombardier Inc

Corporate rebuilding is a corporate activity taken to altogether adjust the construction or the tasks of the organization. This normally happens when an organization is dealing with huge issues and is in monetary peril. It suggests modifying the business for expanded effectiveness and benefit. Corporate rebuilding turns into a trendy expression during financial declines.

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1 Capital IQ database

ATTRIBUTES OF BUYING BEHAVIOUR FOR FASHION APPAREL: AN EXPLORATORY STUDY

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ABSTRACT

In this paper an attempt has been made to identify the factors affecting buying behaviour of the consumers for fashion apparel in select tier-II cities of north India. With intent to achieve the objective of measuring buying behaviour of women, exploratory factor analysis has been used. Before undertaking the analysis, a pilot study was done followed by exploratory factor analysis. Data was collected from 300 women respondents from two cities of Lucknow and Chandigarh, representing generation X and Y, selected for conducting the present study. Exploratory Factor Analysis was employed for analysis. The study concludes that consumer characteristics being the crucial attribute that influences buying behaviour of women consumers followed by external factors , product attribute and store characteristics.

Keywords: Fashion, Buying Behaviour, Consumer Characteristics, External Factors

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Decarbonising Economic Growth through Innovations in Renewable Energy

Pooja Sharma*, Sunita Gupta**

Abstract *With the emerging consciousness of climate change and focus on climate-resilient growth across all developing nations, Brazil has proved to be a benchmark for the energy transition to an environmentally sustainable energy system. All the developing countries are heading towards decarbonised growth using alternative sources of energy. As a result, the paper explores the causal relationship between renewable energy consumption and economic growth in the case of Brazil, using the data for the last 12 years. The Granger causality test is performed to comprehend the relationship between the three crucial indicators of the newly emerging growth models. The paper examines the interdependence of renewable energy and economic growth using the Granger causality test to estimate two-way dependence in BRICS countries. The paper exhibits the evidence of one-sided long-run causality between the use of renewable energy and per capita GDP, concluding that the deployment of renewable energy Granger causes per capita GDP growth. The results of Granger causality and correlations further provide an adequate rationale for the state to invest in renewable energy technologies and innovations. In this backdrop, the paper attempts to analyse India's green growth compared to Brazil in the last 15 years.*

Keywords *Climate Change, Renewable Energy, Economic Growth, Human Capital, R&D, BRICS*

INTRODUCTION

Climate change has taken centre stage among all global challenges that both developed and developing nations face today. Each developed and developing economies is determined to adopt newer, cleaner, and efficient ways of producing energy to mitigate the harmful and disastrous consequences. For the first time in 20 years, COP21 will aim to achieve a legally binding agreement, along with international climate agreements, to keep the average temperature below 20°C (UNFCCC, COP 21). India is going to play a critical role in meeting the targets. India aims to lower its emission intensity by 33% to 35% by 2030, below the 2005 levels (Times of India, 2 October 2016). In this context, most advanced countries have established a legal framework to encourage the shift from fossil-based energy to a non-conventional clean energy system. This attempt requires a well-planned conscious effort to accomplish global energy efficiency objectives and transition towards clean energy alternatives.

India is also committed to expanding the contribution of non-fossil-based capacity of electricity generation to 40% of the installed electric power capacity by 2030. The efforts are substantially towards decarbonisation, which reduces carbon-emitting conventional fuels and substitutes them with renewable and zero-carbon sources of energy. India is struggling with its two-fold objectives of energy equity and sustainable energy growth. Under such circumstances, when the country is struck by many problems of unemployment, poverty, inequality, and lack of enough infrastructure that directly highlights an acute need for cheap sources of energy, it would be a real challenge for the nation to undergo energy transition in favour of alternate sources of energy. It is challenging for a developing nation and poor nations to adhere to the targets, as the conventional sources of energy are cheap and the alternative sources are expensive, as they involve technological innovations.

With emerging concerns of climate change, climate regime has formulated a very comprehensive or holistic energy regime. All the developed and developing countries are determined to undergo a transition in their energy system to attain climate-resilient growth, so that they are successfully able to trade-off between carbon emissions and economic growth. In this context, Brazil has been a remarkable example in achieving carbon-free growth, laying down benchmarks in energy innovation and transition pathway.

Brazil, a Latin American country, is the biggest in South America, and the fifth largest globally[1]. It is the most prominent country in terms of international trade in South America. Brazil's institutional regime, policy framework,

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EFFECTS OF PANDEMIC ON AUTOMOBILE INDUSTRY (WITH SPECIAL FOCUS ON MARUTI SUZUKI)

Dr. Sunita Gupta*

ABSTRACT

The most profound global health emergency that the world has experienced in the modern history is the Covid19 Crisis, which started from Wuhan, China. To cope up with this pandemic, many countries of the world imposed strict lockdown with the sole objective of saving lives. In India, it was first imposed from 25th March, 2020. The lockdown brought with it many seen/unseen problems like loss of job and income, labor migration to native place, fall in demand, production, consumption, GDP, etc. The effect of pandemic was quite evident in various economic indicators of FY 2020-21. The world economy is estimated to have shrunk by 4.3 % in 2020 as per World Bank, and 3.5 % as per IMF.[2]

Keywords: *Pandemic, Automobile Industry, Covid19, GDP, IMF.*

Introduction

The Unforeseen Challenge: Covid Crisis

To boost the Indian Economy, the Govt. took various recovery measures after lockdown. After facing 23.9 per cent shrinkage in GDP in Q1 FY2020; it started witnessing a V-shaped recovery, when the GDP in Q2 FY2020[1] was 7.5 per cent declined. Also India experienced recovery across all key economic indicators. Disadvantaged groups were the most impacted by the lockdown during the first two months i.e. from April, 2020 to May, 2020. Around Rs. 4 lakh crore has been the income loss by the India's vulnerable section, which is approximately equal to 2 percent of the country's annual GDP, according to an analysis by Scroll.[3] From production to transportation, real estate to hospitality, from education to automotive, all sectors have been impacted and economy experienced the sharpest drop in the last 41 years.[4] Of these, one of the worst affected sectors is the Indian Automobile Sector.

Indian Automobile Industry: Background

India's automobile sector is one of the strongest pillars of the Indian economy. Due to strong linkages (both backward and forward) of the automobile sector, it becomes an essential factor impacting the growth. Progression and cognizant strategy intercessions in the course of recent years made a lively, aggressive market, and brought a few new players, bringing about development and age of gigantic business in the auto industry. The turnover of automobile industry contributes 7.1 percent to the overall GDP, 27% to industrial GDP and 49% to the manufacturing GDP and provides employment to 3.7 crore people directly and indirectly as on December, 2020. The sale of vehicles is about 26 million annually and 8% of total exports worth 27 billion USD come from the automobile industry. The industry is also giant contributor to the national treasury and contributes around 1.5 lakh crore to the overall GST which is equal to 15% of total collected GST. Apart from this, Auto Components Industry of India too is worth 57 billion US dollars which is around 3.95 lakh crore. The turnover of the Auto component industry of India contributes 2.3% to the GDP and provides employment to 5 million people and exports of worth 15-16 billion US dollars which is nearly equal to 1.06 lakh crore.[5] The sector is also called the 'Sunrise Sector' of the economy.

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AN EXPLORATORY STUDY OF IDENTIFYING FACTORS CREATING PURCHASE INTENTION TO BUY LIFE INSURANCE POLICY- AN EMPIRICAL STUDY

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Abstract
Human life is invaluable and there is no replacement for the same. But financial security could be ensured to a great extent through life insurance. Despite being so important, everyone does not buy life insurance. Review of literature indicates that there is a dearth of studies identifying the factors which create purchase intention in individuals to purchase a life insurance policy. To fill in this gap, the present study has been undertaken. The purpose of the study is to find out the variables/constructs which create purchase intention to buy a life insurance policy. Out of 983 individuals contacted from Delhi/ NCR, the Data of 549 valid respondents was finally analysed through Exploratory Factor Analysis and Multiple Regression. The result of the data analysis revealed 4 factors namely Rational Evaluation, Customer Satisfaction, Customer Trust and Customer Relationship Management for predicting Purchase Intention to buy life insurance policy, CRM emerged as the most significant factor. The study has major implications for insurance companies selling life insurance policies to focus on identified factors to increase their customer base and revenue.

Keywords: Purchase Intention, Life Insurance Policy, Insurance, Exploratory Factor Analysis, Customer Relationship

Introduction
The Indian population has been increasing continuously and reached 138

Change in the Role of HR during the Pandemic

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Sunita Gupta *

Abstract
Management is done by the people, for the people and through the people. The uncertainty created by covid 19, has substantially affected the life of everyone. The well settled way of 'working' or 'managing' at physical workplace with a defined way of doing/managing things have got totally disturbed. Everything has gone 'online' from 'working' to 'controlling'. All human resources are affected , be it employer or employee. On the one side, mentally unhealthy employees are struggling hard how to work online, whereas, on the other side, managers are equally unaware as to how to manage such staff. The work life balance of people have got totally disturbed during ongoing pandemic. All this has raised lot of challenges not only for employees but also for Human Resource managers. The present paper is an attempt to discuss the change in the role of HR manager to combat the challenges imposed by the prevailing crisis, to manage the most precious resource of the organisations, the 'Human Resource'.

Keywords
Covid19, Pandemic, Human resource management, Role of HR

INTRODUCTION

The Covid 19 pandemic penetrated deeply into lives of one and all, and its profound effects (rather wounds) are clearly visible in every sphere of life be it individual or organisation, howsoever big or small one might be. Various measures from odd-even shop openings, night curfews, weekend curfews to complete lockdown etc., have been taken by govt. to stop spread of this deadly virus resulting in closure of academic and non-academic institutions. Organisations were not able to manage their running or fixed expenses and some were even forced to close their business and oust employees making it a vicious circle internationally.

All kind of activities, anyways classified like personal or professional; commercial or non-commercial, mental, physical or financial have got terribly affected. Organisations need to take care of their most precious assets, human capital (Dirani, et al, 2020). On one side, employees are struggling hard to save their jobs and coped up learning new skills of working 'online' and that too 'working from home' with little/no knowledge or access to resources. On the other hand, the Human Resource Managers roles have changed to manage such employees effectively.

WORK-LIFE BALANCE DISTURBANCE

In general, all the workers encounter the task of finding the correct 'work-life balance'. The clause "work-life balance" has been a buzzword for ages, and the construct is that workers should avoid letting work overtake their lives. One has to distinguish and maintain balance between the work and the personal life, giving due importance to each.

Work-life balance was earlier thought as achieving a balance between personal and professional obligations only. But according to the latest and broader concept , it is balancing between work and non-work activities properly. It does not solely mean a distribution of one's time between work and personal life, however rather a flexibility in having the ability to figure within the skilled field, whereas maintaining the time and energy to pay on personal life. The work, family responsibilities, private life, individual and organisation health is crucial for each employer and members of the family of workers. What matters is the quality time. (Ramakrishnan, D., 2020).

Work- life balance has got imbalanced in today's uncertain environment. Because of FUD (Fear , Uncertainty and doubt) created by the pandemic, the whole concept of work life balance has got blurred. (Ramakrishnan, D., 2020). Physical Workplaces are absolutely or partly utilised, youngsters/ students are being schooled from home, businesses are shut, and traditional events and get-togethers are cramped or had to

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Consumers' Buying Behavior towards Point-of-Sales Promotion: A PLS-SEM Model

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Abstract: Indian's retail sector in past ten years has witnessed tremendous growth and today it is world's fifth attractive market after USA, UK, China and Japan. The total sales of retail sector in the global market reached $25.038 trillion in 2019, which showed an increase of 4.5% from the previous year. Point-of-Sales (POS) is the place where a customer makes a payment to the seller in exchange for goods and/or services received. Point-of-Sales promotion tools (Price Discount, BOGO free, In-Store Display, Coupons, Free Samples, Contests, Sales Talk, Loyalty Programs) enable the retailer to augment the sales. The paper aims to study the consumers' buying behavior towards point-of-sales promotion techniques. PLS-SEM was used to analyse the data. The study can be useful to the marketers, retail store owners and manufacturers in designing POS promotion tools that can help accelerate sales and profits.

Keywords: Point-of-Sales Promotion, Buying Behavior

1. Introduction

It has been evaluated that India's retail market will reach $1.75 trillion by 2026, at a Compound Annual Growth Rate (CAGR) of 9-11%, driven by social, demographic and financial factors, for example, urbanization, increase in income, rise in nuclear families. Then again, with rising web access, reduced cost of access to data, increase in the access of smart phones, the Indian E-business industry is anticipated to grow above 1200% to touch $200 billion by 2026 from $15 billion in 2016.

Zebrafish*

A Versatile Learning Tool

Padmshree Mudgal, Chitra Bhasin, Adita Joshi and Radhika Gupta

Zebrafish, a freshwater teleost fish, is a popular vertebrate model to study embryo development, organogenesis, gene mutations, and adult physiology. Owing to its biological and genetic advantages, zebrafish is a preferred system for toxicological studies, modeling human diseases, and studying innate immunity. Its usage in studying psychosomatic behavioral disorders has been appreciated recently. Zebrafish is an easy-to-culture, non-invasive vertebrate system with potential multidisciplinary utility in undergraduate teaching and research.

Zebrafish (*Danio rerio*) is a small tropical freshwater fish endemic to India and is found in the Indo-Gangetic Plains (*Figure* 1). It can be procured from aquarium pet shops and can be easily maintained at a minimum cost in mini aquariums or tanks in laboratories. Zebrafish is a vertebrate and shares 70% genetic homology with the human genome and approximately 84% homology with disease-causing genes in humans [1]. Most organ systems and bioprocesses in zebrafish are similar to human systems.

It has become challenging to attract students' interest in biological sciences. Strict guidelines and restrictions on animal experimentation at the undergraduate level have taken away all the excitement of hands-on and inquiry-based learning in biological sciences. Zebrafish model system offers many advantages to fill up this void which include:

1. Zebrafish embryos are easy to collect due to external fertilization and are available in large numbers owing to high fecundity. A steady supply of embryos can be maintained as female fish breed



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India seems to outperform in handling COVID-19 pandemic

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ABSTRACT

The coronavirus pandemic is an ongoing pandemic of coronavirus disease 2019 caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2). The outbreak was first identified in Wuhan, China and soon within months it engulfed more than 188 countries. As of 25 January 2020, more than 100 million cases have been reported globally. Worst affected countries globally include USA, India, Brazil, Russian, UK, France, Turkey, Italy, Spain and Germany. By far India has taken robust immediate measures to contain the spread of virus by implementing stringent nationwide lockdowns at an early stage. This review focuses on how India, in several ways, is placed better in handling COVID-19 than the developed countries.

Keywords: COVID-19, India, WHO, Test

INTRODUCTION

The world is currently facing a coronavirus pandemic, COVID-19 (formerly known as SARS-CoV-2), coronavirus disease 2019 by WHO. COVID-19, beginning in the Wuhan province of China in mid-November 2019, started to spread across other countries. By 13 January 2020, the first case of the novel corona-virus (COVID-19) was reported outside China, in Thailand and then in Japan and South Korea.[1] This was an alarm for other countries to take preventive measures as the number of cases in China and other countries started to increase at a rapid rate. By 23 January 2020, more than 550 people got infected in many countries. Due to sudden spurt in the number of cases, reaching thousands in a single day, WHO declared this as a global health emergency on 30 January 2020.[2] It was declared a pandemic by WHO on 11 March 2020.[1]

Initial measures taken in India to contain the pandemic

The first COVID-19 case in Kerala state of India was reported on 30 January 2020 of a student who had returned from Wuhan China.[2] There was not very significant rise in the COVID-19 cases in India till first week of March, but the number of reported cases crossed 100 till 15 March 2020. Countries like India and US started screening people in February (for temperature and any symptoms of cough or cold) travelling from China and later those travelling from other countries too and asked them to home quarantine for 14 days. These measures by the government were not enough because during the incubation time of the virus the person shows no significant symptoms thus tends to be an asymptomatic carrier of the disease. Due to air-to-air transmission and longer incubation period of the virus, it spread across nations making it urgent for all countries to take up sudden and strict actions to stop its spread. As the virus was seen to be highly contagious in countries like Italy and USA, where population is less and healthcare facilities are better than that of India, the government of India was forced to take strict measures to contain the further spread of the virus. After the detection of the first case, Indian government started to spread awareness amongst people through advertisements on social distancing, usage of masks and hand-washing to avoid the contact of virus. Additionally, Aarogya Setu app was launched on 2 April 2020 promoted by the Ministry of

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MUTUAL IMPACT OF COVID 19 AND POLLUTION

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ABSTRACT

COVID 19 is a viral infection that originated from Wuhan province of China. The first case of COVID 19 in India was reported on 31st January 2020. Till now more than 11 million cases and more than 0.16 million deaths have been reported in India. The pandemic has played a major role in impacting the environment due to subsequent lockdowns in many countries all over the world. The Indian environment had also changed and pollution levels greatly affected by the lockdown imposed due to the ongoing pandemic. The virus spreads mainly through human to human contact but there have been certain studies suggesting its spread through air and aerosols. It is observed in many studies that pollution can also impact the spread of the virus SARS CoV2. In this review we aim at exploring the various mutual impacts of Covid 19 on pollution and the severity of the disease due to air pollution. An in-depth report of various transmission ways of the SARS CoV2 and the impact of the pandemic on Indian environment including air, water and is also highlighted.

KEY WORDS : COVID, Air pollution, AQI, Lockdown

CHAPTER TWO

History, evolution and classification of CRISPR-Cas associated systems

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MUTUAL IMPACT OF COVID 19 AND POLLUTION

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ABSTRACT

COVID 19 is a viral infection that originated from Wuhan province of China. The first case of COVID 19 in India was reported on 31st January 2020. Till now more than 11 million cases and more than 0.16 million deaths have been reported in India. The pandemic has played a major role in impacting the environment due to subsequent lockdowns in many countries all over the world. The Indian environment had also changed and pollution levels greatly affected by the lockdown imposed due to the ongoing pandemic. The virus spreads mainly through human to human contact but there have been certain studies suggesting its spread through air and aerosols. It is observed in many studies that pollution can also impact the spread of the virus SARS CoV2. In this review we aim at exploring the various mutual impacts of Covid 19 on pollution and the severity of the disease due to air pollution. An in-depth report of various transmission ways of the SARS CoV2 and the impact of the pandemic on Indian environment including air, water and is also highlighted.

KEY WORDS : COVID, Air pollution, AQI, Lockdown

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KEY WORDS : COVID, Air pollution, AQI, Lockdown

AIR POLLUTION

Human lives have been majorly impacted in every aspect by COVID19 which has taken a number of lives till now, but the situation is getting better and hopes are on the ongoing vaccination across many nations. The situation initially had been very threatening. There are a number of reasons that have led to the 'super spread' of this virus affecting different socio economic groups in different ways. One of these factors included air pollution and its fluctuating parameters. Toxic gases released from industries, vehicles and global warming gases like NO_2 have shown to increase the fatality rate in areas of the world due to COVID19 infection. Long term exposure to NO_2 can lead to heart and lung disorders, diabetes, along with cytokine storms in the body emerging due to severe immune reactions. As per a study, 38% of India's disease burden is contributed by cardiovascular disease and diabetes caused as a result of air pollution (Balakrishnan, K. *et al.*, 2019) Another study emphasizes the fact that COPD was responsible for around 76% of chronic respiratory diseases in India (as per 2016 data), which increases the prevalence of lung disorders making individuals more prone to air borne infections (Salvi *et al*., 2018). According to some studies, in normal conditions the body produces small amounts of nitrogen oxides that prevents the duplication of Respiratory Syncytial Virus (RSV) in lungs. But when environmental NO_x levels rise, endogenous nitrogen oxide formation is hampered, thus making lungs prone to infection (Daraei *et al*., 2020).

According to the world air quality report 2020 published by IQ AIR visuals, out of the 10 most polluted cities of the world, 9 were from India. The top 50 most polluted cities had 35 Indian cities (based on $PM_{2.5}$ levels). The air quality of $PM_{2.5}$ is highly dangerous amongst the other pollutants in

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Review Article

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India seems to outperform in handling COVID-19 pandemic

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ABSTRACT

The coronavirus pandemic is an ongoing pandemic of coronavirus disease 2019 caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2). The outbreak was first identified in Wuhan, China and soon within months it engulfed more than 188 countries. As of 25 January 2020, more than 100 million cases have been reported globally. Worst affected countries globally include USA, India, Brazil, Russian, UK, France, Turkey, Italy, Spain and Germany. By far India has taken robust immediate measures to contain the spread of virus by implementing stringent nationwide lockdowns at an early stage. This review focuses on how India, in several ways, is placed better in handling COVID-19 than the developed countries.

Keywords: COVID-19, India, WHO, Test

INTRODUCTION

The world is currently facing a coronavirus pandemic, COVID-19 (formerly known as SARS-CoV-2), coronavirus disease 2019 by WHO. COVID-19, beginning in the Wuhan province of China in mid-November 2019, started to spread across other countries. By 13 January 2020, the first case of the novel corona-virus (COVID-19) was reported outside China, in Thailand and then in Japan and South Korea.[1] This was an alarm for other countries to take preventive measures as the number of cases in China and other countries started to increase at a rapid rate. By 23 January 2020, more than 550 people got infected in many countries. Due to sudden spurt in the number of cases, reaching thousands in a single day, WHO declared this as a global health emergency on 30 January 2020.[2] It was declared a pandemic by WHO on 11 March 2020.[1]

Initial measures taken in India to contain the pandemic

The first COVID-19 case in Kerala state of India was reported on 30 January 2020 of a student who had returned from Wuhan China.[2] There was not very significant rise in the COVID-19 cases in India till first week of March, but the number of reported cases crossed 100 till 15 March 2020. Countries like India and US started screening people in February (for temperature and any symptoms of cough or cold) travelling from China and later those travelling from other countries too and asked them to home quarantine for 14 days. These measures by the government were not enough because during the incubation time of the virus the person shows no significant symptoms thus tends to be an asymptomatic carrier of the disease. Due to air-to-air transmission and longer incubation period of the virus, it spread across nations making it urgent for all countries to take up sudden and strict actions to stop its spread. As the virus was seen to be highly contagious in countries like Italy and USA, where population is less and healthcare facilities are better than that of India, the government of India was forced to take strict measures to contain the further spread of the virus. After the detection of the first case, Indian government started to spread awareness amongst people through advertisements on social distancing, usage of masks and hand-washing to avoid the contact of virus. Additionally, Aarogya Setu app was launched on 2 April 2020 promoted by the Ministry of

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Interaction and esterase activity of albumin serums with orphenadrine: A spectroscopic and computational approach

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ABSTRACT

Herein, we have explored the comparative effect of antihistaminic drug, orphenadrine (ORP) on serum albumins - human serum albumin (HSA) and bovine serum albumin (BSA). The interaction between ORP and proteins was characterized using steady state fluorescence spectroscopy, UV-visible spectroscopy, circular dichroism (CD) and molecular docking methods. Binding constant for BSA-ORP and HSA-ORP systems were found to be 2.78 $\times$ 10^4 $Lmol^{-1}$ and 3.09 $\times 10^4$ $Lmol^{-1}$, respectively. Far UV-CD results showed that the secondary structure of HSA becomes more compact in presence of ORP, however, the secondary structure of BSA decreases in presence of ORP. The functionality of both the proteins changes in presence of ORP which was confirmed by esterase like activity of BSA/HSA. Competitive binding results showed that ORP binds to Sudlow site I (subdomain II) of both BSA and HSA. The computational study was carried out to further our understanding of the experimental work.

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1. Introduction

Orphenadrine (ORP) is an antihistaminic or anticholinergic drug used to treat musculoskeletal spasm. ORP plays an important role in relieving pain arising due to muscle injuries such as sprains and strains or due to physical therapies [1]. It is a methyl derivative of diphenhydramine. It binds to the H1 receptor as well as muscarinic receptors in the central nervous system. The exact mechanism of action of ORP is not known but it interrupts the neurotransmitter pathway by blocking the voltage-gated sodium channels of the nerve cells [2]. It inhibits the production of acetylcholine (neurotransmitter) and stimulates the production of dopamine (neurotransmitter) in the central nervous system (CNS) [3]. Therefore, ORP became the choice to treat Parkinson's disease in the early sixties since Parkinson's disease is a neurodegenerative disease in which dopaminergic neurons degenerate in the brain and an imbalance is developed between acetylcholine and dopamine neurotransmitters [4][5] . The concentration of albumin protein is approximately 35-50 mg/L in the serum [6] . Serum albumins are the major circulatory proteins with known structure. HSA is the main transporter protein in humans [7]. HSA and BSA are globular proteins and consist of 585 and 583 amino acid residues, respectively[8]. Serum albumins are heart-shaped globular proteins. HSA has three homologous domains-domain I (1-195), domain II (196-384), and domain III (385-585) [9]. The Three-Dimensional (3D) structure of HSA is governed by 17 disulfide bonds. A free sulfhydryl (-SH) group is also found in its structure [10]. Secondary structure mostly consists of α-helix and extended loops are also found in the structure of these proteins. Sudlow discovered the two binding sites of various substances in the HSA & BSA. Site I (warfarin binding site) is located in subdomain IIA and Site II is located in subdomain III-A. It was discovered that site II is the binding site of benzodiazepine [7]. BSA can robustly adopt various conformations depending upon the pH of the medium. At pH 7.4, serum albumins encompass a normal heart-shaped helix form which eventually transforms into an expanded conformation i.e. the E-form at pH below 4 as a consequence of denaturation and complete unfolding, increasing the hydrodynamic axial ratio [11]. To know the pharmacokinetics (absorption, distribution, metabolism, biotransformation, & excretion) and pharmacodynamics (actions of the drug on target sites) of the drug, the behavior of the transporter protein must be studied. The behavior of a particular drug can be ascertained by its interaction studies with the proteins [8]. The bioavailability of drugs on target sites depends on the carrier molecule or transport protein. Reversible binding of the drug to transport protein is made through the availability of the

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ORIGINAL PAPER

Deciphering the role of alkyl chain length on interaction study of antidepressant drug-cationic surfactants in imidazolium based ionic liquid

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Abstract

To study the role of alkyl chain length on the thermodynamics and mixed micellization behavior of amitriptyline hydrochloride (AMT) with dodecyltrimethylammonium bromide (DTAB)/cetyltrimethylammonium bromide (CTAB) in imidazolium based ionic liquid 1-methyl-3-octylimidazolium chloride (Omim.Cl) at various mole fractions and several temperatures (varied: 298–313 K) was carried out by the electrical conductivity measurements. Mixed micellization behavior of CTAB with AMT demonstrates the synergistic interaction while DTAB with AMT favors antagonistic interaction, in the presence of Omim.Cl. The shift in nature of binding interaction from antagonistic to synergistic with increase in the alkyl chain length of cationic surfactant from DTAB to CTAB is elucidated in terms of the divergence in ideal and calculated values of critical micelle concentration (*cmc*) and micellar mole fraction (X^m) and discussed in an appropriate manner. In addition, the values of various thermodynamic parameters were determined by using the results obtained from conductivity plots. They also support the results obtained from the interaction parameters.

Keywords Critical micelle concentration · Thermodynamic parameters · Imidazolium ionic liquid · Binding interaction · Interfacial activity · Surfactants

Introduction

To introspect the mixed amphiphile systems study that has been taken broad consideration for researchers during last decade due to the enhanced colloidal and surface properties as compared to their pure entity components [1–5]. On adding up of any chemical moiety into an amphiphilic aggregate, a change to be observed in the physicochemical characteristics of the system such as the reaction rates, degree of ionization and clouding/phase separation [6–13]. In nature, a range of drugs that behave as amphiphilic moieties is consist of various classes like a local antidepressant, anesthetic, tranquillizing and antibiotic bared their appropriate action on interacting with biological membranes. The tricyclic antidepressant drugs, as shown in Scheme 1a form approximately 6–12 monomers of micelle (or aggregates) [14] that comprise a short chain of hydrocarbon with a terminal charged nitrogen atom.

Nowadays as per requirement of nature chemists try to emphasize more towards greener solvents and Ionic liquids (ILs) to be better novel solvents because of the numerous

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Invariance analysis, optimal system and conservation laws of (2 + 1)-dimensional non-linear Vakhnenko equation

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Abstract. In this article, we study a (2 + 1)-dimensional non-linear Vakhnenko equation which appears in a relaxing high rate active barothropic medium. The Lie symmetry analysis is applied to study the solution of (2 + 1)-dimensional Vakhnenko equation and also used to find the optimal system of one-dimensional Lie subalgebra. The two-dimensional non-linear Vakhnenko equation is reduced to various ordinary differential equations by applying similarity transformation method, and solving these reduced ordinary differential equations, we find invariant solutions of (2 + 1)-dimensional Vakhnenko equation. Moreover, the adjoint equation of the Vakhnenko equation and its conservation laws are also obtained, which can be used for mathematical analysis.

Keywords. Vakhnenko equation; Lie group of transformation; infinitesimal generator; adjoint equations; optimal system; conservation laws; invariant solutions.

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1. Introduction

Differential equations have a remarkable ability to predict the world around us. Many complex phenomena in plasma physics, engineering, fluid mechanics, non-linear optics, biology, economics, physics, chemistry, fluid flow problems, etc. are modelled by the non-linear partial differential equations. The theory of non-linear evolution equations draws the attention of physicists and mathematicians due to their applications in real-life problems. Nowadays many researchers are trying to obtain exact solutions for such non-linear evolution equations. Bäcklund transformation method [1], exp-function method [2], homogeneous balance method [3], inverse scattering method [4], the (G'/G)-expansion method [5], Lie group method [6] etc. are the most efficient and accessible methods for solving these partial differential equations.

The Lie group method is also called Lie symmetry analysis. In 1881, Lie symmetry analysis was introduced by Lie, which is a very systematic method to solve partial differential equations. The Lie group method has recently entered into most interesting fields related to mathematics, such as classical mechanics, differential equations, Lie algebra and rogue waves. The main objective of the Lie symmetry analysis is to obtain the desired reduction of partial differential equations to ordinary differential equations by considering the classification of the optimal system of one-dimensional subalgebras of symmetry algebras and then the resulting ordinary differential equations have later been investigated for different types of solutions. Furthermore, on the basis of symmetries, the integrability of non-linear partial differential equations like group classification, optimal system and conservation law, can be contemplated sequentially.

Sahoo *et al* [7] discussed the modified KdV–Zakharov–Kuznetsov equation using Lie symmetry analysis. Kumar and Kumar [8] analysed (2 + 1)-dimensional combined MCBS-nMCBS equation by symmetry analysis and found its singular and complex solutions. Baleanu *et al* [9] have discussed some important results for the cubic non-linear Schrödinger's equation with repulsive delta potential. Wang and Fakhar [10] investigated an extended (2 + 1)-dimensional Zakharov–Kuznetsov–Burgers equations using Lie symmetry approach. Wei *et al* [11] analysed the variable-coefficient Davey–Stewartson equation using symmetry analysis and also found its conservation laws. Arora and

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Resonant curve of geo-synchronous satellite including effect of earth's equatorial ellipticity and resistive force using perturbations technique

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ABSTRACT

In this paper, we have investigated the effect of earth's equatorial ellipticity parameter and resistive force on the resonant curve of a geo-synchronous satellite using perturbations technique. Equations of motion of the satellite are determined in spherical coordinates (r, θ, ϕ) with the help of gravitational potential of the earth. Furthermore, the equations of motion of the satellite are simplified in the form of second order differential equation by using perturbations technique. It is observed from the solution that resonance occurs due to the frequencies $\dot{\theta}_E$ (angular rate of rotation of the earth) and $\dot{\gamma}$ (where γ be the measured from minor axis of the earth's equatorial ellipse to the projection of the satellite). Finally, we study the effect of the earth's equatorial ellipticity parameter and the resistive force on the resonant curve with the help of different graphs. It is observed that amplitude A decreases when the magnitude of the resistive force increases.

1. Introduction

The motion of geo-synchronous satellite is affected by many forces, some are resistive force, gravitational force of earth, solar radiation pressure, solar gravitational field etc. Resonance occurs when the ratio of orbital period of two planets or satellites is close to the small integer. This happens when within small interval of time they repeat their geometrical configuration.

On the resonance problems in the solar system, many authors have worked by considering various forces but few of them have given attention on the second order tesseral harmonic due to earth's equatorial ellipticity.

Blitzer (1966) surveyed the resonance effect on motion of the satellite orbit in the rotating frame of reference with mean motion of the satellite incuding geo-potential.

Bhatnagar and Gupta (1977) studied the resonance includng the solar radiation pressure in the motion of an artificial satellite. They expanded Hamitonian and generating function which depends on Solar Radiation pressure in the power series of small parameter.

In the classical mechamics, Garfinkel (1982) studied problems of resonance. His main contribution is in the formulation of methodology and solution of the resonance problems.

Lane (1988) studied the analytical theory of the tesseral harmonic $J_2^{(2)}$ (Earth's equatorial ellipticity) resonance effects on the orbits of the satellite. This theory has been tested in equations of motion for perturbation in Keplerian elements numerically.

Gilthorpe and Moore (1992) developed a theory for the motion of satellite under the influence of zonal harmonic and gravitational field of earth.

Costa Filho and Sessin (1999) studied the Delaunay method and method of integration of equations and they applied to the first order resonance.

Radwan (2002) determined the resonance of the moon, satellite and the sun including the oblateness of the earth and lunar-solar attraction. Also, they determined the periodic solution for the motion of the satellite.

Callegari et al. (2004) investigated the first order mean motion resonance in general three-body problem. Voyatzis and Kotoulas (2005) studied the mean motion resonance in symmetric and non-symmetric periodic orbits with Neptune and they also investigated the branch of symmetric elliptic periodic orbits with unstable and stable segments in each resonance.

In the problem of geo-centric satellite Yadav et al. (2019) studied the stability of Lagrangian points including earth equatorial ellipticity

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Differences in Aggression and Resilience due to Exposure to Conflict Amongst Kashmiri and Delhi Youth

Abstract

The present study isaimed at understanding how exposure to conflict affects the intensityof aggression and resilience in youth. The sample consisted of 160 young adults, with an equal number of Kashmiri and Delhi youth studying in Delhi-NCR. The Buss-Perry Aggression Questionnaire(Buss & Perry, 1992) was used to measure aggression. The Connor-Davidson Resilience Scale (CD-RISC-25, Connor & Davidson, 2003) was used to measure resilience. A 2x2 ANOVA (SPSS version 21) was used to assess the differences in aggression and resilience with respect to differences inethnicity/exposure to violence and gender. Pearson correlation was calculated to explore the relationship between aggression and resilience.Significant differences were observed in the level of aggression and resilience among Kashmiri and Delhi youth. Genderdifferences were observed with respect to aggression but not resilience. A low but significant negative correlation was found between aggression and resilience.

Key words: *Aggression, Resilience, Exposure to Violence, Youth, Kashmir, Kashmiri, Delhi NCR.*

Introduction

Young adults are in a constant state of exploration, change and search for meaning in life with culture and their surroundings playing a quintessential role in their development. They are the torch-bearers of development. Changes in both, the environment and physiology of the adolescent shape the transition foryouth. The psychological repercussions of conflict interfere substantially with the psychological development in individuals (Pedersen, 2006)[1]. Kashmir has been

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DOES SELF-COMPASSION INFLUENCE LIFE SATISFACTION? EXAMINING THE EFFECTIVENESS OF SELF-COMPASSION TRAINING PROGRAM

Meetu Khosla

ABSTRACT

Self-compassion has generated much interest recently due to its benefits for psychological well-being. The purpose of this study was to investigate if self-compassion influenced life satisfaction in any way as it has implications for wellbeing. A brief self-compassion training program was developed to cultivate self-compassion among 30 students from University of Delhi, age ranging from 19-22 years. A baseline measure of self-compassion (self-compassion scale) and life satisfaction (Life -satisfaction scale) was taken before inducing the intervention. Five interventions were given over a period of eight weeks and participants completed the scales after each intervention. A pre and post comparison of the self compassion scores and life satisfaction scores revealed that the self-compassion intervention program was effective in enhancing the level of self compassion among the participants. Further it was seen that with increase in the level of self compassion there was a significant increase in the level of life satisfaction, self-kindness, mindfulness and common humanity. This study has important implications for enhancing life satisfaction and reducing the risk of developing mental illness or health problems.

DOES SELF-COMPASSION INFLUENCE LIFE SATISFACTION? EXAMINING THE EFFECTIVENESS OF SELF-COMPASSION TRAINING PROGRAM

Research on self-compassion is rather sparse and in the present times it is a much needed field of study. Due to the pandemic there is an aura of fear, stress, trauma, un-certainty which is causing poor life satisfaction and unhappiness among people. This research particularly aims to understand how self-compassion can be cultivated and enhanced when people are undergoing the pandemic. Is there any relationship that exists between life satisfaction and self-compassion? If there is then how does self- compassion influence life satisfaction? Self compassion has been found to enhance well- being and life satisfaction by protecting one against any unpleasant emotional and cognitive responses that one may display to negative life experiences. This research is unique as it attempts to explore the relationship between self-compassion and life satisfaction among young adults under these extraordinary circumstances.

SELF-COMPASSION

There is a recent interest to explore the concept of self-compassion which is deeply rooted in Buddhism. Self-compassion is the care and compassion that one shows towards oneself when faced with difficult times (Bennett-Goleman, 2001). It refers to a positive attitude that one develops towards oneself by being aware and facing the suffering rather than avoiding it. It motivates the person to reduce the pain by accepting oneself and not being judgmental and being kind to oneself . This gives an opportunity to the person to open up to oneself, understand the nature of the problem, personal inadequacies, failures and not evaluating oneself in a deprecating manner. In fact trying to see life in a bigger perspective (Neff, 2003).

Self- compassion has three components as self-kindness versus self-judgment, common humanity versus isolation and mindfulness versus over identification . Self kindness explains the kindness that one shows towards oneself in suffering. When one is going through a failure in life , instead of feeling inadequate and punishing oneself with self-criticism one is content and understanding towards oneself. This component talks about the grim realities of life where failures, difficulties are inevitable. That one can confront the pain that one is going through and calm oneself instead of feeling bad and sad that he or she failed (Neff, 2012). Common humanity talks about being aware of one's' experiences, both pleasant as well as unpleasant not as being personal but as being common to all humanity. This component makes one realize that all human beings have flaws, can fail in life and also have inadequacies. So it is important to learn to forgive oneself being a human being .Mindfulness component refers to a mind state that is non-judgmental, balanced where one is aware of their feelings and thoughts as they are. These cognitions and

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Article

Psychometric Properties and Correlates of Precarious Manhood Beliefs in 62 Nations

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Cognitive Benefits of Mindfulness Meditation among Adolescents

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ABSTRACT: *The aim of the present study was to assess the effect of mindfulness meditation on cognitive abilities such as working memory, shifting attention and executive functioning in adolescents. Thirty-five adolescents with the age ranging from 12 to 18 years were selected using a purposive sampling method. They were divided into two groups: control group (n=18; Female=10; Male=8) and experimental group (n=17; Female=11; Male=6). The study followed a pretest-posttest research design where all participants were assessed using standardized psychological tests before and after the intervention. The experimental group was given a 30 minutes intervention that included mindfulness meditation along with relaxation exercises for 10 days consecutively. The findings suggest that the short-term practice of mindfulness meditation can be used to enhance cognitive functions in adolescents. The findings have implications for future research as attention, working memory, and executive function are cognitive activities that affect our day to day thinking, learning, planning, and decision making. Later these abilities translate to real world accomplishment and improvement in quality of life.*

KEYWORDS: *Mindfulness meditation, working memory, shifting attention, executive functioning.*

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I. INTRODUCTION

Meditation is a technique that involves focusing the mind on a particular object, thought or activity, to achieve a state of mental and emotional calm. It is a state of mental silence. The English term meditation is derived from the Latin word 'meditatio', meaning "to think, contemplate, devise, ponder". Hundreds of studies on meditation have been conducted since the 1950s. However, clinical psychology and psychiatry have developed meditation techniques for numerous psychological conditions that were initiated after the 1970s.Mindfulness meditation involves open monitoring of oneself and the environment. Here the attention is not focused on any one specific object but rather one lets attention flow freely without judgment or attachment. One simply observes the thoughts, perception, and senses that one experiences. Mindfulness means being present in the moment i.e., here-and-now awareness of the experience. Kabat-Zinn (2003) defined mindfulness as awareness that arises through paying attention, on purpose, in the present moment, non-judgmentally. It's about knowing what is on your mind. It liberates from the worries of past and future and lets one live fully in the present.

Mindfulness practice is employed in psychology to alleviate many mental and physical conditions, such as reducing depression, stress, and anxiety. It is also helpful in treating drug addiction. Several mindfulness-based interventions, such as the Mindfulness-Based Stress Reduction, have since been developed for clinical and empirical research. Black, Milam, & Sussman (2009) did a systematic review of sixteen empirical studies for the health-related effects of meditative practices among children and youth aged 6 to 18 years in school, clinic, and community settings. It was found to be an effective intervention in the treatingvariousphysiological, psychosocial, and behavioral issues. According to Fisher (2006) meditation has been proven among children to be a means for stilling the mind, encouraging mindfulness, and providing optimum conditions for generative thinking and reflection.Bei Bei et al. (2012) conducted a pilot study on adolescent participants and showed significant improvement on objective sleep onset latency, sleep efficiency and total sleep time after practicing mindfulness-based intervention. Patricia, Broderick and Metz (2011) gave a pilot trial of learning to breathe, a mindfulness curriculum for adolescents created for a classroom setting. The results suggested promising role of mindfulness in enhancing adolescents' emotion regulation skills as well as theirwell-being. Another study by Semple (2010) showed significant improvements in sustained attention following mindfulness meditation. Tang, Hölzel and Posner (2015) also showed that mindfulness practice enhances attention. Hurk, Giommi, and Gielen (2010) investigated attentional processing in relation to mindfulness meditation on participants 20 years old. Better orienting and executive attention were observed in

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Body Image Affect Life Satisfaction among Young Females

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ABSTRACT

The present study was conducted with the aim to assess the role of body image in life satisfaction among young females. It also assessed if there were differences in body image concerns among the school students, college students and working women. The sample included 95 young females from the age group 12-35 years. Body image concern inventory and satisfaction with life scale were used to collect data. The data were analyzed quantitatively. The results of the study showed a significant difference in perception of body image concerns between the three groups. Further, it was found that body image concern had a significant negative relationship with life satisfaction and it also significantly predicted overall life satisfaction among young females. It suggests that an individual's perception of their body image has an impact on life satisfaction. The findings have imperative implications for the promotion of healthier body perception. Fostering self-acceptance and appreciation by paying more emphasis on inner attributes than the outer physical appearance may promote individual's satisfaction with their lives.

Keywords: Body Image, Life Satisfaction, Young Females.

I. INTRODUCTION

In this world of social media, abundance of cameras and blazing fast connectivity, everyone wants to look good. The concern for physical beauty and attractiveness tends to be more pressing for the younger people for reasons which may range from seemingly obvious to most absurd. A self perception of an ugly face or figure is a matter of grave concern for many. Body Image is the subjective perception, appraisal, and evaluation of one's own appearance (Cash & Smolak 2012). It is a multidimensional, subjective and dynamic construct that encompasses perceptual, affective and cognitive components (Halliwell & Dittmar; 2003; Grogan, 2008). Body image satisfaction or dissatisfaction is not an all or none phenomenon, rather it exists on a continuum. Some people have a negative view of self, others have a positive view of self. However, some level of negative view exists in all of us.

Body image dissatisfaction is a pressing issue with studies estimating that as many as 50-60% of women and 30-40% of men have a negative body image (Tiggemann, 2004). Yahana, Apaak and Hormenu (2021) studied 555 school students and found 10% of the participants had serious body image concern, 40% had moderate and 25% had mild body image concern. Goswami, Sachdeva, and Sachdeva (2012) conducted a study on 96 Indian students and found 13.54% were dissatisfied with their body image. Even after becoming financially independent, working women were more likely to perceive themselves as physically unattractive compared to male counterparts irrespective of body mass index, self esteem, occupational grade and age (Emslie, Hunt & Macintyre, 2001).

Negative body image involves a dissatisfaction with one's own physical appearance and is often associated with engaging in behaviour such as frequent self weighing, excessive mirror-checking, pinching of the skin, or avoidance of public situations (Menzel, Krawczyk, & Thompson, 2011). Positive or negative feelings about one self can be influenced by personal, interpersonal, biological and cultural factors. Our body image is mostly a relative perception formed by comparison with peers and personalities we perceive as ideal. It is heavily influenced by standards that have been set by the media and society. The media idealize young, slim women and create an unrealistic standard of female beauty (Clay, Vignoles, & Dittmar, 2005). The obsession with perfect body image and inability to achieve this ideal standard of beauty results in great discomfort and dissatisfaction with their own body.

Negative body image concern can have serious consequences to both physical and psychological health. They have higher risk of indulging in a range of unhealthy behavior such as crash dieting, self inducing vomiting, laxative misuse and excessive exercise (Cafri, Yamamiya, Brannick& Thompson 2005; Neumark-Sztainer, Paxton, Hannan, Haines, & Story,

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Catalysis

Water Chestnut Peel Facilitated Biogenic Synthesis of Zinc Oxide Nanoparticles and their Catalytic Efficacy in the Ring Opening Reaction of Styrene Oxide

Maruf Chauhan,[a, b] Sushma Yadav,[a, b] Rama Pasricha,[c] and Priti Malhotra*[a]

Sustainable initiatives using various biologically active plant materials have been receiving huge amount of attention in the immediate past. Herein, we present the plant mediated synthetic methodology for preparing zinc oxide (ZnO) nanoparticles (NPs) *via* a greener protocol using water chestnut peel (WCP), an agricultural bio-waste whose versatility is well known both behaving as a stabilizing and reducing agent. This method of synthesis of ZnO NPs ensures a cost competitive, non-toxic, economically viable and environmentally benign pathway while using WCP as efficient scaffolds. The crystalline nature and morphology of as synthesized NPs were confirmed using Powder X-ray Diffraction (PXRD) and Scanning Electron Microscopy (SEM). Biogenically synthesized NPs have average crystalline size 20.49 nm and irregular spikes morphology. Furthermore, the biogenically synthesized ZnO NPs were utilized for catalysing the ring opening reaction of styrene oxide from aniline and aniline derivatives enabling the reaction reach up to 99% yields. Motivated by the excellent conversion of ring opening reaction the biogenically synthesized catalyst has also been explored to earmark their versatility and efficiency for facilitating numerous organic transformations which simultaneously emphasise their role in safeguarding the environment.

Introduction

Over the years, nano-catalysis has captured humongous attention owing to their exclusive properties of reactivity, large surface areas, and ability to perform the reaction under milder conditions, selectivity and finally their ease of isolation and recovery after reactions.[1] Nano-catalysts exemplify such class of catalysts which exhibit both homogeneous and heterogeneous catalytic power.[2] The largely acknowledged benefits of nano-catalysts have etched a significant place for them in organic synthesis due to their simple reaction procedures, reusability, environment friendly nature, low cost and their ultrasmall size.[3–6] Recently, metal and metal oxides NPs have been employed as versatile nano catalysts with their efficacy being attributed to their dual Lewis acid and Lewis base character and their redox capabilities on the surface.[7] Over the ancient few decades, metals and metal oxides NPs synthesis have been reported *via* different methods ranging from biological, chemical and physical methods.[8] Amidst the series of metal oxide NPs, ZnO NPs has a vast potential for applications markedly as biosensors, cosmetics, drug careers, antibacterial agents and catalyst in a varied range of organic reactions.[9,10] ZnO NPs enjoy a widespread range of applications and to enable them their biogenic synthesis is more desirable as it ensures its biocompatibility and safety. Numerous different procedures, such as spray pyrolysis, sol-gel process, mechanical milling, thermal evaporation, homogeneous precipitation, organometallic synthesis, microwave method and mechano-chemical fabrication of ZnO NPs was undertaken in the past.[11] Biosynthesis of ZnO NPs is environment friendly, non-toxic, easy to fabricate and offers high level of safety for biological applications.[12] ZnO NPs have emerged as an economical, non-toxic, non-hygroscopic, polar inorganic crystalline material which are harmless and effortlessly available and more often behave as lewis acid during catalytic performances in organic transformations where it has gained astounding importance.[13] Driven by encouraging benefits of ZnO NPs, various reports are listed in Table 1 highlighting the biogenic synthetic protocols for synthesizing ZnO NPs using discrete plants and green wastes which are novel options of immense advantages as they not only rule out the usage of toxic and hazardous chemicals but also do not hinder the beneficial advantages of these NPs in various fields.

In the current report, ZnO NPs have been newly synthesized by the biogenic pathway using WCP extract. WCP are the disposal layer of the fruit and is about 20% (w/w) of the total mass of the fruit. It is that layer which is generally discarded and adds to the kitchen waste causing environmental pollution.

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Catalysis

Water Chestnut Peel Facilitated Biogenic Synthesis of Zinc Oxide Nanoparticles and their Catalytic Efficacy in the Ring Opening Reaction of Styrene Oxide

Maruf Chauhan,[a, b] Sushma Yadav,[a, b] Rama Pasricha,[c] and Priti Malhotra*[a]

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ORIGINAL ARTICLE

Stress, Anxiety Triggers and Mental Health Care Needs Among General Public Under Lockdown During COVID-19 Pandemic: a Cross-Sectional Study in India

Kabir Pal[1] · **Shagun Danda**[2]

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Abstract
The outbreak of novel corona virus (COVID-19) pandemic possesses the potential to arise an unprecedented growth of mental health care needs among the general population. The present study aims to understand the knowledge of possible symptoms, stress and anxiety triggers and mental health care needs related to COVID-19 pandemic among the general population of India. A web-based cross-sectional survey was conducted across India. In order to conduct the survey, an online survey tool (semi-structured questionnaire) was prepared using google forms. Apart from having an informed consent, the survey tool comprised 42-item questions addressing the background characters of the participants and the pertinent issues related to the study. Snowball sampling technique was adopted in the study, and the questionnaire was sent to the contacts of the surveyors. All the participants were further requested to forward the tool in their respective contacts. A total 284 respondents were covered under the survey. More than 50% of participants reported having some professional loss in the current pandemic lockdown phase and 74% of the respondents reported having stress about their business or employment in the coming times. Majority (77%) of respondents agreed on the importance of professional mental help but 40% reported not likely to take professional help if they experience extreme stress and anxiety due to COVID-19. The educated people realise the significance of mental health care needs but majority of them decline to take a professional help even after realising the extreme anxiety. It is imperative for the government to amplify the awareness programmes addressing the mental health care needs and its importance during the COVID-19 pandemic.

Keywords COVID-19 pandemic · Awareness · Stress · Anxiety · Mental health

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Re-inventing the Teaching-Learning Process Post-Covid:

Philosophical and Pragmatic Dimensions

Monica Prabhakar and Soma Sengupta

Abstract

Covid-19 has impacted all sectors of the country including the education sector. In this new normal situation, though online teaching has become the order of the day, it has led to a digital divide among students. The study explores the possibilities of effective online methods of teaching and learning taking cues from the ancient Indian philosophy of education and the modern technologies developed to smoothen the process of learning. The objectives of the study are to re-invent the modern online teaching and teaching-learning process in the context of the ancient education system; and to analyse the pros and cons of online education with special reference to India. The study pointed out that there is an opportunity to build-up the current, on our ancient education system, on the three pillars of learning, i.e., shravana (listening), manana (reflecting) and nididhyāsana (internalizing). Implementing a total online education system will be a real challenge in a diverse country like India, with inequalities of income, leading to poor infrastructure and limited access to technology; coupled with poor training and content development; and political opposition and blame games. But all the

Can Anupalabdhi Be An Epistemic Instrument of Valid Knowledge?

क्या अनुपलब्धि वैध ज्ञान का एक ज्ञानमीमांसीय उपकरण हो सकता है?

Dr. V. Sujata Raju

सारांश

जिस पद्धति से ज्ञान की उत्पत्ति होती है, वह भारतीय ज्ञानशास्त्र में चर्चा का सबसे प्रासंगिक विषय है। प्रमाण का सिद्धान्त स्थापित करता है कि सत्यात्मक ज्ञान के प्रत्येक अंश के लिए, निश्चित रूप से कुछ मान्यता प्राप्त साधन है। भारतीय दर्शन के सभी मतों ने स्वीकार किया है कि प्रमाण वह है जो प्रमा दाता है और प्रमा सत्य एवं सुनिश्चित ज्ञान है। इस शोध–पत्र में हम मुख्य रूप से ज्ञान का साधन– अनुपलब्धि या अभाव की समस्या से सम्बन्धित है लेकिन इसकी स्वीकृति या अस्वीकृति के रूप कुछ तत्त्वमीमांसीय पहलुओं के विचार शामिल है। ज्ञानमीमांसीय विश्लेषण के लिए अभाव के सत्तामीमांसीय पहलू की चर्चा नितान्त आवश्यक है। इस शोध–पत्र का उद्देश्य महत्वपूर्ण ज्ञानमीमांसीय बहस की टिप्पणियों को उजागर करना है कि क्या अनुपलब्धि को भारतीय ज्ञानशास्त्रीय परम्परा में एक पृथक, स्वतन्त्र और अप्रयुक्त प्रमाण के रूप में स्वीकार किया जा सकता है।

मुख्य शब्द :

अनुपलब्धि, अभाव, प्रमाण, प्रमा, अद्वैत वेदान्त, पूर्वमीमांसा, न्याय–वैशेषिक।

Abstract

The method in which knowledge originates is one of the most pertinent subject-matter of discussions in Indian epistemology. The theory of pramāṇa establishes that for each piece of veridical knowledge, there is certainly some accredited means. All the schools of Indian philosophy have accepted that pramāṇa is what gives pramā and that the pramā is true and assured knowledge. In this paper, we are primarily concerned with the problem of the non-existence (anupalabdhi or abhāva) as a means of knowledge. But its acceptance

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MIG: At the Centre of the Narrative of Elections

Suranjita Ray

Ever since 'GaribiHatao' (poverty eradication) became the most popular slogan which appealed to the large majority of poor people across the country that brought the Congress Party to power in the 1970s, the poll manifestoes of leading political parties have focused on several poverty alleviation programmes and schemes. Despite various interpretations of understanding poverty and its causes that has made it difficult to arrive at a consensus on the poverty alleviation strategies, Minimum Income Guarantee (MIG)/income assurance has remained central to poverty eradication, and has been endorsed by several political parties to legitimise their manifestoes as pro-poor and pro-people.

While the Bharatiya Janata Party blames the Congress Party of having betrayed India in the name of poverty for almost 70 years, the Congress Party describes the Nyunatam Aay Yojana (NYAY) as a surgical strike on poverty as it will undo anyay (injustice) by empowering the poor to overcome the recent impairments that policies of demonetisation and a flawed Goods and Service Tax have caused. This blame-game has reignited the debate on poverty which re-emphasises that poverty cannot be reduced to income deprivation alone.

NYAY: A Big Promise to Abolish Poverty

Unlike several schemes that target the farm households for income support such as the Central Government's Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) Yojana, Biju Janata Dal's Krushak Assistance for Livelihood and Income Augmentation (KALIA) scheme in Odisha, Telangana Rashtra Samithi Party's Farmers' Investment Support Scheme (FISS)/Rythu Bandhu in Telangana, and All India Trinamul Congress Party's Krisak Bandhu Scheme in Bengal, the Congress Party claims that NYAY is a universal scheme that promises a direct cash transfer of Rs 6000 per month and Rs 72,000 per year to 50 million very poor families amongst the poorest 20 per cent of India's population. NYAY promises 12 times an annual income transfer than PM-KISAN Yojana and claims to be the biggest anti-poverty programme that will benefit 25 crore poor, which will cost 3.6 lakh crore per annum. It also claims to be women-centric as the money would be credited to the bank account of the woman of the household.

The Congress spokespersons defend that a minimum basic income will ensure equality and justice for the poor people. They argue that consultation with renowned economists and experts suggest that the poorest Indians live on Rs 6000 and helping them with an additional amount of Rs 6000 would lift them above poverty. In remonetising the economy, 'NYAY will jump start the Indian economy like a vehicle that is started by a key'. Though the economy growing at a faster pace will not necessarily alleviate poverty, supporters of NYAY argue that income transfer will enable the poor to meet their essential needs by spending the money. Praveen Chakravarty, Chairperson of the Data Analytics Department of the Congress Party, believes that 'an unconditional cash transfer gives the economic freedom where some families might choose to indulge in consumption while others may choose to upgrade the skills of their children'. This will restart the economic engine/ kickstart the economy, as a consumption boost will give rise to pick up in the investment demand. This will create new jobs and increasedtax revenues will lead to the second part of NYAY which will jump-start the economy.

While the Congress party President ruled out the role of progressive taxation /levying higher taxes on the rich/middle class, the question of resources for such schemes largely remains

Mainstream VOL LVII No 15 New Delhi March 30, 2019

Interpreting FRA To Uphold Justice

Suranjita Ray

On 28 February 2019, in response to a review petition filed by both the government at the Centre and in Gujarat, the Supreme Court stayed its controversial order of 13 February 2019 - to ensure eviction of nearly one million Adivasis and Other Forest Dwellers from forestlands, whose claims under the Scheduled Tribes and Other Forest Dwellers (Recognition of Forest Rights) Act 2006, have been rejected across several states[1].

The apex court in its stay order has asked the State governments for a detailed report on whether due process was followed by the Gram Sabhas' and the authorities under the FRA before rejecting the claims. The review order makes it clear that there will be no forcible evictions for now (till 10 July 2019 when the matter will be taken up in the Supreme Court). It provides a temporary relief to millions of Adivasis and Other Forest Dwellers whose illegal evictions would have deprived them of their livelihood resources, home, land and justice. However, what is of larger concern is the narrow interpretation of the Act itself and the understanding of conservation of forests by the wildlife rights-based groups/movements/organisations which makes eviction easier, defeating the very purpose of the Act.

We find that forests have become sites of contestation and conflict between the nature conservationist/environmentalist and the Adivasis and forest dwellers, and many a times between the latter and the Forest Department/State. While the petitioner's concern regarding demarcation of critical wildlife habitats is important and needs to be addressed, holding the implementation of FRA as responsible for encroachments, deforestation and fragmentation of forest land, needs to be contested.

Interpreting the FRA

Despite the fact that section 4(5) of the FRA 2006, specifically prohibits eviction until the process of implementation is fully complete in an area and Rule 13 of the Act spells out a wide range of evidence to be considered by the Gram Sabha in determining forest rights which include oral statements by village elders and land improvement measures either taken individually or collectively by the communities such as levelling, bunds, check dams and construction of huts, the narratives by the villagers suggest that the predominant reason for the rejection of claims is the lack of sufficient evidence and rejection of oral history. In fact, the de facto veto power of the forest department in approving claims often acknowledges the documentary evidence of its records only as acceptable evidence. All the other evidences submitted by the claimants are rejected.

Therefore rejection of claims are far more than giving the title deed as settlement of claims. Till November 30, 2018 in an approximate claim of 42.24 lakh, both individual and community, around 18.94 lakh claims have been given title deeds, and around 19.39 lakh claims have been rejected (Ministry of Tribal Affairs).

Most of the claims are rejected either on the ground that there is no proof that three generations of Other Traditional Forest Dwellers have been staying in the forest land or due to the

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Exploring the Significance of Bezbaroa's Burhi Aair Sadhu, Focusing on Innocence as Projected in Bezbaroa and Shakespeare

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Abstract

This article attempts at exploring two basic concerns. The first is to analyze the significance of Laxminath Bezbaroa's Burhi Aair Sadhu, a collection of Assamese folktales. This leads to the observation of significant postcolonial analyses of orature as a community reservoir of myths, morality, society, history and culture, by African authors such as Achebe, Wa Thiongo and Fanon. The second and related basic point of this article is to highlight several similar traits noticeable in Bezbaroa's Burhi Aair Sadhu and some of Shakespeare's plays in terms of innocence and its projection.*

Keywords: Folktales, culture, innocence, projection

Laxminath Bezbaroa (1864-1938),better known as 'Sahityarathi' and 'Rasaraj' in Assamese, was the most prominent litterateur of the Assamese Renaissance of the Nineteenth and early Twentieth century, a prolific author who wrote short stories, poems, novels, essays, songs andresearch articles, a socially responsible editorwhoedited and published magazines, a playwright who recreated Assamese history through vivid literary productions-in short did everything possible to rejuvenate the depressed and subjugated Assamesepeople at a transitional moment. His wit – that ascribed 'Rasaraj'(King of Humour) title to him-was comparable to Chaucer in urbanity. To a certain extent he could be like Pope as well, providing a good laughter at the expense of certain social follies. Through various relentless efforts he asserted the Assamese identity and boosted up the morale of the people to resist negative forces that exerted dominance through various modus operandi. He was particularly instrumental in retrieving history

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Decarbonising Economic Growth through Innovations in Renewable Energy

Pooja Sharma*, Sunita Gupta**

Abstract *With the emerging consciousness of climate change and focus on climate-resilient growth across all developing nations, Brazil has proved to be a benchmark for the energy transition to an environmentally sustainable energy system. All the developing countries are heading towards decarbonised growth using alternative sources of energy. As a result, the paper explores the causal relationship between renewable energy consumption and economic growth in the case of Brazil, using the data for the last 12 years. The Granger causality test is performed to comprehend the relationship between the three crucial indicators of the newly emerging growth models. The paper examines the interdependence of renewable energy and economic growth using the Granger causality test to estimate two-way dependence in BRICS countries. The paper exhibits the evidence of one-sided long-run causality between the use of renewable energy and per capita GDP, concluding that the deployment of renewable energy Granger causes per capita GDP growth. The results of Granger causality and correlations further provide an adequate rationale for the state to invest in renewable energy technologies and innovations. In this backdrop, the paper attempts to analyse India's green growth compared to Brazil in the last 15 years.*

Keywords *Climate Change, Renewable Energy, Economic Growth, Human Capital, R&D, BRICS*

INTRODUCTION

Climate change has taken centre stage among all global challenges that both developed and developing nations face today. Each developed and developing economies is determined to adopt newer, cleaner, and efficient ways of producing energy to mitigate the harmful and disastrous consequences. For the first time in 20 years, COP21 will aim to achieve a legally binding agreement, along with international climate agreements, to keep the average temperature below 20°C (UNFCCC, COP 21). India is going to play a critical role in meeting the targets. India aims to lower its emission intensity by 33% to 35% by 2030, below the 2005 levels (Times of India, 2 October 2016). In this context, most advanced countries have established a legal framework to encourage the shift from fossil-based energy to a non-conventional clean energy system. This attempt requires a well-planned conscious effort to accomplish global energy efficiency objectives and transition towards clean energy alternatives.

India is also committed to expanding the contribution of non-fossil-based capacity of electricity generation to 40% of the installed electric power capacity by 2030. The efforts are substantially towards decarbonisation, which reduces carbon-emitting conventional fuels and substitutes them with renewable and zero-carbon sources of energy. India is struggling with its two-fold objectives of energy equity and sustainable energy growth. Under such circumstances, when the country is struck by many problems of unemployment, poverty, inequality, and lack of enough infrastructure that directly highlights an acute need for cheap sources of energy, it would be a real challenge for the nation to undergo energy transition in favour of alternate sources of energy. It is challenging for a developing nation and poor nations to adhere to the targets, as the conventional sources of energy are cheap and the alternative sources are expensive, as they involve technological innovations.

With emerging concerns of climate change, climate regime has formulated a very comprehensive or holistic energy regime. All the developed and developing countries are determined to undergo a transition in their energy system to attain climate-resilient growth, so that they are successfully able to trade-off between carbon emissions and economic growth. In this context, Brazil has been a remarkable example in achieving carbon-free growth, laying down benchmarks in energy innovation and transition pathway.

Brazil, a Latin American country, is the biggest in South America, and the fifth largest globally[1]. It is the most prominent country in terms of international trade in South America. Brazil's institutional regime, policy framework,

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FARMERS' PERCEPTIONS OF CLIMATE CHANGE, ITS ASSOCIATED RISKS AND ADAPTATION METHODS: A CASE STUDY OF GHAZIABAD, UTTAR PRADESH, INDIA

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ABSTRACT

This study makes an attempt to explore farmers' perception of climate change, awareness of adaptation and techniques adopted by them. Study area is Ghaziabad, Uttar Pradesh because this district is located in seismic zone IV and due to this, district is exposed to natural and man-made calamities such as, floods, drought, windstorms. Non-parametric test named Mann-Kendall has been employed to observe monthly trend in the climatic variables. Minimum temperature and maximum temperature showed an upward trend in most of the months; however, rainfall shows an insignificant downward trend in most of the months. The primary survey results indicate that farmers are observing increase in temperature, erratic rainfall and other changes in climate, but they are not aware of "climate change" per se. Most farmers believe that "Ancestral Spirits" are the main cause of the variations taking place in climate. The farmers are aware of the climate shocks and climate variability. Although farmers haven't taken any concrete steps to combat the perceived climate changes, they are changing their farming practices.

Keywords: Trend, Climate Change, Mann-Kendall, Perception, Adaptation.

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1. INTRODUCTION

Climate change represents the significant variations in the statistical distribution of weather parameters over a long period [1].

According to Indian Meteorological Department Jha and Tripathi (2017), there exists four seasons in India: winter (January and February), premonsoon (March, April and May), monsoon (June, July, August and September) and post-monsoon (October to December).

The entire year gets divided into four seasons: (i.) Winter (January and February); (ii.) Pre-monsoon or Hot climate season (March-May); (iii.) Southwest or summer, monsoon season (June-September); (iv.) Post monsoon season (October-December). Year-wise fluctuations in the weather and happening of climatic shocks/extremes in respect of these four seasons are:

[1] As mentioned in Jha & Tripathi (2017), in context of climate change, term **"Long Period"** discusses to time period ranging from a decade to a century. The IPCC (as cited in Jha & Tripathi, 2017) takes into consideration the average of climate variables during 1961-1990 as the standard to measure variations in climate during a period.

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Determinants of Economic Mobility in India

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In this paper, we analyse the trends pertaining to the transition of households out of poverty and into the middle class over time. Further, we look at the factors affecting upward income mobility of urban Indian households, particularly the effect of the urban infrastructure development. The analysis of factors affecting poverty alleviation and upward economic mobility among households has been well documented in literature. The motivation of this study is to investigate whether investment in urban infrastructureis actually an important determinant of household economic mobility. Firstly, we study the state wise transitions in the income distribution of urban households over time. Secondly, we study the relationship of these economic transitions with various social and institutional factors that may have influenced them. The results indicate that infrastructure investment does not have a positive impact on transition out of poverty, but affects upward household mobility at higher income levels. However, factors such as the length of pucca roads in the district, and urban electrification (%) have a positive impact on household mobility out of poverty and middle class mobility respectively. The use of 2SLS probit regression model in order to tackle the problem of endogeneity reinforces the result that while the JNNURM spending does not affect out of poverty mobility, it significantly impacts mobility of households into global middle class.

Keywords: *Income mobility, Female education, Urban, Infrastructure*

I. INTRODUCTION

The motivation of this study is to investigate the factors affecting economic mobility in India, and whether investment in urban infrastructure leads to household economic mobility. Firstly, we analyse the state wise transitions in the income distribution of urban households over time. Secondly, we study the relationship of these economic transitions with various social and institutional factors that may have influenced them, with a focus on infrastructure facilities.

Although the method for measuring economic mobility has been contested in literature (Gottischalk and Spolaore, 2002), economic mobility refers to the changes in individual or household income/consumption over time (Fields and Ok, 1998), thereby improving/reducing the standard of living. This mobility can be either intergenerational or intra generational.While the former looks at the changes in the economic status of children in comparison to their parents, the latter looks at the

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शोध-पत्र

भूमंडलीकरण एवं हिन्दी पत्रकारिता में अभिव्यक्त राष्ट्रीय बोध



डॉ. ज्योति शर्मा

शोध सारांश

लोकतंत्र के चतुर्थ स्तंभ के रूप में स्वतंत्रता आंदोलन से समसामयिक समय तक हिन्दी पत्रकारिता ने अहम् भूमिका का निर्वहन करते हुए मिशन रूप में कार्य किया है। चाहे भारतवासियों को अंग्रेजों के शोषण के प्रति संगठित कर आंदोलित करना हो अथवा किसी सामाजिक मुद्दे से अवगत कराना हो हिन्दी पत्रकारिता ने सदैव अपने पत्रकारिता धर्म का सत्यनिष्ठा से पालन किया है। काल, समय, भूमंडलीकरण एवं परिस्थितियों के प्रभाववश बाजार का अल्प प्रभाव पत्रकारिता अवश्य पड़ा है इस सच्चाई से मुंह मोड़ा नहीं जा सकता। परन्तु आज भी हिन्दी पत्रकारिता निरपेक्ष और सत्याधारित पत्रकारिता कर्म का जिम्मेदारी पूर्वक पालन कर रही है इंकार नहीं किया जा सकता।

बीज शब्द

हिन्दी, पत्रकारिता, भूमंडलीकरण, बोध, सत्य, धर्म, कर्तव्य, मिशन आदि।

प्रस्तावना

भूमंडलीकरण के समय में सभ्यता, संस्कृति, समाज एवं इतिहास नये भाव बोध के साथ परिवर्तित हो रहे हैं। एक ओर मानव विकास की भव्य मीनारों का संस्पर्श करने की प्रक्रिया में प्रवृत्त है तो दूसरी ओर मानव जीवन के दैनिक कार्य-व्यापारों, चिन्तन-मनन को तकनीक, मीडिया एवं बाजार की शक्तियाँ संचालित कर रही हैं। भूमंडलीकरण कह लीजिए या विकास अथवा बाजार की मायाविनी शक्ति के प्रभाववश व्यक्ति, समूह, प्रदेश और राष्ट्र के स्तर पर हिंसा, घृणा एवं बर्बरता के नए आख्यान भी दिन-प्रतिदिन रचे जा रहे हैं। इन सबके बीच भी कुछ ऐसी शक्ति, शाश्वत, पवित्र, शुद्ध एवं शुभ भारत की पावन धरा पर आच्छादित है जो कह रही है-

''तुमको पाना है, अविराम
सब मिथ्याओं में
ओ मेरे सत्य।''[1]

समाज में मानव-मूल्यों की स्थापना के साथ जन-जीवन को विकासोन्मुख बनाना पत्रकारिता का दायित्व है। ''सैर कर दुनिया की गाफिल जिन्दगानी फिर कहाँ'' यह कथन भूमंडलीकरण तथा बाजारवाद पर सटीक बैठता है जो मीडिया के कंधों पर बैठकर संसार की सैर पर अग्रसर हो रहे हैं। स्वतंत्रता प्राप्ति से पूर्व की पत्रकारिता अंग्रेजों से दो-दो हाथ कर रही थी उसका मूल मंत्र था-

''ज्वलतु ज्वलतु विप्लववह्नि नगरे-नगरे
भस्म होतु राक्षसेर स्वर्ण लंकापुरी।''[2]

'पयामे आजादी' पत्र द्वारा राष्ट्रशक्ति के प्रेरणास्रोत सम्राट बहादुरशाह 'जफर' ने ऐतिहासिक संदेश दिया-

''हिन्दुस्तान के हिन्दुओं और मुसलमानों उठो, भाइयो उठो, खुदा ने इन्सान को जितनी बरकतें अदा की हैं, उनमें सबसे कीमती बरकत आजादी है।''[3]

आजादी तत्कालीन जन-साधारण का प्रमुख लक्ष्य था और उसे पाने के लिए वे पूर्णतः कृतसंकल्प थे। उनके प्रबल प्रतिशोध को स्वर देती एवं पत्रकारों के जीवंत संघर्ष को चित्रांकित करती 'मद्रारथी पत्र' की निम्न पंक्तियाँ दृष्टव्य हैं-

''चढ़ रहा है हर जुबां पर अब जुनूने लाजपत,

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Recombinant outer membrane protein OmpC induces protective immunity against *Aeromonas hydrophila* infection in *Labeo rohita*

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ABSTRACT

Aeromonas hydrophila is an opportunistic pathogen that causes enormous loss to aquaculture industry. The outer membrane proteins of *Aeromonas* help in bacterium-host interaction, and are considered to be potential vaccine candidates. In the present study, we evaluated immunogenicity and protective efficacy of recombinant OmpC (rOmpC) of *A. hydrophila* in Indian major carp, *Labeo rohita*. The rOmpC-vaccinated fish produced specific anti-rOmpC antibodies with a significant antibody titer, and the antisera could specifically detect the rOmpC in the cell lysates of *Escherichia coli* expressing rOmpC and cross-react with different *Aeromonas* lysates, indicating the suitability of the anti-rOmpC antisera to detect *Aeromonas* infection. A significant increase was noted in ceruloplasmin level, myeloperoxidase and anti-protease activities in transient and temporal manner the sera of the rOmpC-immunized fish as compared to PBS-control fish. Higher agglutination- and hemolytic activity titers in the anti-rOmpC antisera indicate stimulation of innate immunity. Expression of immune-related genes comprising various acute phase proteins, cytokines and inflammatory response molecules were modulated in the head kidney of rOmpC-immunized *L. rohita*. While IgM, IL1β, and TLR-22 were significantly up-regulated at early time points (3 h–72 h), the others showed a transient augmentation at both early and later time points (SOD, lysozymes C and G, NKEF-B, C3, CXCa and TNF-α) in the rOmpC-immunized *L. rohita* in comparison to PBS-injected controls. These data suggest that the rOmpC-induced immune response is temporally regulated to confer immunity. *In vivo* challenge of the rOmpC-immunized fish with *A. hydrophila* showed significantly greater survival when compared to PBS-injected control fish. Thus, our results highlight the immunomodulatory role of rOmpC and demonstrate its protective efficacy in *L. rohita*, along with the use of anti-rOmpC antisera in detecting *Aeromonas* infections.

1. Introduction

India, a country rich in water bodies and surrounded by seas, is a major producer of food from aquaculture industry. It is the second-largest producer of all carps (cyprinids), following China, and the three major carps contribute approximately 90% of the total aquaculture production [1]. *Labeo rohita* (commonly known as rohu) is one of the principal species reared in fresh water carp polyculture systems, along with the other two Indian major carps: *Catla catla*, and *Cirrhinus mrigala*. In light of increasing food demand, a range of strategies have been adopted to enhance the production of carps, including *L. rohita*. However, like any other organism, it is also prone to infections caused by viruses, bacteria and parasites, resulting in huge economic losses. The scanty knowledge of the immune status and various factors that could confer resistance to and protect the fish from diseases is a major hindrance to the establishment of efficient measures to prevent the diseases, thereby affecting its production [2].

Among many bacteria that infect *L. rohita, Aeromonas hydrophila,* a Gram-negative bacterium belonging to the *Aeromonadaceae* family, is one of the major pathogens that cause high mortality of the infected fish, especially in contained facilities [3,4]. Recent reports indicate that aeromonads group account for more than 65% of total bacterial

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Molecular phylogeny, structure modeling and *in silico* screening of putative inhibitors of aerolysin of *Aeromonas hydrophila* EUS112

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ABSTRACT

Aeromonas hydrophila, a Gram-negative bacterium, causes diseases in fish, resulting in excessive loss to the aquaculture industry. *Aeromonas* is a highly heterogeneous group of bacteria, and the heterogeneity of the genus is attributed to variation and diversity in the virulence factors and toxins among various *Aeromonas* strains. One of the major toxins aerolysin, secreted by the bacterium, causes hemorrhagic-septicemia and diarrhea and can serve as a drug target. Here, we describe characterization, molecular phylogeny, and homology modeling of the aerolysin of *A. hydrophila* strain EUS112 (Ah_{EUS112}) cloned in our lab. The encoded aerolysin is 485 amino acids long with an N-terminal signal sequence of 23 amino acids. Phylogenetic analysis of the aerolysin of Ah_{EUS112} revealed that it belongs to a diverse group of toxins, showing maximum similarity with aerolysins of other *Aeromonas* strains followed by *Vibrio* toxin. The homology model of the mature aerolysin of Ah_{EUS112} was generated using the crystal structure of a mutant aerolysin (PDB#3g4n) as the template, which showed that the encoded aerolysin exists as a channel protein. Validation of the generated model using bioinformatics tool confirmed it to be a good quality model that can be used for drug design. Molecular dock analysis revealed that drugs, aralia-saponin I, cyclamin, ardisiacrispin B, and aralia-saponin II bind to aerolysin with a higher affinity as compared to other drugs and at functionally important amino acids of aerolysin. Hence, these molecules can act as an effective therapeutics for inhibiting the aerolysin pore formation and curtail the severity of *Aeromonas* infection.

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KEYWORDS
Aerolysin; homology modeling; molecular docking; molecular dynamic simulation; phylogenetic tree

1. Introduction

A. hydrophila is a motile, Gram-negative rod-shaped enterobacterium established as one of the major pathogens that affect fish. It is a ubiquitously present bacterium, accountable for causing necrosis in fish tissues besides ulcers, hemorrhagic septicemia, and many other diseases, resulting in high fish mortality and substantial economic losses to the aquaculture industry (Rasmussen-Ivey et al., 2016). It is an opportunistic pathogen and occasionally causes diseases in amphibians, reptiles, and mammals, including humans. In humans, it is a causative agent of diarrhea and septicemia. The pathogenicity of *Aeromonas* is attributed to its intricate network of virulence factors such as a surface layer, adhesins (porins help in attachment), various secretion systems (releases enzymes and toxins), and biofilm formation (Rasmussen-Ivey et al., 2016). Among various extracellular toxins secreted by *Aeromonas*, aerolysin and hemolysin are the best characterized that are involved in the development of hemorrhagic septicemia and contribute significantly to its pathogenicity in fish and other animals. Though *Aeromonas* are ubiquitously present in the aquatic environment, a significant heterogeneity has been noted in this genus among various species and subspecies with respect to its distribution, host range, and growth parameters (Gauthier et al., 2017; Janda & Abbott, 2010). The heterogeneity in various parameters and virulence among various *Aeromonads* has been attributed to genomic heterogeneity and due to variations in the structure of toxins owing to amino acid difference. Cytotoxic and hemolytic activities reported for many *Aeromonas* species have been attributed to both hemolysin and aerolysins (Cumberbatch et al., 1993; Ferguson et al., 1995; Gosling, 1996). Aerolysin is a heat-labile type of β-hemolysin displaying phospholipase A and C activity. It can form a channel by inserting itself into the cell membrane's bilayer, initiating leakage of essential cytoplasmic contents resulting in cell lysis (Abrami et al., 2003). The toxin is secreted as an inactive precursor (proaerolysin) and traverses the membrane with the help of its N-terminus sequence. The toxin is then secreted into the periplasm, where it attains a

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Bilayer of zirconium oxide/lanthanum oxide high-κ dielectric fabricated for metal-oxide-semiconductor nano-electronic device applications

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ABSTRACT

This study reports the fabrication of zirconium oxide (ZrO_2)/lanthanum oxide (La_2O_3) bilayer on silicon substrates using the ions generated in a modified dense plasma focus device. Both ZrO_2 and La_2O_3 are fabricated using one burst of focused plasma each on substrates kept at a distance of 4.0 cm from top of the anode. The as-deposited bilayer is further annealed to study the effect of annealing on the characteristics of the bilayer. The bilayer is found to have uniform morphology as obtained in scanning electron microscopy and atomic force microscopy results. The uniformity of bilayer is found to improve upon annealing. These as-deposited and annealed bilayers are electrically characterized through current-voltage and capacitance-voltage measurements in a metal–oxide-semiconductor (MOS) capacitor configuration. The leakage current density and capacitance density of MOS capacitors fabricated on as-deposited and annealed bilayers, respectively are ~2.89×10^{-10} A/cm^2 and ~7.23×10^{-12} A/cm^2 at 1 V and ~2.18 μF/cm^2 and ~2.72 μF/cm^2. Conduction mechanism of MOS capacitor is field/tunnel emission and Schottky emission at low and high electric field, respectively. The annealed bilayers are found to possess improved morphological and electrical properties making them suitable candidate for future nano-electronic device applications.

1. Introduction

The next-generation nano-electronic device requires efficient metal–oxide-semiconductor (MOS) capacitors having smaller size and improved electrical characteristics in terms of low leakage current density and high capacitance density. Traditionally, silicon dioxide (SiO_2) was used as gate dielectric material in MOS device, which reaches its limitation when the thickness is reduced below 2 nm in sub 100-nm technology [1]. The limitation of SiO_2 such as high leakage current is alleviated by using high-κ gate dielectric materials. Several high-κ gate dielectric materials have already been investigated in earlier researches [2–4] to replace the SiO_2. In an earlier study [4], we have shown that use of zirconium oxide (ZrO_2) high-κ dielectric in MOS capacitors can result in improved electrical characteristic of the fabricated device. Moreover, it is reported in literature [3,5] that stacking of two high-κ dielectric materials one over another results in further improvement in the electrical characteristics of the fabricated MOS capacitors. This motivates us to investigate the use of novel stack of high-κ dielectric material ZrO_2/lanthanum oxide (La_2O_3) in MOS capacitors to be used in future nano-electronic device applications. In this study, we reports the fabrication of ZrO_2/La_2O_3 high-κ dielectric materials bilayer and their use in the MOS capacitors. The morphological and electrical properties of fabricated bilayer based MOS capacitors are compared for as-deposited and annealed bilayers.

2. Materials and methods

ZrO_2/La_2O_3 bilayers were deposited on p-type silicon substrates cleaned using standard RCA cleaning procedure. For deposition of La_2O_3 and ZrO_2 the powder of respective material of 5 N purity was compressed at 10 MPa pressure to form pellets, which were subsequently sintered at 800 °C for 4 h. The thickness and diameter of pellets were ~5 cm and ~13 cm, respectively. These pellets were fitted on modified anode of the dense plasma focus (DPF) device. In order to carry out deposition the silicon substrates were kept at an optimum distance of 4.0 cm from top of the anode. The modifications made in DPF device for nanofabrication and its detailed procedure were already reported in earlier studies [2,6]. One burst of focused plasma is used for deposition using each material pellet. The argon plasma having characteristics of high temperature, high density and extremely non-equilibrium formed

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Synthesis of nano-diamond-like carbon for protective optical window coating applications

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Abstract. This study reports the fabrication of carbon using ions of carbon generated by high temperature, high density and extremely non-equilibrium argon plasma produced in modified dense plasma focus device. Carbon is deposited using two bursts of focussed plasma on n-type silicon substrates kept at a temperature of 20 (room temperature) and 130°C. The formation of nano-diamond-like carbon (nano-DLC) is observed at substrate temperature of 130°C. The samples deposited at different substrate temperatures are found to have amorphous in nature as observed from X-ray diffraction studies. These amorphous samples of carbon and nano-DLC possess nanostructures of average size ~27 and ~10 nm for 20 and 130°C substrate temperature, respectively, as obtained from atomic force microscopy and scanning electron microscopy studies. The possibility of formation of nano-DLC was analysed using Raman measurements. Peaks related to D and G band of graphitic carbon are observed in Raman spectra of both the samples. However, the samples grown at substrate temperature of 130°C show peaks related to nano-grain of diamond in Raman spectra, indicating high sp^3 content, thereby confirming the formation of nano-DLC. The hardness measurement reveals the maximum value of hardness ~45.5 GPa for nano-DLC sample, which reconfirms that sample is of nano-DLC nature. The nano-DLC are found to have band gap of ~2.45 eV, which makes the nano-DLC a potential candidate for applications in protective optical window coating.

Keywords. Nano-DLC; nanoparticles; deposition; scanning electron microscopy (SEM); Raman spectra; dense plasma focus.

1. Introduction

Diamond-like carbon (DLC), a metastable state of amorphous carbon consist of a mixture of diamond-like sp^3 and graphite-like sp^2 bondings. Diamond is electrically an insulator with a band gap of ~5.5 eV, whereas graphite is electrically a conductor with zero band gap. Diamond is hard, whereas graphite is soft. Thus, the properties of DLC films mainly depend on the sp^3/sp^2 ratio. Sp^3 bonds mainly govern the mechanical properties, whereas sp^2 bonds govern electrical and optical properties in DLC films. DLC as a material has high mechanical hardness, is chemically inert, highly transparent (optically) and wide band gap semiconductor [1]. The thin films of DLC have a wide range of applications including protective coating for optical windows, magnetic storage disks, car parts, biomedical coating and in micro-electromechanical (MEMs) devices [2–7].

DLC was first produced by Aisenberg and Chabot [8] in 1969 through ion beam deposition of carbon. Now, DLC can be produced by various methods, such as ion beam deposition [8,9], magnetron sputtering [10], ion plating [11] and laser plasma deposition [12]. All these studies [3–12] report the fabrication of DLC thin films. The fabrication of nano-DLC is not yet reported in the literature. However, Dayal *et al* [13] have reported fabrication of nanostructured DLC thin films and studied their structural and mechanical properties. This motivates us to fabricate nano-DLC and further study its properties for future applications in protective coating for optical windows.

The techniques reported in literature [8–12] for fabrication of DLC thin films are physical or plasma-based techniques. Out of these various deposition techniques, plasma-based techniques based on ion implantation [14] are supposed to be superior techniques. One of such plasma-based ion implantation driven technique is dense plasma focus (DPF) device. The modified DPF device is a source of high density, high temperature and extremely non-equilibrium plasma which generates high fluence material ions that can be used to deposit thin films and nanostructures under different processing conditions. The modified DPF device has already been used for nanofabrication of several materials [15–17] including thin films of DLC [18].

In the present study, we have used modified DPF device to deposit nano-DLC on n-type silicon substrate with two bursts of focussed plasma at optimum substrate temperature. The deposits are then characterized by X-ray

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Genesis of magnetism in graphene/MoS_2 van der Waals heterostructures via interface engineering using Cr-adsorption

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ABSTRACT

Graphene/MoS_2 heterostructure (G/MS-H) has distinctive and superlative electronic properties as it contains features of both graphene and MoS_2. Our first-principles calculations reveal this heterostructure has a little bandgap (40 meV) and zero magnetic moment in the pristine form. In the present work, we have attempted to induce magnetism in the resultant heterostructure by adsorbing Cr atom at (i) Top (G-Top) (ii) Hollow (G-Hollow) configurations in the graphene layer and (iii) Top (S-Top) and (iv) Hollow (S-Hollow) in the MoS_2 layer. However, only G-Top and S-Hollow are energetically favorable amid these configurations. Our results demonstrate that Cr-adsorption persuades the significant magnetic moment. Both the stable configurations (G-Top and S-Hollow) transpire metallicity with a Dirac point shift in the valence band. The magnetism originates from the interactions between Cr-3d states with C-2p and S-3p states. These results summarize that the resultant adsorbed heterostructure may serve as a phenomenal breakthrough for nanomagnetism.

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1. Introduction

The latest progression and development in the research of novel 2D materials have opened up new avenues for the fabrication of very thin structures (in the range of nm) with restrained properties. The first member of this family is graphene, a 2D analog of carbon allotrope, graphite, and was synthesized in 2004 at the University of Manchester [1]. Graphene has several peculiar properties which proved its worth in almost all areas especially in photonics, electronics, electrochemistry, optoelectronics, and photovoltaics [2–10]. Aside from tremendous applications, graphene has some shortcomings as well. It reserves zero bandgap and zero magnetic moment in a pristine form which limit its application to optoelectronics and spintronics [11–14]. Previous theoretical and experimental studies showed the electronic and magnetic properties of graphene can be tackled easily by utilizing diverse substrates [15–21], chemical functionalization [22–27], forming nanoribbions [28,29], and with defects (tacking adatom, dopants and creating vacancies) [30–35].

The next popular members of 2D family that grabbed immense attention in their court is transition metal dichalcogenides (TMDs). TMDs form hexagonal lattice-like graphene and are represented as MX_2 where M represents a transition metal element from group IV to VI and X is a chalcogen element (S, Se, and Te). Unlike graphene, MoS_2 is a direct bandgap semiconductor with a handful of interesting and superlative optical, electronic, and mechanical properties [36–40]. Also, over time, as fabrication techniques improved, the era of van der Waals heterostructures speedily came into existence. These heterostructures are made up of the layering of different 2D materials like stacking Lego bricks in a precisely chosen sequence. In this way, many recent experimental and theoretical research in this area have shown that making heterostructure is an efficient way to

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COMPARISON OF THE RESULTS OF DIFFERENTIAL EQUATION BY ORDINARY METHOD AND EULER'S METHOD USING SCILAB

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ABSTRACT

The study of the differential equations has been done by Euler's method and ordinary method using Scilab. In the study it has been found that both methods give the same results when executed by a programming through Scilab. The differential equation is constraint with initial conditions.

Keywords: *Scilab, ODE & Euler's method.*

Introduction

We are familiar about the differential equations. Differential equations are very important in the branch of science in mathematics as well as other branches. Simple harmonic motion, oscillatory motion and periodic motion these are all belongs to differential equations. Simple pendulum & compound pendulum make the oscillations in a period are the examples of simple harmonic and periodic motions, all these belongs to differential equations. There are different kinds of the differential equation such as linear differential equations and nonlinear differential equations but in this paper we are taking only linear differential equation. We are discussing the comparison between ordinary differential equation and Euler's method. In daily life there is use of differential equations. In this paper we are solving the first order differential equations by two methods one is ordinary method and second is Euler's method. Methods are frequently used in physical sciences and mathematical sciences. Scilab is a advanced computaional package which is free of cost. For installing it on the device or system there need not much space on hard disk of your device and noneed of high RAM. All the numerical and mathematical operations can be done easily with it. Many operations and problems were performed using this Scilab software [1,2]. Plotting and solution of the differential equations is very easy with Scilab. The Scialb is an open source software which has applications in companies, industries and research institutions etc. [3]. The author found, when the political heat is generated then political entropy increases and the political remains temperature constant [4].Their problem also can be solved using X-cos simulation. It is very important tool for solving any dynamical problems numerically. X-cos having much more functions or we can say that much more multiple functions can be performed by X-cos simulation. The kernel of the application had been developed by open technologies using SciLab/Xcos environment [5].Scilab is a free software which can be easily arranged and installed on the device. Four different operating systems the software is also different another word we can say that there are three versions one is window second is Mac and third is Linux. Only few commands may vary from one operating system to other operating system. Due to its limitations this software is incapable to display the solution of differential equation as we solve manually, it is the main drawback of this software but there is no doubt that numerically it can solve all the differential equations. A detailed study of the equations had been discussed by the authors,providing the comprehensive study [6,7,8]. In numerical techniques many times we face the problem based on Euler's and modified Euler's method and Euler's method, these problems had been doneby Salleh [9]. The brief history about statistics named Fermi-Dirac statistics was discussed by applying the necessary computing tools [10].The software having much applications all branches of science and engineering, in digital & communication system, numerical techniques, in geographical problems, in biological sensors etc.

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THE MATRIX FORMULATIONS AND ALGEBRAIC EQUATIONS USING SCILAB

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ABSTRACT

The study of matrix formulations and algebraic equations have been done through Scilab software. In this paper the commands for matrixoperations have been used.The matrix operationslike, identity matrix, diagonal matrix, matrix with all element ones & zeros, eigen values & eigen vectors, random matrix (elements of a matrix are found randomly) have been applied. Besides these, some other parameters such as rank, determinant, diagonal, inverse, transpose, adjoint, adding & deleting rows or columns of a matrix, sum& product of rows or columns of a matrix have been discussed. So the role of matrix is so important in Scilab to perform or execute the programs. At last the algebraic equations have been solved by using matrix form.

Keywords: Scilab, Matrix Formulations

INTRODUCTION

Scilab is an open source platform and it is free of cost to everyone need, easily available everywhere.It having large no. of applications in all branches.The mathematical problems &operations can be done with the help of Scilab. In scilab everything is a matrix. We are familiar about the matrix and its properties, in mathematics branch, branch of sciences and engineering we use the matrices. In this paper we have done the mathematical formulation and algebraic equation. A complete environment is provided by it as well as all the operations either which are mathematical or programable. Eighty to ninety percent operations of Scilabare similar to Matlab. It is so easy to install it on the device and need not of high RAM,

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Annealing effects on the microstructure, stoichiometry, and ferromagnetic/antiferromagnetic fraction in NiO nanoparticles

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ABSTRACT

The effect of the annealing atmosphere (air and oxygen) and temperature on the microstructural and magnetic properties of sol–gel synthesized NiO nanoparticles is investigated. A structural refinement of the X-ray diffraction pattern show an increase in particle size, with a decrease in lattice constant and bond length with increasing annealing temperature. Air annealing leads to a larger variation in sizes as compared to oxygen annealing. For moderate oxygen annealing upto 600 °C, a Ni phase is observed which is almost undetectable for air annealing. Air annealing at 400 °C shows a high concentration of Ni vacancies which reduced with increasing temperature. The colour variation with annealing show the stoichiometric improvement. Magnetic properties are extracted from the law of approach to saturation fit of the magnetic hysteresis curves. The two-magnon mode observed in the Raman spectrum correlates with the antiferromagnetic/ferromagnetic transition which can be tailored with the microstructure.

1. Introduction

The antiferromagnetic transition-metal-oxide semiconductor NiO is an interesting material because of its high Neel temperature of 523 K. In the nanoregime, size, surface, and stoichiometry effects lead to properties that may strongly differ from its bulk counterpart. One such stark change is its magnetic behavior, as first suggested by Neel, wherein a transition from an antiferromagnetic (AFM) behavior in the bulk to a ferromagnetic one is observed when the size is reduced to nanometric scales. Thus, a bulk AFM material that exhibits zero net magnetic moments in zero applied field, can displays a detectable net magnetic moment in the nanoscale [1].

The earliest report of size dependent magnetic properties of NiO [2] demonstrated superparamagnetism and weak ferromagnetism (FM) in NiO for a particle size below 100 nm. Kodama et al. proposed a new finite-size effect to explain the anomalous magnetic behaviour (viz., large magnetic moments and coercivities and considerable hysteresis loop shifts) in NiO nanoparticles by evoking multiple (instead of two) spin configurations [3]. The magnetic properties of NiO nanoparticles prepared by various methods such as sol–gel, co-precipitation, and ball milling techniques and also under different annealing conditions have been undertaken [4–12]. He et al. showed that the saturation magnetization (M_s) and retentivity (M_r) increases whereas the coercivity (H_c) decreases with the increase of particle size between 23 and 114 nm [10]. In a previous study, we demonstrated the magnetic ordering and the AFM/FM variation through Raman spectroscopy [12]. In the nanoregime, structure, size, stoichiometry, surface effects, and cation/anion vacancies are delicately influenced by annealing conditions and determine various properties. For example, the role of the cation vacancy in ferromagnetic ordering of metal-oxide semiconductors has been studied [13,14].

The process of thermal annealing serves to reduce structural defects and improve the crystallinity. A systematic variation of the annealing atmosphere and temperature enables a modulation of the defect levels which in turn influences various properties. The annealing conditions have also been reported to influence several functionalities, for e.g. the variation of the dielectric and ferroelectric properties [15] and electrochemical properties [16]. The role of the annealing atmosphere on the conductivity and photovoltaic performance of thermally-decomposed NiO_x films was systematically examined [17,18]. The oxidising air and oxygen atmosphere were demonstrated to give superior device characteristics as compared to the reducing N_2 and inert Ar atmospheres. Further, air annealing demonstrated a better power conversion efficiency as compared to oxygen, thus highlighting the role of

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ORIGINAL ARTICLE

Fluorescence Spectral Properties of Methyl Orange in Homogeneous Media

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Abstract

The methyl orange [$C_{14}H_{14}N_3SO_3Na$], an azo dye exhibited strong emission and large Stokes shift in various solvents, and the largest shift ($\Delta\lambda = 125.51$nm or $\Delta\nu = 9297$cm^{-1}) was obtained in the water. The UV-visible spectra of the dye showed the absorption in the range (33,333 – 20,000) cm^{-1}. We found that solvent effects on the absorption wavelength are consistent. The bathochromic shift in water and the hypsochromic shift in methanol observed in the absorption (43 nm) as well as in the fluorescence (42 nm) spectra predict the strong solute-solvent interaction. The fluorescence quantum yield (ϕ_f) was decreased from 24% in DMSO to 5% in water. The fluorescent properties of this dye are strongly solvent dependent, the wavelength of minimum fluorescence emission ($\lambda_{em} = 435.51$nm) shifts to the red. The maximum and minimum calculated oscillator strength is 32% with ($\varepsilon_{max} = 29011$ M^{-1}cm^{-1}) and 11% ($\varepsilon_{max} = 6682$ M^{-1}cm^{-1}) in methanol and DMSO, respectively. Protonated solvents without exception give a shorter lifetime and lower quantum yield. The average excited-state lifetime of the dye was found maximum ($\tau_{av} = 5.36$ ns) in DMSO. Also, fluorescence lifetime was combined to deduce the radiative and non-radiative decay rate.

Keywords Azo dye · Fluorescence spectra · Excited state time · Stokes shift · Quantum yield

Introduction

Dyes are defined as those natural or synthetic substances which are used to impart or change the colour of substrates with some degree of permanence [1]. They have many scientific and technological applications such as in DNA–protein recognition, photonics, biological fluorescence probe development, recording and memory devices, molecular switches, thermochromic, photovoltaic fluorescent devices, supramolecular systems, holographic data storages materials, and metal sensors, etc. [2–16]. Azo dyes make up the most important class of industrially synthesized organic compounds containing one or more azo groups (−N = N−) and have reached the widest range of usage because variations in chemical structures are directly achievable [17]. These are the most significant commercial colourants because of their wide colour range, good fastness properties, colour density, which is better than that of any other class of dyes. Azo compounds are also known for their medicinal applications and are well recognized for their use as antifungal, antiviral, antibacterial, cytotoxic agents, and metabolic processes [18–20]. The investigation and the effects of the solvents on the absorption and fluorescence spectra of the several categories of organic molecules frame a paramount concept for research, playing a vital role in the photo-physics of the excited states [21–24]. The various chemical processes visualize; electron/proton transfer, isomerization, complexation etc or the physical intermolecular interactions (solute-solvent) such as dipolar interaction are strongly responsible for the variation/shift in the spectra of the fluorophore [25, 26]. The 3-D molecular structure of

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Ayurveda—The Traditional Indian Healthcare Management System

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ABSTRACT

This research paper aims to highlight the present positive trend of adopting Ayurveda – the Ancient Indian system of Healthcare Management and its rising popularity during the Covid-19 times. While the Ayurveda is known as the holistic healthcare scheme of ancient wisdom and the tried-and-tested practices for physical and emotional healing and has been in practice for getting rid of modern day lifestyle ailments and issues, in present times, it has risen up to lead the healthcare system in providing the ideal ways of promoting the immune system for protecting against the unforeseen viruses like Novel Corona Virus.

Ayurveda in Present Times

In recent times, this 4,000 year old Indian Medicine system has caught the attention of the modern world to become one of the game-changer. The world is understanding and also readily adopting the coherent, comprehensive system of Ayurveda that has the capability to bring major change without changing much in people's lives just by emphasizing nutrition, herbal or natural medicines, encouraging physical activity and control over breathing, promoting meditation and sync with among daily, monthly and yearly biological cycles. The World Economic Forum, too, has highlighted the importance of a strong immune system in fighting the virus and has recommended sleeping well, eating a balanced diet, moderately exercising regularly and reducing stress to lead a healthy lifestyle. Ayurveda is also a holistic, patient-friendly, natural and therapy based medicine system that is equally effective for the chronic to acute medical issues. It offers a strong framework for multi-modal preventive medicine.

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निरुक्त-व्याख्या-परम्परा - प्राचीन पाण्डुलिपियां एवं नवीन संभावनाएं[1]

कामना विमल[2], करुणा आर्या[3]

अथापीदमन्तरेण मन्त्रेश्वर्थप्रत्ययो न विद्यते[4] - आचार्य यास्क प्रणीत निरुक्त वेदव्याख्या की परम्परा में निर्वचन परम्परा का प्रतिनिधि ग्रन्थ है। वेदरूपी पुरुष के श्रोत्र स्वरूप निरुक्त[5] का सर्वोपरि प्रयोजन वेदमन्त्रों के अर्थ की प्रतीति कराना है। जहां व्याकरण वेदांग वैदिक तथा लौकिक शब्दों की प्रकृति प्रत्यय परीक्षण द्वारा उनकी साधुता एवं असाधुता का परीक्षण करता है, वहीं वेदांग निरुक्त व्याकरण का कात्स्न्र्य[6] है क्योंकि अर्थ का ज्ञान होने पर ही व्याकरण किसी शब्द की साधुता और असाधुता का परीक्षण करता है - व्याक्रियन्ते विविच्यन्ते शब्दाः अनेन अस्मिन्निति व्याकरणम्[7]। यास्क के अनुसार अर्थ का परीक्षण किए बिना शब्द का परीक्षण अपूर्ण है - अर्थः नित्य परीक्षेत्[8]। अतः वेदोमन्त्रों के अर्थ निर्धारण के लिए निरुक्त का महत्त्व वेदमुख स्वरूप व्याकरण से भी कहीं अधिक सिद्ध है।

निरुक्त परम्परा में सर्वप्रथम वेदमन्त्रों में प्रयुक्त व्याख्येय पदों का निघण्टु रूप में संकलन किया जाता है। यास्क द्वारा अपने निरुक्त में जिन पूर्ववर्ती आचार्यों और उनके निर्वचन सिद्धान्तों का उल्लेख किया है और जिनको यास्क पूर्व निरुक्तकारों के रूप में प्रतिष्ठा प्राप्त है, उनमें से ५ द्वारा निघण्टु के रूप में वैदिक शब्दों का संकलन भी किया गया था, इसके संकेत भी यास्क प्रणीत निरुक्त में उपलब्ध होते हैं। वर्तमान में यास्क पूर्ववर्ती २० निघण्टु ग्रन्थों की रचना संबन्धी मत प्रचलित हैं, यद्यपि सभी निघण्टु उपलब्ध नहीं हैं। वर्तमान में यास्क द्वारा अपने निरुक्त के

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[1] प्रस्तुत शोधकार्य दिल्ली विश्वविद्यालय के Institute of Eminence (IoE) द्वारा संचालित वर्ष २०२१ के FRP के अन्तर्गत किया गया है। यह कार्य पूर्णतया मौलिक और अप्रकाशित है। इस कार्य हेतु प्रेरणा देने हेतु एवं आर्थिक सहयोग हेतु Institute of Eminence (IoE) के Faculty Research Programme संचालकों के प्रति आभार अभिव्यक्त करते हैं।

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[4] निरुक्त 1.5.5

[55] पाणिनीय शिक्षा

[6] निरुक्त 1.5.15

[7] महाभाष्य1.12

[8] वही 2.2

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पृथिवीसूक्त में प्रतिपादित पृथिवी - संरक्षण एवं प्रार्थनाएँ

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सारांश

अथर्ववेद के 12वें काण्ड का प्रथम सूक्त 'पृथिवीसूक्त' कहलाता है। यह सूक्त अनेक दृष्टियों से विश्व साहित्य की अनुपम निधि है। इस सूक्त के अनुसार भूमि अथवा पृथिवी चराचर जगत् का आश्रय स्थल है, पोषण स्थल है, वर्धन स्थल है। अत: पुरुषार्थ के रूप में पृथिवी का संरक्षण ही मानव का प्रथम कर्तव्य है। जिसमें कहीं सत्य, ऋत, संकल्प, तप, ज्ञान, त्याग जैसे विशिष्ट गुणों को धारण करके भी पृथिवी को संरक्षित करने को कहा गया है तो कहीं मातृवत् इस उदात भाव के साथ भूमि को संरक्षित करने का कथन किया गया है।

साथ में ही इस पत्र में यह भी उल्लेख किया गया है कि किस प्रकार मानव अंत: व बाह्य विकास के लिए जल, अन्न, धन, विस्तृत लोक, समृद्धि, आंतरिक व्यक्तित्व की प्रखरता, कृतज्ञता, कल्याण, दीर्घायु तथा समरसता की प्रार्थना करता है।

मुख्य शब्द- प्रार्थना, सत्य, ऋत, ध्रुवा, समरसता।

सर्वप्राचीन ग्रन्थ वेद विश्व-ज्ञान का अक्षय कोष है क्योंकि मानव जीवन के लिए उपयोगी समस्त विद्याओं का समावेश इसमें हुआ है। चारों वेदों में प्रत्येक वेद की अपनी अलग विशिष्टता है। ऋग्वेद, यजुर्वेद, सामवेद तो मुख्यत: आमुष्मिक फल स्वर्ग इत्यादि की प्राप्ति का मार्ग बतलाते हैं, अथर्ववेद एहिक और आमुष्मिक सभी प्रकार की सुख-समृद्धि का मार्ग बतलाता है जिसकी ओर सायणाचार्य ने अथर्ववेद की भाष्योपक्रमणिका में 'ऐहकामुष्मिक फलं चतुर्थं व्याचिकीर्षति' कह कर किया गया है, अत: अथर्ववेद का महत्वपूर्ण स्थान है।

अथर्ववेद के 12वें काण्ड का प्रथम सूक्त 'पृथिवीसूक्त' कहलाता है। इसे मातृभूमि का वैदिक-गीत, राष्ट्रीय गीत आदि नामों से अभिहित किया गया है। तथा इसकी वैज्ञानिक-भूगर्भ, वैज्ञानिक, दार्शनिक और आध्यात्मिक विविध व्याख्याएँ की गई है।

पृथिवी को केवल सूर्य की परिक्रमा वाला भूग्रह न मानकर रहस्यमयी रूप में प्रस्तुत किया गया है। अत: पृथिवी केवल भूमि का वाचक नहीं, अपितु उसके साथ-साथ अनेक चेतन तत्वों की भी परिचायक है जिससे अनेक प्रार्थनाएँ की गई हैं।

प्रार्थना से तात्पर्य याचना नहीं हैं। महर्षि दयानंद का अभिप्राय है कि 'अपने पूर्ण पुरुषार्थ के उपरांत उत्तम कर्मों की सिद्धि हेतु परमेश्वर से सहायता लेना प्रार्थना है', इससे संकेत मिलता है कि प्रार्थना में न तो याचना का भाव होना चाहिए न ही आलस्य और कर्मण्यता का, क्योंकि वेद स्वयं मनुष्य को पुरुषार्थ करने का उद्बोधन देते हैं। अत: इससे सिद्ध होता है कि बिना पुरुषार्थ के यदि प्रार्थना की जाती है तो वह निरर्थक है। पुरुषार्थ के बाद ही प्रार्थना सफल होती है।

पृथिवीसूक्त या भूमिसूक्त में वर्णित प्रार्थनाओं के संदर्भ में पुरुषार्थ के रूप में पृथिवी का संरक्षण ही मानव का प्रथम कर्तव्य है।

क्योंकि वर्तमान में भौतिक विकास की आधुनिक अवधारणाओं ने मनुष्य को प्रकृति से दूर कर दिया है। प्रकृति के तत्त्वों के प्रति दिव्यता का भाव उसके मन में रहा ही नहीं है। वह तो उस पर स्वामित्व जताने के प्रयत्न में लगा है। ऐसे में मनुष्य का स्वयं का अनिष्ट हो रहा है। उधर प्रकृति के प्रति अनात्मीयभाव उसके तत्त्वों को दूषित कर रहा है। इस दृष्टि से आज आवश्यकता है उस वैदिक चिन्तन के पुनरावृत्ति की जहाँ पर मनुष्य एवं प्रकृति के मध्य एक नितान्त आत्मीयता का भाव था। वह भाव स्वभावत: प्रकृति के शोषण व दोहन का नहीं, उसके इष्ट व कल्याण का था। पुन: मानव जिस स्थान पर रहता है, उसके आसपास का वातावरण, उसके जीवन को प्रभावित करने वाले पर्यावरण के प्रति सचेत ही नहीं अपितु रक्षण के लिए स्वाभाविक रूप से प्रेरित किया जाता है। यही वह चिन्तन है जिसमें पर्यावरण में समाहित सभी जीवनदायी तत्त्वों के प्रति देवत्वपूर्ण, कृतज्ञतापूर्ण, आत्मीयतापूर्ण तथा प्रेमपूर्ण

मूल्योचित जीवन : एक वैदिक दृष्टिकोण

डॉ0 सुशीला कुमारी*

सारांश : मनुष्य एक सामाजिक प्राणी है। समाज से अलग उसका अस्तित्व मनुष्य के रूप में स्थापित नहीं हो सकता। समाज में रहकर मनुष्य का शारीरिक, मानसिक, व्यवस्थित व्यवहार, आदर्शों तथा आकांक्षाओं का विकास होता है, इस प्रक्रिया को समाजीकरण कहते हैं। इसी समाजीकरण के प्रक्रिया से मनुष्य के भीतर शनैः शनैः मूल्यों एवं नैतिकता का विकास होता है। अतः कहा जा सकता है कि मानव जीवन विकास के अनुरूप मूल्यों में भी विकास होता है अर्थात् मूल्य चेतना और मानवीय संस्कृति का गहरा सम्बन्ध है। मूल्य मानवीय होते हैं और उनका सम्बन्ध मानवीय जीवन से ही है चाहे वो सामाजिक, सांस्कृतिक, धार्मिक, आध्यात्मिक, नैतिक, राजनैतिक या नैतिक पक्ष ही क्यों न हो। चूंकि विश्व का सर्वप्राचीन ग्रन्थ वेद विश्व ज्ञान का अक्षय कोष है, उसमें मानव जीवन हेतु उपयोगी समस्त विधाओं का समावेश हुआ है अतः उसमें प्रेम, दया, करुणा, त्याग, तपस्या, पुरुषार्थ, कर्त्तव्यनिष्ठा, लोककल्याण, विश्वबन्धुत्व, सौमनस्य इत्यादि अनेक मानवीय मूल्यों एवं नैतिकता के आधारभूत गुणों का सम्यक्रूपेण प्रतिपादन हुआ है। वैदिक साहित्य में वर्णित मानवीय मूल्य सनातन एवं सार्वभौम हैं, जिनके मौलिक सिद्धान्तों को अपनाकर समाज तथा व्यक्ति का पूर्ण कल्याण हो सकेगा।

मुख्य शब्द : मानवीय मूल्य, नैतिकता, सत्य, अहिंसा, कर्त्तव्यनिष्ठा, दान, लोककल्याण, विश्वबन्धुत्व, सौमनस्य, प्रेम आदि।

प्रस्तावना : अर्वाचीन अर्थ प्रधान युग में मूल्य शब्द का प्रयोग कई अर्थों में हो रहा है, यथा– 'कीमत', 'भाव' इत्यादि जो किसी वस्तु के आदान–प्रदान में ही प्रयुक्त होते हैं, जिनका आवरणात्मक जीवन मूल्यों से कोई सम्बन्ध नहीं है। मानव जीवन को उसके उद्गम से उत्स तक ले जाने वाले आचरणीय सूत्रों के समाहार स्वरूप को ही 'मानवीय मूल्य' कहा गया है। पुनः नैतिकता भी मानवीय मूल्यों का वह पक्ष है, जो मानव के अन्तः करण से सम्बद्ध है और कर्त्तव्य की भावना (उचित व अनुचित) पर बल देती है। नैतिकता व्यक्ति के आचरण के सद्गुण हैं। धर्म, नीति, न्याय, सत्य, सहयोग, अहिंसा, सहिष्णुता, तप, त्याग, दान, दया, बन्धुत्व, समन्वय और समता आदि अनेक मानवीय गुण हैं जो नैतिकता की परिधि के अन्तर्गत आते हैं। इस प्रकार मानवीय मूल्य एवं नैतिकता आपस में सम्बद्ध है।

मानवीय मूल्यों एवं नैतिकता पर विचार करें तो हमारा समस्त वैदिक साहित्य मानवीय मूल्यों एवं नैतिकता की दृष्टि से ओत–प्रोत मिलेगा। वैदिक संहिताओं से ब्राह्मण, आरण्यक, उपनिषद् तथा वेदांग पर्यन्त साहित्य में जहाँ एक ओर सत्य, त्याग, सदाचार, सत्संगति, अतिथि–सत्कार, धर्म, दान, एवं 'ईशावास्यमिदं सर्वं', 'भद्रं कर्णेभिः शृणुयाम', 'तन्मे मनः शिवसंकल्पमस्तु' सदृश मन्त्रों द्वारा अनेक उदात्त मानवीय मूल्य दृष्टिगोचर होते हैं, वहीं दूसरी ओर पारिवारिक सौमनस्य, विश्वबन्धुत्व, कल्याण, समन्वय, राष्ट्रप्रेम भी चरमोत्कर्ष पर थे, जो आज सम्पूर्ण मानव जाति के लिए पथ–प्रदर्शन का कार्य सम्पन्न करता है। पुनः अनेक मानवीय मूल्यों को स्थापित करें तो प्रेम, दया, परोपकार, सहानुभूति आदि की भावना का विकास करके समाज को सुदृढ़ बनाया जा सकता है। वैदिक साहित्य में मानवीय मूल्यों एवं नैतिकता के संरक्षण तथा संवर्धन पूर्वक उदात्त मूल्यों के आश्रय में जीवनयापन करने का वर्णन किया गया है। वैदिक साहित्य में मानवीय मूल्यों एवं नैतिकता का प्रतिपादन सरस, सरल, प्राप्त होता है।

वैदिक साहित्य में सत्य की महिमा अनन्त बताई गई है। ऋत व सत्य को पर्याय माना गया है –'सत्यं वा ऋतम्'[1]। ऋत और सत्य की तप रूप तत्त्व से एक साथ उत्पत्ति मानी गयी है–'ऋतं च सत्यं चाभीद्धात्तपसोऽध्यजायत'[2] वास्तव में ये प्राकृतिक नियम ही जगत् में मानवीय मूल्य के रूप में प्रतिष्ठित हैं। यथ श्रुत, यथा

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Significance of Land Grant System in Silahara Period

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Abstract

*Agriculture has been an important part of human civilization since the beginning. Ever since the world's first **Indus valley civilization** came into light, agriculture is recorded as an economic activity along with trade and animal husbandry. Therefore the land was a precious asset and had been recognized as a crucial factor of production since then. The aim of this paper is to study the form of the land grants system, how it was working in that particular region, the impact of the land grant system on the economy of Silahara and so on. The study is based on primary sources especially **epigraphic evidences** along with **literary sources** and secondary data. This paper gives a clear idea about the land grant system which had been well established in that respective period, where a lot of changes can be seen in social and economic life due to influence of land grant system in the Deccan Region.*

Keywords: Silahara, Land grants, Deccan Region, Epigraphic.

Objective:

This paper contains certain objectives like: nature of donation, kinds of land grants, the impact of land grant system on the Silahara economy in those time.

Methodology:

Historical and **Analytical** methods have been used in the whole study that based on primary data such as the Epigraphic **evidences, Corpus Inscriptionum Indicarum vol 6 edited by Vasudev Vishnu Mirashi**, in which analytical point of view has been used as secondary data.

Introduction:

India has always been identified as an agricultural country where land is recorded as wealth. If we go back to the period of Silahara, **Kharepatan plate of Rattraja** referred the land associated with Vishnu and it was expressed through verses in a poetic manner Viz:

वर्ण्णद्यो वैष्णवी सूर्यसूताश्च गावः।
लोकत्रयं तेन भवेदि दत्तं य कांचनं। गां च मही च दघात्।।[1]

which means **gold** refers to the first product of **Agni**, **land** belongs to **Vishnu** and **cow** to the **Sun**. The person who gives the donation of land, gold and cow, they would receive the merit of donating the three world like **Vishnu, Agni** and **Sun**. It indicates that not only social and economic reasons but also religious beliefs are hidden behind the donation of land. There are several views among the historians about the allotment, allocation and the impact of the land grant system on the economy. Professor R.S Sharma suggests that the origin and development of political feudalism is to be sought in the land grant made to Brahamans from the **first century A.D.** onwards.[2] But later this system of land Grant was well established in the society and played a vital role in the formation of social economic history in the early medieval period. Now it was not only limited to Brahmanas family but also non-Brahmanical and non-religious institutional person became grantees. During the 1**0th** century **A.D.** land grant given by generating land aristocracy was supposed to have brought about fragmentation of political power and subjection to degradation of the artisans, etc.[3] Various types of changes were reflected in the society due to influence of the **land grant** system, where social changes were taking place on the one side and at the same time the economy was settling down toward **agrarian economy** on the other.

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Bioinspired synthesis and green ecological applications of reduced graphene oxide based ternary nanocomposites

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ABSTRACT

Researchers have risen to envisage a great deal of potential of nanocomposites (NCs) and foresee a wide range of applications of ternary NCs (TNCs) in particular. The hybrid nanostructures with synergistic impact of metal, metal oxide, carbon containing and polymer nanoparticles (NPs) dispersed on RGO nanosheets, obtained from the convenient protocols (efficient, economical and eco-friendly - E3 approach) along with nontoxic nature have led to a wide range of benefits. Owing to their enormous applications, it is pertinent to review all remedial, sensing, biomedical, energy storage and conversion abilities for traversing furthermore and motivating future researchers. Their consolidated study majorly validates the gigantic role in safeguarding the environment along with their comprehensive efficiency in a spectrum of energy storage and conversion. Moreover, their utilization in sensors also makes them research targets for biomedical scientists exploring clinical investigations. Their significance ensures to construct a link between academic research and environmental sustainability.

1. Introduction

Ceaseless efforts are growing to clean and save the environment and create sustainable future for the forthcoming generations. Strategic approach towards wastewater management and affordable, portable and environmentally benign systems possessing large energy storage capacities are globally of prime concerns [1,2]. As such, intensive research has focused on utilising suitable materials and structures for holistic applications in degrading the hazardous toxins present in industrial wastewater [3], energy storage and conversion [4,5] for upcoming generation and also detects the bio-molecules and restricts pollutant gases [6] from further deteriorating the surrounding air. Among such materials nano structured species whose distinctive and unique characteristics [7] specially those of metal, polymer, carbon and metal oxide NPs have emerged to be highly suitable for a wide range of applications in biomedical field [8], sensors [9], catalysis [10–12] and energy storage and conversion [13]. Nanostructured materials at their nanoscaled interfaces and boundaries can majorly suppress the energy losses and offer great energy conservation through nanocatalysis, nanoelectrodes, nano biosensors and other promising applications. They are being ubiquitously used for wastewater treatment and selective sensor applications [14,15]. However, pure metal/metal oxide NPs have effective surface area and can be efficiently used as photocatalyst but on the other side due to their agglomeration and difficult recovery from reaction system makes them less useful. Due to their non-recoverable nature, loss of mass of the catalyst takes place and both its atom economy and cost effectiveness is diminished leading to lateral environment pollution. Agglomeration of metal/metal oxide NPs during reactions confines their applications and hence solid supports like metal organic framework (MOF) and RGO have received a growing interest for researchers and are able to prevent the agglomeration difficulty [16]. Graphene, in recent years, have aroused great interest among scientists because of its exceptional characteristics such as two dimensional layered structure, high electron mobility, high mechanical strength and thermal and optical excellence [17]. Graphene oxide (GO) is that form of graphene which possesses oxygen as part of its functional group and has distinct properties apart from those of graphene. The oxygenated groups in the form of hydroxyl, alkoxy, carbonyl and carboxylic group, impart special features to GO [18] as compared to graphene by making them more soluble and enhancing its surface activities so that they become more suitable for forming NCs.

Another interesting material called RGO is obtained by reducing GO through a series of reduction [19]. As compared to the graphene produced directly from graphite, RGO contains more defects and residual

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REGULAR ARTICLE

Accidental synthesis of a trimer of pyrazolone and comparison of its antioxidant activity: an investigatory report

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MS received 25 February 2021; revised 17 May 2021; accepted 19 May 2021

Abstract. Untargeted synthesis leading to the formation of a significant product is a common practice and has been successfully achieved after holistic characterization of the accidentally formed molecule of the trimer of pyrazolone. Its significance was further explored in the pharmaceutical field emphasizing the need for the synthesis and validating the newly established pathways for its synthesis. It was known that pyrazolone exhibit a plethora of applications ranging from catalysis, decolourisation of dyes and metallurgical extractions. Paramount importance has been attributed to pyrazolones in recent years for their broad-spectrum biological activities manifested in their anti-inflammatory, analgesic, anticancer and antitubercular functions. In the ongoing research 4,4-Bis-(3-methyl-phenyl-pyrozolin-5-on-4-yl)-3-methyl-1-phenyl-pyrzolin-5-one was synthesized economically and efficiently *via* a novel one-step bio-catalytic pathway using laccase as a catalyst. To validate the utility of our accidental discovery, we have also calculated its antioxidant activity against ascorbic acid as a standard compound. DPPH and ABTS have been used to study the scavenging of free radicals *in-vitro*. This is the first report of the enzyme driven synthesis of trimeric form of pyrazolone. These results will emphasise the utilization of pyrazolone trimers as eco-friendly compounds which exhibit a promising natural antioxidant property in physiological environments.

Keywords. Laccase; Trimer; Pyrazolone; One step novel synthesis; Antioxidant activity.

1. Introduction

Biotechnology can contribute to the development of 'green tools' for the transformation of organic moieties by providing tailor-made biocatalysts. Laccase is amongst the most sought enzymes and is widely acknowledged by scientists for its limited requirement for air and restriction of by-products as only water is the common by-product expected during any reaction. It spears heads its category of 'most green' enzymes and has humungous catalytic applications pioneering in the 21st century. Laccase uses molecular oxygen for oxidizing the substance and is capable of removing hydrogen from the hydroxyl group thereby oxidizing it.[1–10] Pyrazolone derivatives form a significant class of organic compounds and feature among major scientific researchers focused on biological, analytical applications, catalysis, dyes and extraction metallurgy.[11–14] Therefore, inordinate efforts have been diverted towards the synthetic manipulation of pyrazolone derivatives to find more valuable compounds.[15] Although various routes have been promoted for various targeted organic synthesis and among them, innumerable methods are available for the conversion of functional groups, yet unanticipated conversions have gained enough significance. Experts continue to be amazed by the appearance of unexpected transformations. These fortuitous discoveries enrich and expand the collection of principle designs for the planning of synthetic schemes involving intentional pathways and targeted products.

In this paper, we report a new, efficient and serendipitously discovered 4,4-Bis-(3-methyl-phenyl-pyrozolin-5-on-4-yl)-3-methyl-1-phenyl-pyrzolin-5-one.

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ORIGINAL

Sugarcane bagasse-facilitated benign synthesis of Cu_2O nanoparticles and its role in photocatalytic degradation of toxic dyes: a trash to treasure approach

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Abstract
The global water situation is highly challenging and requires immediate attention. It is pertinent to explore opportunities in wastewater treatment with an environment friendly route. An efficient method can be explored where biogenic nanoparticles (NPs) synthesized by agricultural waste can further enhance its potential in cleaning the environment. Therefore, a green, surfactant-free and sustainable approach towards the genesis of cuprous oxide (Cu_2O) was attempted. Cu_2O NPs were synthesized using Fehling's solution and sugarcane bagasse extract which plays a vital role both as reducing and capping agent. The Cu_2O NPs were characterized using Fourier transform infrared and UV–Visible spectroscopy, and their morphology was determined by high-resolution X-ray diffraction, transmission electron microscope and scanning electron microscope analysis. Their optical properties, i.e., band gaps, were calculated, and the catalytic efficiency was studied by carrying out the degradation of organic dyes [methyl orange (MO), methyl blue (MB), methyl red (MR) and Congo red (CR)] present in wastewater via spectrophotometric measurements. Simultaneously, their increasing order of degradation efficiency was found to be MR < CR < MB < MO. The mechanism of degradation of organic dyes on the surface of Cu_2O NPs was also proposed. Utilizing the agricultural waste and trapping the reducing property of its polysaccharides components in facilitating the designing of the Cu_2O NPs are a novel methodology. The current study envisages a new perspective for the purpose of environmental remediation and novel applications in photocatalysis.

Keywords Wastewater treatment · Agricultural waste · Organic dyes · Green synthesis · Photocatalyst · Cu_2O nanoparticles

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REGULAR ARTICLE

Accidental synthesis of a trimer of pyrazolone and comparison of its antioxidant activity: an investigatory report

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Abstract. Untargeted synthesis leading to the formation of a significant product is a common practice and has been successfully achieved after holistic characterization of the accidentally formed molecule of the trimer of pyrazolone. Its significance was further explored in the pharmaceutical field emphasizing the need for the synthesis and validating the newly established pathways for its synthesis. It was known that pyrazolone exhibit a plethora of applications ranging from catalysis, decolourisation of dyes and metallurgical extractions. Paramount importance has been attributed to pyrazolones in recent years for their broad-spectrum biological activities manifested in their anti-inflammatory, analgesic, anticancer and antitubercular functions. In the ongoing research 4,4-Bis-(3-methyl-phenyl-pyrozolin-5-on-4-yl)-3-methyl-1-phenyl-pyrzolin-5-one was synthesized economically and efficiently *via* a novel one-step bio-catalytic pathway using laccase as a catalyst. To validate the utility of our accidental discovery, we have also calculated its antioxidant activity against ascorbic acid as a standard compound. DPPH and ABTS have been used to study the scavenging of free radicals *in-vitro*. This is the first report of the enzyme driven synthesis of trimeric form of pyrazolone. These results will emphasise the utilization of pyrazolone trimers as eco-friendly compounds which exhibit a promising natural antioxidant property in physiological environments.

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Bioinspired synthesis and green ecological applications of reduced graphene oxide based ternary nanocomposites

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ARTICLE INFO

Keywords:
Ternary nanocomposites
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ABSTRACT

Researchers have risen to envisage a great deal of potential of nanocomposites (NCs) and foresee a wide range of applications of ternary NCs (TNCs) in particular. The hybrid nanostructures with synergistic impact of metal, metal oxide, carbon containing and polymer nanoparticles (NPs) dispersed on RGO nanosheets, obtained from the convenient protocols (efficient, economical and eco-friendly - E3 approach) along with nontoxic nature have led to a wide range of benefits. Owing to their enormous applications, it is pertinent to review all remedial, sensing, biomedical, energy storage and conversion abilities for traversing furthermore and motivating future researchers. Their consolidated study majorly validates the gigantic role in safeguarding the environment along with their comprehensive efficiency in a spectrum of energy storage and conversion. Moreover, their utilization in sensors also makes them research targets for biomedical scientists exploring clinical investigations. Their significance ensures to construct a link between academic research and environmental sustainability.

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REVIEW

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Biocatalyst-mediated selective acylation and deacylation chemistry on the secondary hydroxyl/amine groups of nucleosides

Amarendra Mohan Khan[a], Narinder Kumar Agnihotri[a], Vinay Kumar Singh[b], Subash Chandra Mohapatra[c], Divya Mathur[d], Manish Kumar[a] and Rajesh Kumar[e]

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ABSTRACT

Nucleosides play a pivotal role in biological systems and therefore have attracted a lot of interest as chemotherapeutic agents in drug discovery. Over the years biocatalysts have emerged as a sustainable alternative to conventional synthetic catalysts. As a nature's catalyst, they exhibit excellent selectivity, remarkable tolerance, and help in carrying out eco-friendly benign processes. The use of a biocatalyst as a regio- and enantioselective catalyst is particularly relevant in the transformations of nucleosides and their analogs because of the presence of multiple chiral centres. Herein, we discuss the recent advances in the *Pseudomonas Cepacia* Lipase mediated selective acylation and deacylation reactions of the secondary hydroxyl and amino groups of nucleosides and their analogs.

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KEYWORDS
Chemo-enzymatic; nucleosides; *Pseudomonas Cepacia* lipase; REGIO-selectivity

1. Introduction

Nucleosides are essential precursors of natural nucleic acids and metabolically involved in the structure of many coenzymes and thus they are an indispensable part of biological systems. Chemically modified nucleosides show a broad range of biological activities, such as anticancer, antiviral, antifungal, antibacterial *etc.*[1] There are various chemically modified nucleoside drugs available in the market, such as 5-iodo-2′-deoxyuridine (**A**) used against feline herpes virus (FHV-1)[2] and 1-hexylcarbamoyl-5-fluorouracil (**B**) employed against resected colorectal cancer.[3] 5-fluoro-2′-deoxy-uridine (**C**)

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Ferrocenyl thiazolidine-2-thione ornamented 1D coordination polymers derived from coinage metal halides and pseudohalides†

Ayushi Singh, [a] Manoj Trivedi, [b] Gabriele Kociok-Köhn, [c] Ashish Kumar Singh,[d] Mohd. Muddassir [e] and Abhinav Kumar *[a]

Two new Cu(I) and one Ag(I) coordination polymer have been synthesized using a ferrocene-functionalized ligand, 3-ferrocenyl methyl-thiazolidine-2-thione (L). These polymers, composed of $[CuCN(L)]_n$ (**FcCuCN**), $[AgCN(L)]_n$ (**FcAgCN**) and $[\{CuI(L)\}_2]_n{\cdot}n CHCl_3$ (**FcCuI**), have been characterized by FTIR, ^1H and ^{13}C NMR, solid-state UV-vis spectroscopy and single-crystal X-ray diffraction analysis. Single-crystal X-ray diffraction studies suggest that **FcCuCN** and **FcAgCN** are isostructural and the immediate coordination geometry around Cu(I) and Ag(I) is trigonal planar, which is satisfied by the exocyclic sulfur of L, one cyano nitrogen and one cyano carbon. On the other hand, **FcCuI** possesses two discrete monomeric L-Cu-I entities where a four-coordinate geometry around Cu(I) is defined by two exocyclic sulfurs of two L ligands and two iodo groups. Structural differences between **FcCuCN** and **FcCuI** arise due to different pseudohalide and halide ligands bound to the Cu(I) centers. The solid-state structures of these complexes have been stabilized by varied interactions out of which the most interesting interactions are the C–H···Cu and C–H···Ag anagostic interactions in **FcCuCN** and **FcAgCN**, respectively, and the Cu···Cu cuprophilic interaction in **FcCuI**. All these interactions and their nature as well as their percentage contribution have been studied by Hirshfeld surface analyses. The weak interaction energies existing in all the three polymers have been assessed with the help of density functional theory (DFT) and quantum theory of atoms in molecules (QTAIM). Mayer bond order and Wieberg bond indices have also been calculated. Additional band gap calculations suggested that the isostructural polymers **FcCuCN** and **FcAgCN** possess nearly similar band gaps, while the band gap of **FcCuI** is relatively broader.

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Introduction

Ferrocene, an engrossing organometallic unit, had been the keystone of compounds possessing diverse applications in multitudinous fields like electrochemical, catalysis, organic synthesis, electronic absorption, nonlinear optical materials *etc.*[1–4] The biological relevance of transition metal complexes containing (N,S-) heterocyclic thiones as ligands has received significant attention so far.[5] The growing interest in the heterocyclic thione moieties is attributed to their ability to act as ambidentate or multifunctional donors which can coordinate to the metal centers with either the exocyclic soft donor sulfur atom or the heterocyclic hard donor nitrogen atom. Despite being ambidentate in nature, the neutral (N,S-) thione ligands exclusively bind to the metal centers through their exocyclic sulfur atom in either a terminal or a bridging mode in a monodentate fashion.[6] In addition, the S-donor thiones have been proven to be superior soft Lewis bases owing to the π-electrons of the C–S bond and lone-pair electrons on the S atom which make them an electron-rich moiety.[7] Therefore, they are a perfect candidate for studying binding properties with soft electron-pair acceptors like Cu(I), Ag(I) and Hg(II) on the basis of the hard and soft acid and base (HSAB) concept. Consequently, a wide variety of heterocyclic thione ligands have been explored to synthesize coordination complexes with transition metals (*e.g.* Cu,[6,8] Ag,[9] Cd,[10] Ru,[11] Hg,[12] and so on) as well as main group metals like Sb.[13] However, thiones possessing N-substituted 5-membered

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† Electronic supplementary information (ESI) available. CCDC 2069828, 2105377 and 2105378. For ESI and crystallographic data in CIF or other electronic format see DOI: 10.1039/d1ce01147b

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Understanding the Impact of Social Media on Consumer's Attitude and Decision Making Process

Sunita Gupta*, Pankaj Gupta, Renu Yadav*****

Abstract

Consumer attitude is a combination of consumer belief systems, thoughts, and behavioral intent towards a brand. The shopping behavior of consumers today is greatly influenced by social media. Research suggests that there is an increasing reliance of consumers on social media to get information about unfamiliar brands. This study tries to understand how consumer attitude, when combined with social media, helps the customer make the final purchase decision. The present research was undertaken to determine the degree of social media's effect on customer decision-making for fast-moving consumer products at various phases of the process. The stages included are information search, alternative evaluation and post purchase stages. SEM has been used to evaluate the theoretical model. The model supports a direct relationship between attitude and social media. Also, direct relationship was supported between attitude and different stages of decision making process. Furthermore, the relationship between attitude and information search, and attitude and post purchase behaviour was found to be significantly partially mediated by social media.

Keywords: Consumer Attitude, Social Media, Decision Making Process

Introduction

The advent of the Internet and, more particularly, the interactive features of Web 2.0 have re-shaped our lives in multiple ways and has affected our decision making process in more ways than one. Social media sites are being used by business houses to broaden their global presence to customers (Gao et al., 2018). Social media usages becoming significantly essential to an understanding of a company's overall strategy and marketing communication process (Hamilton et al., 2018; Li, 2021). Electronic commerce has significantly changed the way consumers shop. For a vast majority of consumers today, shopping online has become a way of life. Social media, including social networking sites like Facebook, Instagram, LinkedIn, company websites and e-commerce sites, has presented numerous opportunities for marketers to build close relationships with customers (Thackeray et al., 2008). In the age of information, consumers are increasingly exposed to parallel usage of physical and electronic access to markets. It is imperative that marketers must ensure they understand and leverage knowledge of how their target customers are being influenced and also influence the social media ecosystem they live in which forms a key component of this e-ecosystem (Ščeulovs & Gaile-Sarkane, 2010). The focus of this research is however primarily addressed toward the marketer-customer interface.

E-commerce has provided strategic, informational and operational benefits for both marketers and customers. It has changed the parameters of consumer value causing pace, ease, personal service, an attractive price, and the ability to influence an deal are all taking centre stage.

Facilitating this new set of consumer values is the information explosion that determines how individuals handle, consume and ignore information. As a result, when marketers try to control information behaviour, their goal is to increase the effectiveness of an organization's information environment through coordinated action (Kotler, 2003). Customers are looking for information, comparing costs, and trying to find the best deal for

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ORIGINAL ARTICLE

An integrative approach to the nexus of brand loyalty and corporate social responsibility

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Abstract

Corporate social responsibility (CSR) is a strategic tool that empowers competitive differentiation through coagulation of societal and business objectives. Against this context, it has been proposed that rational and emotional factors can develop a mechanism that can elucidate consumers' reaction towards CSR. To date, literature that evaluates the role of rational and emotional variables in this realm is practically nonexistent. The objective of the current study is to develop a parsimonious model to analyze the inter-relationship of CSR and loyalty by incorporating mediators, rational (customer satisfaction) and emotional (brand affect), in the low-involvement product category. The information provided by 294 valid responses was analyzed using structural equation modelling and the PROCESS method. The finding supported the hierarchical chain of effects of CSR practices influencing customer satisfaction (rational variable), which further impacts brand trust and brand affect (emotional variable) and finally paves its way for brand loyalty in the low-involvement product category.

Keywords Corporate social responsibility · Brand loyalty · Customer satisfaction · Brand trust and brand affect

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VISHAL KARYALAYA AND SANSKRIT PRINT CULTURE OF TWENTIETH CENTURY GARHWAL

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With the establishment of several printing presses all across the country, twentieth century India saw an outpour of literature in various Indian languages, especially post Independence. Sanskrit literature too continued to be published in modern times and has been explored by various contemporary scholars. Even though Sheldon Pollock proclaimed that the language and the literature associated with it had been "dead" in modern times, (393-94) his ideas were contested by others like J. Hannedar who declared that the classical language has managed to "reinvent itself in various ways" in contemporary times. (294) Radhavallabh Tripathi examined various tropes and themes in the Sanskrit literature published in the twentieth century. (Tripathi 168-83) Sisir Kumar Das in *A History of Indian Literature* believed that even though modern Sanskrit literature lacked "bold innovations", Sanskrit remained an integral part of the modern Indian society and influenced the literature of various Indian languages. (46) Therefore, most scholars have affirmed the significant position Sanskrit continued to occupy in the twentieth century print culture of India.

Writers from different regions of India too were influenced by Sanskrit literature differently. Some preferred to borrow themes from ancient Sanskrit literature while others created entirely new works in the classical language. One publication house from the Garhwal region of Uttarakhand encouraged both kinds of writers. This paper is an analysis of the Sanskrit literature published from this regional publication house, Vishal Karyalaya established by Vishalmani Sharma Upadhyaya one hundred years ago, in 1921. The paper not only underlines the contribution of the publication house in bringing forth some of the finest literature of Sanskrit from the region but also emphasizes how publication of such literature helped in the growth of Garhwali poetry. Because the literature published in Sanskrit at Vishal Karyalaya is so versatile, I shall borrow Camillo Fromigatti's approach and limit this study to "any print containing any kind of Sanskrit text, regardless of the completeness or length of the text" or "a complete Sanskrit work, regardless of other features (such as the presence of a translation in another language). (75)

Vishal Karyalaya was established by Vishalmani Sharma Upadhayaya who himself was a scholar of Sanskrit. For about five decades, starting with 1921, the publication house brought out literature in various Indian languages and dialects like Sanskrit, Hindi, Bengali, Urdu, Gujarati, Nepali, Garhwali, and even English. Many of the Sanskrit works published here redefined Sanskrit literary traditions of twentieth century Garhwal.

There is no comprehensively documented history on the life of Vishalmani Sharma or his publication house. Scattered information throughout the works published from Vishal Karyalaya provides some insight into the life of the publisher and his work. An equally reliable source perhaps is his daughter-in-law, Mrs. Pushpa Sharma, who resides alone in a house in Narayankoti, and was until recently, the custodian of the

Voices of Dissent from Nineteenth Century Mussoorie

Astha Saklani

In 2015, an exhibition was held in Mussoorie by Surabhi Agarwal, the proprietress of Mussoorie Heritage Centre, showcasing the role of the town in the Indian freedom struggle[1]. It came as a surprise to many that a British bastion could also have spoken out against the colonial government. Hill stations of India like Shimla and Mussoorie have often been viewed by scholars as English havens in an alien land. In these towns, the British reimagined and reestablished the landscape and culture they had left behind at home.[2] However, as insulated as these spaces appeared to the prevailing political, social and economic conditions of the subcontinent, they could not remain unaffected by their surroundings.

Therefore, a few intellectuals from these towns not only took notice of the contemporary situation, but also chose to express their disapproval against the same. So far, historiographies of Indian hill stations have not taken such voices into account.[3] Even if such a study is carried out, it is often limited to the visits, stays and speeches of Indian freedom fighters. This paper is an attempt to examine the early expressions of dissent which arose out of nineteenth century Mussoorie and were perhaps instrumental in creating an atmosphere where future freedom fighters like Mahatma Gandhi and Abbas Tyabji[4] could speak out against the atrocities of the colonial government. What such leaders did, as the paper shall elucidate, could in fact be viewed as a legacy of dissent, born in the nineteenth century itself. For this purpose, the study shall take into account some of the earliest intellectuals from Mussoorie and their expressions of dissent recorded in print. The medium of print not only became a significant method of dissemination of ideas in the nineteenth century, but is also a reliable historical archive, containing contemporary records of dissent from Mussoorie.[5]

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Mussoorie was developed as a hill station for the officials of the East India Company. Like its cousin Shimla, itsymbolized respite, joy and freedom for the colonial rulers of India. In the town were built grand hotels and palaces, clubs and banks, gardens and breweries. Mussoorie boasted of some of the best educational institutions, churches and businesses, which looked after all the needs of the British.[6] A library of great repute, with 'all the newest periodicals and newspapers' as well as 'books of every shade of literature' was established in 1843. Ironically, people also went to the library 'for gossip'.[7]Like every other hill station, the town had its fair share of scandals, murder mysteries and clandestine affairs which evoked the interest of novelists like Agatha Christie and Arthur Conan Doyle.[8] Between gospels and gossip, church and club and schools and scandals, Mussoorie became a strange medley of paradoxes.

H.C. Williams accurately put forth the dilemma of describing Mussoorie in 1936, 'Blotches grave and splashes gay, ascents to the sublime and tumbles to the ridiculous, contributors and contributions of more than hundred years to the making of modern Mussoorie. How can one correctly catalogue so diverse a conglomeration?'[9]Despite these contrasts, it appeared to have all the ingredients of a perfect English heaven, quite different from the hellish reality of most of the Indian subcontinent. While most regions suffered oppression and poverty due to the colonial rule, Mussoorie imbued opulence, grandeur and prosperity.

Yet, trouble for the British stirred in paradise soon after it came into existence and found its way into the print culture of the town. The seeds of dissent in Mussoorie were perhaps sownby one of its earliest and most influential residents, an Irishman, Mr. John Mackinnon. According to a nineteenth century contemporary, 'Masuri owe[d] a good deal to his [Mackinnon's] energy and public spirit.'[10]He constructed one of the earliest roads to Mussoorie, opened one of the earliest schools in the town called Masuri Seminary in 1834, in fact the first English medium school in the region and bought

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An End or a New Beginning: Deciphering the Allegory in Dharamvir Bharati's *Andha Yug*[1]

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Abstract

This paper will analyse how Dharamvir Bharati portrays the horror of Partition through the lens of the Kurukshetra War in *Andha Yug* . The paper will try to decode the allegory that Bharati presents through not just looking at Mahabharata but also referring to various texts written on Partition.The paper will analyse the medium of Theatre used and the purpose that it serves. The paper will then deal with the allegory through the themes of Blindness, moral and physical decay, the role of the narrator, the idea of war and the Existential crisis during the two times. The blurring boundaries between the binaries of good and evil, dharma and adharma, faith and doubt, free will and predestination, light and darkness will be addressed. The paper will go on to discuss the question of Identity and 'Honour'.Thus this paper will look at various aspects of *Andha Yug*, thereby analysing if *Andha Yug* can be read as a dystopian allegory.

Keywords: Indian Theatre, Allegory, Partition Literature, Dystopian Literature

"Kalyug[2], is not merely evil, in it, necessary conditions are progressively built for a new Satyug[3], another harmony, a more advanced perfection."- Sri Aurobindo

How can a harmony be created from death and destruction? How can symphony be generated out of a barren world? How can *Kalyug* ever be an 'advanced perfection'? These are some of the questions that this paper will try to analyse through Dharamvir Bharati's

[1] *Andha Yug* is translated as 'The Age of Blindness' but it can also mean 'The Age of the Blind'. 'Andha' means blind while 'Yug' means an Era. Where the people are blind to the happenings of the world and have lost their morality and ethics. It refers to the modern world after 1947, when India and Pakistan were separated.
[2] Kalyug means 'The Age of the Downfall' and is the fourth and final stage in the spiritual evolution of man according to Hindu mythology. It is also termed as 'Kali Yug' or the age of Goddess Kali, the Destroyer. Hence it is a corrupt and unfair world, full of sorrow and suffering. It will end, marking a new age of hope, salvation and peace, named 'Satyug'.
[3] Satyug is the first era in the cycle of Hindu mythology. It comes after Kalyug and is a fair and peaceful world. It comes from 'Satya Yug' or 'The Age of Truth'.

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ANALYSING THE USE OF LANGUAGE IN MEENA KANDASAMY'S *THE GYPSY GODDESS*

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Abstract:

The debut novel of Meena Kandasamy, *The Gypsy Goddess* is a convoluted, non-linear, digressional, and 'postmodern' fictional narrative based on the bloody massacre of 1968 in the Kilvenmani village which is located in the southern state of Tamil Nadu, India. The use of local phrases; ironic, satirical and unabashed crude language similar to that of Namdeo Dhasal; fragmented phrases for creating a visual impact; breaking the fourth wall to address the audience directly; digressions to not only place the story in a specific temporal and spatial coordinate but also to present the Dalit atrocities to people has been at the centre of this work of fiction. Additionally, the use of language is done by her to rewrite the history as people know it through employing both official and unofficial narratives of history in her work. Interestingly, it is often claimed that "marginalized groups are socially situated in ways that make it more possible for them to be aware of things and ask questions" (Yudianto 4). When we take this argument further, we understand that how they question the structures of power depends on the effective utilisation of language. Thus this paper will analyse how Meena Kandasamy uses language to cater to her purpose and if she succeeds in this endeavour.

Keywords: Language, Dalit Literature, Neo-historicism.

It is often claimed that "marginalized groups are socially situated in ways that make it more possible for them to be aware of things and ask questions" (Resa Yudianto 2012). The validity of this argument cannot be devoid of the fact that to question the structures of power, one is dependent on the effective utilisation of language. What if you are not a conventional storyteller? What if all you have is the 'truth'? What if your disparate, fragmented, and crude world lacks evidence, coherence, and power? Will you still attain justice in the court of law? Can you attain justice outside the court of law? *The Gypsy Goddess(2014)* by Meena Kandasamy is an attempt to grapple with these questions.

According to James Kidd, Kandasamy's *The Gypsy Goddess* is "...a novel of self-conscious experimentalism and unmistakable fury" which "throws down a gauntlet to

Rethinking Translation and Publication Politics: Dalit Writings in English Translation as World Literature

VANDANA L.

Power relations between different languages within India and of various Indian languages with English are ridden with inequalities. The process of translating Dalit literature from the vernaculars into English, hence, inevitably traverses these unequal power relations. Moreover, Dalit writings cut across disciplines and are essentially an inter-disciplinary area of research. It is argued that the question of addressivity, that is so crucial to Dalit Studies, is largely being resolved by translation (both within bhashas and from bhashas into English and other international languages). The construction of the literary international or World literature which is primarily through translation – with its assurance of global outreach and international participative reading – appears promising to the Dalit writings in English and English translation because it necessitates a rethinking of Indian history.

Other than the transposition of Source language to Target language and other linguistic technicalities like equivalence, negotiation, appropriation and adaptation, translation needs to be understood as a philosophical, political and cultural category. Andre Lefevere, a noted Translation theorist, significantly proposes three basic distinctions in approaching translation. First is to differentiate between the product (the translated text) and the process (the activity of translation); second is to choose between a descriptive (discursive) versus an evaluative (qualitative) approach; and the third pertains to deciding whether to analyze translations or translate oneself. Taking cue from Lefevere's theorization, this paper takes a discursive approach to translation and discusses English translation of Dalit writings as 'a product' with an interventionist potential.

This paper is divided into four sections, wherein in the first section, an attempt has been made to figure out the position of Dalit writings in English translation in the larger World literature paradigm. The worldwide circulation of Dalit Writings in translation, it is argued, is instrumental in deconstructing 'the idea of India' as a caste-free country. Dalit writings, especially autobiographies, necessitate a rethinking of Indian history. To this end, the first section of this paper engages with the contemporary debates pertaining to Translation Studies and World literature. I have also discussed a few critiques and counter-critiques of World Literature pertaining to canon politics and its Eurocentric approach, especially the importance it ascribes to the English language.

The second section of the paper discusses the Dalit response to English, which is significantly shaped by the politics of standardizing a select few vernacular Indian languages over their dialects, which mostly belong to the Dalits. Here, I discuss the case of a Gujarati Dalit writer, Neerav Patel and his critique of mainstream Gujarati literature, and also I discuss Kancha Ilaiah's views on how caste has its own grammar. The third section of the paper discusses the politics behind publishing—as to what role does publication of certain translations play in the service of certain ideologies, market forces, representational ethics, and questions like which text gets translated into which language and by whom, also which publication house publishes it—with special reference to the ongoing Dalit literary (largely vernacular) movement in India. Here, I also discuss a few cases of anti-caste publication ventures like Navayana and Panthers Paw. The last section of the essay discusses

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Towards an Understanding of Dalit Theory: The Debates in *The Cracked Mirror*

Vandana

Abstract

While the already in place emergent Dalit literature has been posing a challenge to the upper-caste narratives on Dalits, in *The Cracked Mirror*, Gopal Guru and Sundar Sarukkai argue that now Dalits must broaden the premise of Dalit representation by taking it to the next level—theory. Using experience as a political tool, as Dalits have already established a large corpus of literature, Guru emphasizes that Dalits must realize the importance to theorize themselves from the experiential point of view. While caste has been discussed extensively by insiders in literature, politics and cultural activism, it is argued that Dalits have remained averse to theory. This paper is an exploration of how theoretical concepts hold the power to intervene the cognitive domains of both the oppressed as well as the oppressor, and as a result, can impart unity, continuity, and intensity to the Dalit experience, and how dialectics of owned experience and theory can help construct a concrete universal.

Keywords: Dalit experience, caste, top-of-the-twice-borns (TTBs), institutionalized exclusion

The practice of social science in India is based on (as well as garners) a socio-cultural hierarchy which solidifies the already established uneven divide between the Dalits and the top-of-the-twice-borns (TTBs). While caste has been discussed extensively by insiders in literature, politics and cultural activism, it is argued that Dalits have remained averse to theory. Gopal Guru, in this regard, maintains that the non-egalitarian/ autocratic nature of the social science practices in India is the reason behind the 'institutionalized exclusion' of Dalits from the theoretical

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Original Article

The Subaltern Critique of Dominant Historiography and a Case for Retrieving a Historiography of Dalit Literary Traditions in India

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Vandana[1]

Abstract

In order to retrieve literary history in India, teleology operates on three levels: ancient, medieval and modern. As per the longue duree approach to the study of history, history is not an event or an object, but like the concept of time, is a configuration and a process. The history of the longue duree gives priority to long-term monumental historic patterns, moments and shifts in society, that is, the slow-paced structural processes which tend to have strong historical consequences. Similarly, languages and literatures, too, marked by historical catastrophes, undergo a process of sedimentation. For this reason, instead of a single literary history of South Asia, Sheldon Pollock proposes the concept of 'literary cultures' which allows room for 'historical individuation' of each culture rather than homogenising them merely for the sake of historical analysis. The basic questions that I have tried to look into through this study include:

1. Why is it problematic to retrieve literary history in India?
2. Why is it essential to have an alternative literary historiography of Dalit literature?
3. How does Dalit subalternity differ from colonial subalternity?
4. How the Dalit voice is disintegrated from within because of the prevalence of graded inequality?
5. What constitutes the politics of history writing and canon formation in the third world countries like India where retrieving subaltern literary trends remain a problematic discourse?

Keywords

Caste, cultural spheres, discrimination, education, social exclusion, social spheres

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Justifying And Implementing Human Rights Discourse In India

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1. INTRODUCTION

To be born into the human race grants a person certain right known as human rights. It's something everyone's born with, no matter their race, creed, colour, or sexual orientation. Human rights are "rights about life, liberty, equality, and dignity of the person guaranteed by the Constitution or enshrined in the International Covenants and enforceable by courts in India" in the Protection of Human Rights Act, 1993. (Donnelly, 1982).

The people's progress inside a country is directly proportional to the progress of the country as a whole, making human rights protection an absolute need. Every Indian citizen is afforded the most fundamental of protections under the law according to the Indian Constitution. With great care and deliberation, the Constitution's authors laid out all the rules that must be followed. And due to these continuous shifts, human rights have expanded in scope. Nowadays, parliamentarians play an essential role in safeguarding people' rights by creating new laws, updating old ones, etc. (Donnelly, 1982).

Human rights have been defined as

Essential moral protections which, ostensibly, all humans, regardless of where they live, have by their humanity. The use of the term "right" to refer to these assurances implies that they belong to certain people who may exercise them, are very important, and that adherence to them is required rather than voluntary. Many people believe that human rights are both universal in the sense that everyone should be entitled to them and independent in the sense that they can be used as a basis for both support and criticism regardless of whether or not the government or the courts of a given country recognise or enforce them. "(Nickel, 1987)

A theory of human rights ethics aims to specify the conditions under which human beings may act with respect for one another. Human rights are all about determining what makes for a reasonable level of life. With this goal in mind, the Universal Declaration of Human Rights laid the groundwork for the European Convention on Human Rights (1954) and the International Covenant on Civil and Political Rights (1996). (1948). (1966). The moral theory in these three books is the basis of a growing agreement that the present geopolitical order might benefit from something like an international bill of rights. Yet, human rights

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The Problem Of Democratic Citizenship And The Idea Of Global Democracy

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1. INTRODUCTION

Not until about the last two decades have IR textbooks begun to address the issue of democracy in other countries. The word "democracy" was rarely used, and when it was, it was about the influence domestic regimes had on the foreign policy behaviour of individual nations rather than the possibility of reshaping global society or even international organisations (IOs) following democratic values and rules. When international relations (IR) researchers first started paying attention to the European Community, they mostly saw it as a weird IO and paid little attention to its nascent democratic tendencies. Treatises on democratic theory, with a few notable exceptions, reflected this lack of interest and paid little attention to the global aspects of democracy. Interestingly, in the original edition (1987) of his widely read Models of Democracy, not even David Held, who was instrumental in putting the relationship between globalisation and democracy on the intellectual agenda of the 1990s, had addressed the subject. Political activists like the world federalists discussed the prospect of a worldwide democratic movement, but academics paid them little mind. (Archibugi Et Al., 2011).

The intellectual climate has shifted significantly over the previous two decades. But, many people still aren't convinced that democracy can be expanded to non-state entities and see the concept of a worldwide democracy as an impossible pipe dream. (Dahl 1999) or, worse, think that its advocates are barking to the moon (Dahrendorf 2001). Although several respected democratic theorists have roundly criticised it, the issue can no longer be ignored. Scholars like Richard Falk, David Held, Jurgen Habermas, and Ulrich Beck laid a fertile ground for development. The concept of "democracy beyond borders" has been explored by a new generation of researchers who have contributed to several recent handbooks in international relations and democratic theory.

Citizenship and democracy are inescapable topics in any discussion of human beings about political authority. It's fair to say that these ideas are as contentious as advocacy. For effective advocacy, however, it is essential to take some time to consider what these results mean. The goals we want to achieve in a political system, as well as the rights and duties of all those involved, can be articulated with the aid of these ideas. In this chapter, we'll examine how contrasting interpretations of these ideas have shaped the Guide's approach to advocacy.

AI and Ethics
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ORIGINAL RESEARCH

Why ethical audit matters in artificial intelligence?

Nitesh Rai[1]

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Abstract
Artificial intelligence is making its way in every possible sector rapidly hence affecting us directly or indirectly. Automation of manual labors and algorithm led solutions has exposed us to a new world that we had not witnessed yet. Although it is true that the idea of AI is not altogether new in the twenty-first century, its footprints have indeed marked their presence in many important and critical realms; therefore, making it a ubiquitous phenomenon. AI also carries a whole range of ethical problems which no other technology has probably produced. Since we are talking of a machine which is going to be semi-autonomous and autonomous in the future, any perfect projection of its course is a problematic task. The first section of this article lays the foundation of what it means when we say a good life. Ultimately, the prime objective of any technology is to assist humans and make their lives better. However, despite proving its potentials, AI also exposes us to many moral questions and demands intervention from social science. The following section with some illustrations reflects upon ethical issues emerging with the use of AI in different domains. The last section proposes a list of suggestions that may prove the first step in the broader discussion of how to make AI more responsible and ethical for the future.

Keywords Ethics · Artificial Intelligence · Responsibility · Regulation · Human Values

1 Introduction

The very genesis of the progression of Political Science begins with the idea of the good life in ancient Greek-City states. Philosophers engaged with numerous aspects of what is a good life and what establishes it. In the beginning, Justice, Democracy, and the partial introduction of Rights was a painstaking embodiment that could pave the way towards a more civilized and happy social order in which civilians can flourish and live well. Subsequently, a more democratized liberal world order was envisioned that underlined more on liberty, self-determination, autonomy, and creativity of humans. Human history has indeed travelled miles to achieve what we see today around us and our consistent endeavors to make our society more impartial, equal, and idyllic to all is still in motion. We faced multiple challenges such as feudalism, racism, biasness, superstition in our pursuit and it can't be denied that we have come a long way where values like justice, liberty, and equality is a universally accepted phenomenon and cherished worldwide. What unique in all the social evils was that they all emanated within society and non-other than humans themselves were responsible to a large extent. Technology brought rupture in the social order and humans were no longer the sole players of new transforming societal equations that emerged in the wake of the industrial revolution. Divide between rich and poor created class in society, the dignity of laborers was subverted in the way no one wants to imagine today [1], ecological imbalance made living poor in the wake of the first industrial revolution. It was perhaps the first instance when humans tested the ill bearings of the unplanned introduction of machines in our society for diverse purposes. With sophisticated advancement in the realm of technology that has become entrenched in our everyday life, ordinary people stand at bay when it comes to comprehending how new machines are working and who are controlling it [2]. A new set of extremely complex challenges are awaiting our dire attention if at all we are serious about making our social order just and happy for everyone [3]. New emerging technologies like IoT (Internet of Things), Artificial Intelligence [4], Advanced robotics, 3D printing have great potential to impact us, and reshape our social relations fundamentally [5]. Artificial Intelligence (AI hereafter) is

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ENGAGEMENT OF WOMEN IN 'GIG ECONOMY': A CHIMERA OFEMPOWERMENT

**NUPUR TRIPATHI*

Abstract:

The paper succinctly tries to understand the myriad ways in which gig economy has given women an opportunity to be a part of labour force. The Paper begins by explaining the shift in nature of work in the backdrop of Fourth industrial revolution and advent of virtual workspaces. Thereafter, it limits its understanding to impact of gig economy on women empowerment, owing to the flexible nature of work and ensuing challenges. The concluding section highlights certain policy recommendations that can ensure that the opportunities provided to women by gig economy do not go in vain.

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Constitutional Change For Minorities In Nigerian Federal Arrangement

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ABSTRACT

The minority problem in Nigeria is the direct product of the existence of the federal system's growth and creation. In order to foster creation of national meaning, the emerging framework should resolve the interests of all communities in an ethnically varied political climate. Where national consciousness is replaced by ethnic identification, national integration wishes to encourage solidarity through treatment. A sense of national consciousness was not stimulated at the beginning of the federal system in Nigeria. Unfortunately, at the detriment of national unification, independence political actors politicised the minority problem. As a result, calls for self-determination, ownership of land, and Sharia law were moved in many phases, as well as the creation of additional States, and a recent national conference on sovereignty was convened. This paper suggests that overall institutional corruption in Nigeria exacerbates the turmoil generated by these demands and the subsequent crises over the years. While in the various units of the federation there are minority groups, politics are more a matter of the more prominent minority than politics. Devices designed to alleviate minorities' fears have become a catalyst for federal instability. The paper states that Nigeria should examine the minority problem for the second time and undertake further concrete steps in order to develop a federal political system isolated from divisive trends.

Keywords: Minority, Nigeria, Federalism, Ethnicity.

INTRODUCTION

Nigeria is one of the most diverse and divided countries in Africa. In 1914, the decision to merge northern Nigeria with the southern Nigeria created a single political entity with a limited common history and cultural connection, mainly for administrative reasons. Colonial rule has exacerbated these differences, strengthened religious and ethnic identities as major political differences and creating conditions for continuous instability (Mustapha, 2007; Agbiboa, & Okem, 2011). The divide between North and South continues and is characterised by significant changes in economic development and access to basic social services. Challenges over religion have frequently led to tensions within the regions particularly since more fundamentalist strains of Islam grew in the 1980s (Agbiboa, 2013). Nigeria's regional structure also fostered competition among ethnic groups below this level (Suberu, 1993; 1996). In their respective regions, the Yoruba, Igbo and House/Fulani have been designated as dominant ethnicities and are tensioner to ethnic minorities (Graf 1988). The strong association between communities in a specific territory has also led to a conflict between 'indigenous people' claiming birth and other Nigerians who are considered internally migrant, denied equal rights and afforded limited access to the land (Mamdani, 2001). Concurring in the spoils of the natural resources of Nigeria

Indian Perspective of Post Pandemic World Order

Prof. Satish Kumar &
Dr. Chandra Prakash

There are stiff conflicts between America and China. The US President Biden is losing no opportunities to target China. The Chinese offensive posturing is becoming a challenge for the world peace. Experts believe without a coherent world view a country cannot become a Super power. If the axis is shifting from west to east, Indian stature has to be accommodated. Chinese view strongly detests India. India occupies the largest area of the South Asian continent, surrounded by the Himalayan mountain ranges to the north and the Indian Ocean to the south. Located at the intersection of the trade routes between South Asia, Central Asia and the Middle East, ancient Indian kingdoms and empires maintained cultural and economic relations with Mesopotamia, Greece, China and Rome.[1]

Bharat's five millennia as a civilization entity have always involved engagement with the outside world. Right from the earliest times, Bharatiye kingdoms had maintained ties with other countries and regions. There is evidence of diplomatic relations between ancient Indian kingdoms and those in China, Rome, Greece, Egypt and Mesopotamia. The Hindu and Buddhist religions that arose in India expanded beyond the subcontinent, providing evidence of India's links beyond the subcontinent. Some South-East Asian empires were even led by dynasties which practices Hinduism and Buddhism such as the Sri Vijaya Empire in present day Cambodia, Thailand and Indonesia (java) during the seventh century. Kotha Satchidananda Murthy, a Bharatiya philosopher and professor, compares and contrasts Bharatiya philosophical streams with those of the west. Writing in the 1960s, Murthy asserts there were two philosophical streams in Bharatiya foreign policy, one realist and the other idealist or moralist. Murthy traces Bharatiya realism to ancient treaties like the Arthasastras, Dharmasastras and Nitisastras and refers to this as the positivistic Kautilyan theory. For Murthy, the idealistic and moralistic stream in Bharatiya politics comes from Buddhism and Jainism.

Bharat's Ancient Strength and Outlook as a Great Power

There seems to be an abiding grip of history and tradition on how India views. Indians would argue that modern India is inspired by the past, connected to the present and looking towards the future. India's history shows that it does not follow a winner takes all approach to contestation. Nor is there a confident belief that the end justifies the means. The India of the Mahabharata era was also multipolar, with its leading powers balancing each other. But once the competition between its two major poles could not be contained, others perforce had to take sides."

Some Indians, like Panikkar, saw Independence as an opportunity for Bharat's rise and embraced the views of British strategists about Bharat's centrality in influencing the Near and Far East. Panikkar saw benefits for Bharat in associating closely with Britain and maintaining, as a sovereign country. He explained his views, 'the old Indian empire as a common defense area had much in its favor. In his book 1943 the Future of South East Asia, Pannikar had already argued that in history Bharat had been the only power able to control South East Asia or what he called 'Further India'.[1] Pannikar saw India as the security provider as well as the key economic power for the region because of its geographical positions, size, resources, manpower and industrial potential. He even sited President Quezon of the Philippines who declared, 'without a free India, no nation in South East Asia can be free'. That Pannikar was not alone in this view is seen in the 1946 book titled India's Foreign Policy written by Iqbal Singh, which argued for defense-based regional groupings both for the Middle -East and South-East Asia, with India at the core of both."

Several other Indian strategists too saw Independence as the opportunity for India to break out of its isolation and play a role on the world stage. One of them, P.N Kirpal, wrote in 1945, 'Three great highways connect India with the rest of the world. From Calcutta towards the South and South East, the sea routes reach Australia and New Zealand, the islands and countries of South-East Pacific and the great powers of China and Japan in the Far East. From Bombay and Karachi here are old and easy sea routes to the Middle East, Africa and Europe. From Delhi to the passes of the North-West our railway system reaches the most ancient of the world's highway of commerce and culture,

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डॉ. संतोष सैन

उषा प्रियंवदा के कथा-साहित्य में भारतीय जीवन-मूल्य

समकालीन हिंदी लेखन में उषा प्रियंवदा का नाम चर्चित रहा है। उनके कथा लेखन में मुख्य रूप से आधुनिक जीवन की ऊब, घुटन, तनाव, अजनबीपन, उससे उत्पन्न संत्रास, बनते-बिगड़ते रिश्ते, बनती-बिगड़ती जिंदगी, पढ़े-लिखे व्यक्तियों की मानसिक यंत्रणा का अंकन रहा है। जीवन का यथार्थ चित्रण उषा प्रियंवदा की रचना के केंद्र में है। उन्होंने टूटते परिवेश में जीवन की परिवर्तनशीलता और जीवन-मूल्यों को गहरी मार्मिकता एवं सहानुभूति से अभिव्यक्त किया है। लेखिका ने अपने कथा लेखन में बदलते हुए जीवन मूल्यों, बदलती हुई मान्यताओं, विश्वासों और परिस्थितियों के बदलाव को आधार बनाया है। आज का व्यक्ति नई परिस्थिति में स्वयं से टूटते हुए, जिंदगी से जूझते हुए आर्थिक संकट से संघर्ष कर रहा है। मध्य वर्ग कभी आदर्श तथा नैतिकता से जूझता है, तो कभी आधुनिक यथार्थ से। यही लेखिका के कथा साहित्य के केंद्र में है।

पचपन खंभे लाल दीवारें, रुकोगी नहीं राधिका, शेष यात्रा, अंतर्वंशी उपन्यासों में जीवन-मूल्यों की अभिव्यक्ति में लेखिका पूर्णतः सफल रही है। उनके पात्र आधुनिक व्यक्ति की संवेदना और अनुभव के एकदम निकट है। वर्तमान और अतीत के बीच आधुनिक व्यक्ति की मनःस्थितियों, द्वंदों एवं जीवन संघर्षों को मार्मिकता से अभिव्यक्त किया है। उषा प्रियंवदा के उपन्यासों के सभी पात्र आधुनिक हैं। आधुनिक व्यक्ति किसी-न-किसी समस्या से त्रस्त है। ये सभी पात्र आधुनिक मध्यवर्गीय एवं उच्चवर्गीय समाज से लिए गए हैं। उनके पात्र कभी भारतीय परिवेश से जुड़े हुए हैं तो कभी विदेश की धरती से। ये सभी पात्र अपनी सारी कमियों, खूबियों के बावजूद हमारे सामने आदर्श जीवन-मूल्यों के साथ प्रस्तुत हुए हैं। उनके उपन्यासों में मध्यवर्गीय जीवन है। जिससे उनके कथा साहित्य में विविधता है। जीवन-मूल्यों और विश्वासों तथा संस्कारों के संघर्ष की, रिश्तों की मार्मिकता की अभिव्यक्ति है। इस दृष्टि से उषा प्रियंवदा का 'पचपन खंभे लाल दीवारें' सर्वप्रसिद्ध है।

'पचपन खंभे लाल दीवारें' की आधुनिक स्त्री पात्र सुषमा अजनबीपन एवं अकेलेपन के कारण अपने ही परिवार के द्वारा शोषण का शिकार होने के बावजूद भी नारीमय आदर्श और जीवन-मूल्यों का निर्वाह करती है। नारी जहाँ आत्मनिर्भर होकर समाज में अपनी पहचान बनाती है वहीं उसे इस आत्मनिर्भरता का मूल्य भी चुकाना पड़ रहा है। सुषमा संस्कारी है। और संस्कारों

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समीक्षा आलेख

भारतेंदु के नाटकों का वैविध्य

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शोध सारांश

नवजागरण के अग्रदूत भारतेंदु के नाटकों में उनके संयत और सामंजस्यपूर्ण दृष्टिकोण का परिचय मिलता है। देशोद्धार की भावना से परिपूर्ण भारतेंदुने अपने नाटकों में राष्ट्रीय और समाज-सुधार सम्बन्धी विचारों को प्रभावशाली रूप में अभिव्यक्त किया है। अपने नाटकों के द्वारा भारतेंदु सीधे भारतीय जनता से सम्वाद करते हुए आम जनता की समस्याओं को अत्यंत ही विरोधी तेवरों के साथ अपने नाटकों में अभिव्यक्त करते हुए भारतीय संस्कृति के महत्त्व को उजागर करते हैं और आधुनिकता के पक्षकार बनकर समाज की विभिन्न समस्याओं पर गंभीर चिंतन तो करते हैं लेकिन साथ ही समाधान भी खोज निकालते हैं। इन्हीं सभी क्रियों पर विचार करते हुए भारतेंदु के साहित्य चिन्तन के विविध आयामों पर प्रकाश डालने का प्रयास इस लेख में किया गया है।

बीज शब्द :

नाटक, साहित्य, समाज, संस्कृति, भविष्यद्रष्टा, देशोद्धार, आधुनिकता के पक्षधर, सामाजिक और धार्मिक बाह्य आडम्बरों का विरोध, सामाजिक रुढियों से मुक्ति।

भारतेंदु के साहित्य की सबसे बड़ी विशेषता है सामाजिक और सांस्कृतिक पक्ष। उन्होंने सामाजिक और सांस्कृतिक क्षेत्रों में कार्य करते हुए साहित्य को भी साधारण जनता के साथ जोड़ दिया। साहित्य, समाज और भारतीय संस्कृति को लेकर भारतेंदु का उत्साह अदम्य था। अतः समाज के कल्याण के लिए, देश के उद्धार के लिए, राष्ट्र की सेवा का ध्येय लेकर साहित्य सृजन किया। एक समाज सुधारक की नजर से और भविष्य द्रष्टा की भांति उन्होंने यह भांप लिया कि एक स्वतंत्र राष्ट्र की पहचान और उन्नति अपनी भाषा से ही संभव है -

"निज भाषा उन्नति अहै, सबै उन्नति को मूल।
बिन निज भाषा ज्ञान के, मिटत न हिय को सूल।"[1].

सं.डॉ. नागनाथ कुंटे, पृ.सं. ७१

२. बंद स्पर्श — माहेश्वरी, पृ.सं. ४६

३. सुनो मालिक सुनो — मैत्रेयी पुष्पा, पृ.सं. १८०

४. गोमा हंसती है (अपनी बात) — मैत्रेयी पुष्पा, पृ.सं. १२

५. सुनो मालिक सुनो — मैत्रेयी पुष्पा, पृ.सं. १८१

६. वही, पृ.सं. १८१

७. वही, पृ.सं. १८४

८. वही, पृ.सं. १८४

९. वही, पृ.सं. १८५

१०. वही, पृ.सं. १८५

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स्त्री विमर्श : हिंदी सिनेमा के सन्दर्भ में

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आजकल स्त्री—अधिकारों, स्त्री—अस्मिता और स्त्री — चर्चा जहाँ कहीं भी हो चाहे वह किसी भी विषय से आरम्भ हो किन्तु उसका अंत स्त्री—अधिकारों, स्त्री—अस्मिता और संघर्ष पर ही होता है। प्रत्येक स्त्री, प्रत्येक दूसरा पुरुष (चाहे भीतर से वह स्वयं कितना ही बड़ा भेड़िया हो), प्रत्येक तीसरा साहित्य, हर चौथा सेमिनार और इनके सबके ऊपर बैठी राजनीती सभी के भीतर स्त्री—अस्मिता और अधिकारों की चिंता गहरे तक पैठी हुई दिखाई देती है। ऐसा प्रतीत होता है कि सारा समाज ही स्त्री कि दशा को सुधारने में युद्ध स्तर पर लीन है, फिर भला सिनेमा इतने महत्वपूर्ण मुद्दे पर पीछे कैसे रह सकता है। हालाँकि इसमें दो राय नहीं हैं कि सिनेमा का केवल एक ही अभिप्राय माना जाता है और वह है एंटररटेन्मेंट, मतलब साफ है मनोरंजन। सिनेमा में इस मनोरंजन को कई रूपों में प्रस्तुत करने का प्रयास किया जाता है, जैसे भड़कीले दृश्य, उत्तेजक गीत—संगीत, नायक—नायिका की परदे पर वास्तविक प्रेमी—प्रेमिका जैसी केमिस्ट्री आदि लेकिन गौर करने वाले बात यह है की इस मनोरंजन को दर्शकों के समक्ष प्रतुत कौन करता है? छोटे एवं तंग कपड़े पहने, नायक को रिझाने एवं कुछ गिने—चुने दृश्यों में स्तरीय अभिनय करने वाली नायिका या फिल्म में दिखाई जाने वाली अन्य स्त्री पात्र सबका प्रयोग इसी मनोरंजन शब्द को सार्थक

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वृन्दावन लाल वर्मा के उपन्यास 'झाँसी की रानी' में स्त्री चेतना

शीतल कुमारी
शोधार्थी, हिंदी विभाग,
दिल्ली विश्वविद्यालय

सारांश

स्त्री के प्रति पितृसत्तात्मक समाज का रवैया निश्चित मानदंडों और आदर्शों से संचालित होता रहा है जिसमें स्त्री की भूमिका पहले से तय कर दी जाती है। धर्म, वर्ण, जाति और वर्ग के स्तर पर स्त्री को दोयम दर्जे का प्राणी समझा जाता है। स्त्री को उस आदर्श आचरण संहिता के अनुसार साथ जीना होता है जिसका निर्धारण सदियों से पुरुषों ने अपने पास रखा है। ऐसे में वृन्दावन लाल वर्मा का ऐतिहासिक उपन्यास 'झाँसी की रानी' आज भी उतना ही प्रासंगिक जान पड़ता है जितना इतिहास में था। रानी लक्ष्मीबाई ने जिस स्त्री चेतना को प्रस्तुत किया उसे इस प्रकार समझा जा सकता है कि इससे स्त्रियों में उस असीमित शक्ति का प्रवाह होता है, जिससे स्त्रियाँ अपने जीवन से जुड़े हर फैसले को स्वयं ले सकती हैं।

बीज शब्द : *नारी विमर्श, अस्मिता, स्वराज्य, समानता, पितृसत्तात्मक, स्वाभिमान।*

प्रस्तावना

आज दलित विमर्श, दलित - स्त्री विमर्श और स्त्री विमर्श के साथ-साथ आदिवासी विमर्श समकालीनता के केंद्र में है। हमारे यहाँ मानवता का सवाल दलित मुक्ति, वर्ण व्यवस्था और नारी अस्मिता से जुड़ा हुआ है। ऐसे में लक्ष्मीबाई का पूरा व्यक्तित्व, उनका संघर्ष, विद्रोह औरआत्मसमर्पण का संबंध किसी ना किसी तरह स्त्री अस्मिता की पहचान और नारी मुक्ति की भावना से है। लक्ष्मीबाई का 13 वर्ष की उम्र में अपने पिता से कहना कि "जब मैं सवाल करती हूँ तो आप इसी प्रकार मेरा मुहँ बंद कराने लगते है"।[1] ये बात भले ही आज से लगभग 170 वर्ष पूर्व की है, पर आज भी उतनी ही प्रासंगिक है। स्त्री के प्रति पितृसत्तात्मक समाज का रवैया निश्चित मानदंडों और आदर्शों से संचालित होता रहा है जिसमें स्त्री की भूमिका पहले से तय कर दी जाती है। धर्म, वर्ण, जाति और वर्ग के स्तर पर स्त्री को दोयम दर्जे का प्राणी समझा जाता है। स्त्री को उस आदर्श आचरण संहिता के अनुसार जीना होता है जिसके निर्धारण सदियों से पुरुषों ने अपने पास रखा है।

ऐसे में वृन्दावन लाल वर्मा का ऐतिहासिक उपन्यास 'झाँसी की रानी' आज भी उतना ही प्रासंगिक जान पड़ता है जितना इतिहास में था।सामान्यतः 'झाँसी की रानी' लक्ष्मीबाई का नाम सामने आते ही, वर्ष१८५७ की क्रांति, तलवार की चमक और युद्ध की प्रचंड ध्वनि स्वतः ही कानों में गुंजने लगती है।अगर अतीत के कालखंड में थोड़ा पीछे जाके देखा जाये तो एक बात स्पष्ट रूप से दिखाई देती है, रानी लक्ष्मीबाई को सिर्फ युद्ध में वीरता दिखाने या उनके विद्रोही स्वभाव के लिये याद नहीं किया जा सकता बल्कि उनका पूरा जीवन स्त्री चेतना से लैस था। वह स्त्रियों के लिये मार्ग प्रशस्त करती है। उनका जीवन साक्षात स्त्री सशक्तीकरण का उदाहरण पेश करता है। जिसे वर्तमान में स्त्री विमर्श और स्त्री चेतना कहा जा रहा है, उसकी सशक्त अभिव्यक्ति, रानी लक्ष्मीबाई के व्यक्तित्व और कृतित्व में देखने को मिलती

[1]वृंदावन लाल वर्मा (१९५६) झाँसी की रानी – लक्ष्मीबाई (षष्ठम संस्करण,(झाँसी.१८ ,मयूर प्रकाशन :

हिंदी दलित कहानियाँ और ओमप्रकाश वाल्मीकि

विजय कुमार

दलित कहानियों की संरचना दलित जीवन के आचार-विचार, व्यवहार-संस्कार, रहन-सहन, भाषा-बोली और आस-पास के सामाजिक, धार्मिक, आर्थिक और राजनैतिक संबंधों से निर्मित होती है। दलित कहानियों में भाषा की कृत्रिमता नहीं दिखाई पड़ती है क्योंकि दलित पात्र या गैर दलित पात्र जिस परिवेश में पलता-बढ़ता है उसी की भाषा का प्रयोग करता है। दलित कहानियों की भाषा, शिल्पएवं घटना पात्रों केअनुकूल है। उसका अनगढ़पन ही उसकी विश्वसनीयता और प्रामाणिकता का आधार है जो लेखक के द्वारा अनुभूत है।

दलित कहानी के संदर्भ में उपर्युक्त बातों को हम ओमप्रकाश वाल्मीकि की कहानियों के माध्यम से देख सकते हैं। इनकी कहानियों में उपेक्षित और वंचित दलित जीवन के विविध पक्षों को प्रस्तुत किया गया है। उन्होंने दलित जीवन की पीड़ा, संत्रास और छटपटाहट जीवन की विवशता को रचनात्मक रूप प्रदान किया है। अपनी कहानियों में उन्होंने दलित तथा गैरदलित रिश्तों को भी सचेत ढंग से प्रस्तुत किया है। साथ ही एक बड़े वर्ग के लोगों के असंवेदनशील चेहरे को दिखाया है। दलित कहानियों के कलात्मक पक्ष को लेकर जो पूर्वाग्रह आलोचकों में दिखाई पड़ता है उसे ओमप्रकाश वाल्मीकि की कहानियाँ चुनौती देती। क्योकि इनकी कहानियाँ कलात्मक स्तर पर सशक्त है।

ओमप्रकाश वाल्मीकि के भाव पक्ष तथा कला पक्षको हम उनकी कहानियों 'सलाम' 'खानाबदोश' 'घुसपैठिये' 'जिनावर' आदि के आधार पर देख सकते हैं। श्सलाम ' कहानी उस सामंती सोच और व्यवस्था के खिलाफ है जो वर्षों से चली आ रही है जिसके कारण दलित वर्ग को अपमानित और हेयतर दृष्टि से देखा जाता है। कहानी के शीर्षक पर नजर डाले तो स्पष्ट होता कि सलाम एक वर्ग के लिए तो अभिवादन के लिए प्रयुक्त होता किंतुवही सलाम दूसरे वर्ग को हेयतर दृष्टिसे देखने तथा अपमानित करने के लिए प्रयुक्तहोता है। कहानी में हरीश शिक्षित है तथा शहर से गाँव ब्याहके लिए आया है। वह गाँव में घूम-घूमकर बड़े लोगों के दरवाजे पर जाकर सलाम प्रथा को निभाने के खिलाफ है। वह थोड़े से कपड़े और बरतन के लिए अपने स्वाभिमान को गिरवी नहीं रखना चाहता है। अपने स्वाभिमान गिरवी न रखना ही उसके चेतना से लैस होने को दर्शाता है। कहानी में लेखक नेगाँव और शहर के फर्क को भी दिखाया है। शहर के लोग शिक्षित होने के कारण अपने अधिकारों के प्रति सचेत है।

ओमप्रकाश वाल्मीकि कहानी में ब्राह्मण वर्ग के युवक को दलित युवक की बारात में लाते हैं जबकि ज्योतिबा फूले एक ब्राह्मण मित्र की बारात में गए थे। कहानीकार का ब्राह्मण वर्ग के युवक को दलित वर्ग के यहाँबारात में लाने का उद्देश्य कहीं न कहीं दलित वर्ग की यातना और अपमान की सच्चाई से अवगत कराना भी रहा होगा। क्योंकि हरीश जब कमल को ग्रामीण जीवन में होने वाली दलित घटनाओं के बारे में बताता है तो उसे विश्वास नहीं होता किंतु बारात में आने पर तब उसे असलियत महसूस होती है।

कहानी में स्पष्ट दिखाई पड़ता है कि जाति का महत्त्व बहुत है क्योंकि चायवाला जब तक कमल को नहीं जानता कि वह कहाँ से आया है तब तक चाय बना कर देने को कहता है। किंतु जैसे ही पता चलता है कि वह चूहड़ों की बारात में आया है वैसे ही पहचान जाता है कि इसकी जातिक्या है? उसका यह कथन "सहर में चूतिया बणना...में तो आदमी कू देखते ही पिछाणलूँ...कि किस जाति की है?"[2] इस ओर संकेत करता है कि व्यक्ति किस प्रकार झूठी और कि किस दम्भ पूर्ण जिंदगी जी रहा है। कहानी में लेखक इस ओर भी संकेत करता कि दलित वर्ग का व्यक्ति सवर्णवर्ग के व्यक्ति के साथ भाई का रिश्ता भी नहीं जोड़ सकता है। कहानी में रामपाल का यह कथन–"ओ सहरी जनमे हम तेरे भाई है? साले जवान सिभाल के बोल, गॉड में डंडा डाल के उलट दूँगा।"[3] इसको बखूबी प्रकट करता है। गाँव में सवर्ण समाज दलित स्त्रियों के प्रति कैसी भावना रख सकता है इसका प्रमाण कहानी के इस प्रसंग–"अरे, लौडिया को किसी गाँव में ब्याह देता तो म्हारे जैसो का भी कुछ भला हो जाता...। एक तीखी हँसी का फव्वारा छूटा। आस पास खड़े लोगों में अपनी हँसी मिला दी।"[4] में दिखाई पड़ता है। अपनी बेटी जैसी युवती के बारे में व्यक्ति के अंदर किस तरह की हीन भावना है तथा उस पर सामूहिक रूप में लोगों की हँसी, उनके अंदर की अमानवीयता की दर्शाती है।

कहानी में हरीश का सलाम से इंकार पूरे समाज की चुनौती है। प्रतिरोध के

चन्द्रधर शर्मा गुलेरी की कहानियों में व्यक्त प्रेम संवेदना

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कहानी के क्षेत्र में महज तीन कहानियाँ लिखने वाले चन्द्रधर शर्मा गुलेरी ने 'उसने कहा था' कहानी के बल पर ऐसे अमर हुए कि हिन्दी लेखकों के लिए यह मुहावरा बन गया कि ये तो गुलेरी है, इसीलिए कहा जाता है कि कम लिखो, मगर अच्छा लिखो। दो-चार रचनाएँ लिखकर भी व्यक्ति अमर हो सकता है। इस धारणा को हिन्दी कहानी के निर्माता चन्द्रधर शर्मा पुष्ट किया है।

गुलेरी की तीन कहानियाँ- 'सुखमय जीवन' , ' बुद्धु का काँटा' और 'उसने कहा था' हैं। पहली दो कहानियाँ 1910 ई० से 1915 ई० के मध्य रचित मानी जाती है। 'उसने कहा था' 1915 ई० में सरस्वती पत्रिका में प्रकाशित हुई थी। 'सुखमय जीवन' और 'बुद्धु का काँटा' कहानियाँ नयी जमीन के बावजूद बहुत चर्चित न हो सकी। लेकिन 'उसने कहा था' कहानी ने लोकप्रियता के सारे कीर्तिमान तोड़ दिये। जिस समय प्रेमचन्द और प्रसाद कहानी लेखन को सुधार रहे थे, उस समय कलात्मक उत्कर्ष की ऐसी मिसाल प्रस्तुत करना अपने आप में बड़ी बात थी।

हिन्दी कथा साहित्य में स्त्री-पुरुष संबंध, प्रेम, कर्तव्य व बलिदान का जो रुप प्रारम्भ से चलता आया है, उसकी अभिव्यक्ति गुलेरी की कहानियों में एकदम अलग है। जो दाम्पत्य जीवन प्रेमचन्द के समय में था, वह जैनेन्द्र के समय तिकोने प्रेम के रूप में सामने आया जो कई जगह बहुत संश्लिष्ट और उलझाव पूर्ण हो गया है। गुलेरी के प्रेम, कर्तव्य और बलिदान का एक क्रमिक विकास कहानियों में दिखाई पाता है।

हिंदी दलित कविता और जयप्रकाश कर्दम की कविता संवेदना

विजय कुमार

दलित साहित्य एक प्रकार से जीवन का साहित्य है कला का नहीं। यह वह साहित्य है जिसमें जीने का संघर्ष है। हिंदी दलित कविता उस मनुष्य की कविता है जो स्वतंत्रता और सम्मान के साथ जीवन जीने का अभिलाषी है। हिंदी साहित्य के इतिहास पर दृष्टि डाले तो हम देखते है कि आदिकालीन साहित्य के रासो काव्यों में कहीं भी मनुष्य की पीड़ा या शोषण को नहीं दर्शाया गया है। अपितु राज्याश्रित कवियों ने राजाओं की वीरता का अतिशयोक्ति वर्णन किया है। वह वीरता का वर्णन भी इस प्रकार–

बारह बरस लौ कूकर जीवै, अरु तेरह लौ जियै सियार
बरस अठारह क्षत्रिय जीवै, आगे जीवन कौ धिक्कार।।[1]

सिद्धों, नाथों और जैनों की रचनाओं में यद्यपि ब्राह्मणों के शोषण के खिलाफ आवाज दिखाई पड़ती है किंतु वे ईश्वर की और गुरु की सत्ता को स्थापित करने के चक्कर में उतना मुखर नहीं हो सके। भक्तिकालीन साहित्य में भी ईश्वर और मनुष्य के मिलन की ही चर्चा ज्यादा दिखाई पड़ती है। संत काव्य में यद्यपि कबीर, रैदास, दादूदयाल आदि ने सामाजिक असमानता, विडंबना, धार्मिक पाखंड का पुरजोर विरोध किया लेकिन ये संत कवि भी आत्मा-परमात्मा के मिलन, गुरु की महत्ता और नाम स्मरण की महत्ता से आगे नहीं बढ़ पाए। सगुण भक्त कवि अपने आराध्या राम और कृष्ण की भक्ति में ही व्यस्त रहे। रीतिकालीन कवि दरबारी होने के कारण राजाओं से प्रशंसा पाने के लिए रीति निरूपण के चमत्कार कौशल पूर्व ग्रंथ लिखे। जो नायक-नायिकाओं की काम-भावना तथा उनके रूप सौंदर्य तक ही सीमित रह गए। इनके लिए सामान्य मनुष्य की पीड़ा से कोई सरोकार नहीं था। अपितु इनके लिए ज्यादा महत्त्वपूर्ण था विरह में नायिका कितनी तड़प रही है। जैसे बिहारी का यह दोहा–

औधाई सीसी, सु लखि बिरह–बरनि बिललात।
बिच ही सूखि गुलाबु गौ, छीटौ छुई न गात।।[2]

आधुनिक काल में भारतेंदु युग, द्विवेदी युग में देश की स्वतंत्रता का प्रश्न ही मुखरता से दिखाई पड़ता है। चाहे तो भारतेंदु हरिश्चंद्र हो या मैथिलीशरण गुप्त, माखनलाल चतुर्वेदी आदि सभी के यहाँ देश मुक्ति का प्रश्न बड़ा है। कहीं भी मनुष्य की सामाजिक पीड़ा या शोषण का चित्रण नहीं है।

मैथिलीशरण गुप्त एक प्रकार से 'उर्मिला' जो रामायण की उपेक्षित पात्र थी, उसको केंद्र में रखकर 'साकेत' महाकाव्य की रचना की। किंतु वे भी अपने काव्य का नायक या नायिका किसी दलित या निम्न जाति के चरित्र को नहीं बना सके। लेकिन वही द्विवेदी युग में अकेले दलित कवि के रूप में हीराडोम है जो ईश्वर को कटघरे में खड़ा करते हैं–

खंभवा के फारि पहलाद के बचवले जा
ग्राह के मुँह से गजराज के बचवले...
मरले रवनवा के पलले भभिखना के
कानी अंगुरी पै धैके पथरा उठवले,
कहँवा सुवल बाँटे सुनत न बाटे अब
डोम जानि हमनी के छुए से डेरइले।।[3]

छायावादी कविता में 'मैं' की ही अभिव्याक्ति ज्यादा हुई है। प्रसाद, महादेवी, पंत के यहाँ कही भी सामाजिक शोषण के खिलाफ आवाज उठाते नहीं दिखाई पड़ते है इस युग में प्रकृति और मनुष्य के संबंध की ज्यादा मुख्यता से दिखाया गया है। साथ ही नायिका के सौंदर्य को भी उकेरने में कवि चूके नहीं है। निराला के यहाँ सामाजिक विडंबना के प्रति आक्रोश दिखाई पड़ता है। जैसे उनकी कविताओं 'तोड़ती पत्थर', 'विधवा' आदि में देख सकते हैं। किंतु वे भी जातिगत छुआ-छूत की समस्याओं को नहीं उठा पाए। इसका कारण है कि निराला जातिगत उत्पीड़न के दंश को नहीं झेले थे। इसलिए वे इस ओर ध्यान नहीं दे सके। इसी प्रकार प्रगतिवाद, प्रयोगवाद, नई कविता के कवियों ने भी समग्रता में इन प्रश्नों को अपनी कविता के विषय के रूप में नहीं चुना। त्रिलोचन की कविताओं–'नगई महरा', 'चित्रा जाम्बोदकर', नागार्जुन की 'हरिजनगाथा', 'घिन ती नहीं आती', धूमिल की 'मोचीराम' कविताओं में कुछ हद तक चीजों को रेखांकित करने का प्रयास किया है। लेकिन दलित चौतना का स्वर इसमें दिखाई नहीं पड़ता है। केवल समस्याओं को ही दर्शाया गया है।

इस प्रकार समग्रता में देखा जाए तो हिंदी साहित्य के इतिहास में दलितों के शोषण, दमन, उत्पीड़न तथा उनके संघर्ष का चित्रण किसी भी कवि या रचनाकार के यहाँ सूक्ष्मता से नहीं दिखाई पड़ता है। यही कारण है कि दलितों ने अपनी पीड़ाओं को चित्रित करने के लिए अपना साहित्य सृजित किया। इसी क्रम में दलित कविताओं के सृजन के मूल में सामाजिक और आर्थिक परिवर्तन है। दलित कविता का स्वर हिंदू धर्म के प्रति आस्थावान नहीं है। इसका कारण है हिंदू धर्म की सामंतवादी या ब्राह्मणवादी व्यवस्था।

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Local Complaints' Committees under the Sexual Harassment of Women at Workplace Act: Key to Gender Justice at Grassroot Level

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ABSTRACT

This paper is a critical analysis of the constitution, composition and functioning of the Local Complaints Committees (LCC's) that are mandated to be constituted under the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013- referred to as POSH (prevention of sexual harassment for short). The need for this analysis is imperative because it is this committee where women at workplace can seek justice if faced with sexual harassment. The LCC is constituted for specific kinds of complaints. These include the complaints from the unorganized sector like the domestic workers, labourers, daily wagers etc. It would be a big leap if the provisions of this noble Act are spread to the grassroot level. It would empower women and help question and change the deep patriarchal mindset of the Indian Society. The authors have worked as part of or observed the functioning closely. Thus the authors critically analyse the LCC's- the constitution, the composition and the functioning. They further suggest the ways to make the LCC's more proactive.

Keywords: POSH ACT, Women Empowerment, Sexual Harassment, Gender Equality.

PURPOSE:

The vision of the committee that formulates the Acts and the actual implementors on the ground are different set of people. Unless everyone on the ground understands the vision, the spirit behind formulation of the law, it may not be implemented with the enthusiasm and honesty that it so deserves. An attempt is being made to share the theoretical provisions of the Act and where the gap exists in implementation.

METHODOLOGY:

The theoretical provisions of the Act were studied in detail. Also, the practical experience of authors either as part of the LCC or as close observers reveals the ground reality. The authors and their team have been

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JUST IN 10 MINUTES: A CASE STUDY ON ZEPTO

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Avani Pandey**

ABSTRACT

This case discusses the working of Zepto, an e-commerce company founded in April 2021 in Bandra, Mumbai by two 19-year-old Stanford dropouts Aadit Palicha and Kaivalya Vohra. Well, they are not newbies in the start-up world, this is their third start-up after GoPool and Kiranakart. They came with this ground-breaking idea while sitting in their homes and waiting for their groceries to be delivered in 2-3 days. Zepto belongs to those start-up subgroups that experienced meteoric development in the post-Covid period. This case explains the development process of how the company is making it possible to deliver items in 10 minutes. Zepto has raised $360 million in funding with the lead investors being the American start up accelerator company Y Combinator and the American growth equity firm Glade Brook Capital Partners. Currently, the company has a valuation of $900 million.[1] So, the possibility that Zepto will soon turn into a unicorn is not a daft idea. However, there is a major concern surrounding Zepto' s business model as they have still not made the business profitable. Zepto is also facing tough competition from its rival Blinkit (formerly known as Grofers) who was founded in December 2013.

Keywords: *Zepto, Start-up, E-commerce, Business Model, Post-Covid.*

Introduction

Zepto is a quick e-commerce company that started its operations in 2021.

The company started its operations in Bandra, Mumbai and has subsequently extended its delivery areas to Pune, Delhi, Gurgaon, Noida, Ghaziabad, Bangalore, Chennai, Hyderabad and Kolkata.

On October 31, 2021, a total of 8 investors, led by Glade Brook Capital Partners, invested in them $60 million after which more investors began to notice them. Later, they raised additional funding through their series C and series D rounds. Y Combinator Continuity Fund became the major investor in both of these rounds.

The Series C and D rounds were held on December 20, 2021 and May 2, 2022 and raised $100 million and $200 million respectively[2].But Zepto is not the only quick commerce start-up that is backed by strong funding, it is up against fierce competition in India from Blinkit. Blinkit has received backing from 24 investors and has gone through a total of 19 fundraising rounds. Blinkit is currently valued at $1 billion[3]. And then there is also Dunzo which is backed by Google.

Zepto' s tagline is "Groceries delivered in 10 minutes". They do this with the help of Dark stores. They are nothing but warehouses that are not open to the public and are located in such area in the neighbourhood where demand is high.Only commonly requested commodities are kept in these warehouses, preventing the loss of unsold stock. Zepto' s dark stores are designed in a way so that orders are filled as rapidly as possible, effectively and efficiently reducing time. Currently, Zepto is delivering 2500+ goods, including food and drink, personal care products, fresh produce, home cleaning supplies, and snacks and beverages, from its 100+ dark stores. As stated by the CEO of zepto Aadit Palicha the average delivery time taken by Zepto is 8 minutes and 47 seconds.

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1 https://www.crunchbase.com/organization/zepto-29b1
2 https://timesofindia.indiatimes.com/topic/zepto
3 https://www.crunchbase.com/organization/grofers-trusted-delivery-partner

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GENDER BUDGETING : NOT AN ACCOUNTING EXERCISE BUT AN ONGOING PROCESS

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ABSTRACT

The paper initiates by introducing readers to the concept of gender budgeting and how it should not be mistaken for a separate budget but a tool to make the budget more gender sensitive and bridge the inequalities between men and women. The paper is specific to India and attempts to describe why do we need gender budgeting and what are the components of it. Data is collected from 2018 to 2022 and critically evaluated to determine the percentage of funds allocated to fulfil gender specific needs as a percentage of the total budget. The paper further highlights current position of India in terms of progress made over the years in gender budget. The conclusion of the paper raises various questions about what are the problems that prevail in the current gender budgets. The researchers have tried to give some recommendations to reduce the above stated deficiencies and address the multi-dimensional inequalities that exist for women in India. This will in turn promote dignified position for Indian women.

Key Words*: Budgeting, Gender Budgeting, Gender sensitive budgeting, gender equality*

Introduction

The advancement of a country is inextricably related to the standing of its women. In other words, a country cannot flourish unless the well-being of half of its population is guaranteed. Article 14 of the Constitution of India states as following: “The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India.” We can infer from this that the concept of 'equal protection of the laws' demands the State to provide special treatment to persons in various situations in order to achieve equality for everyone.

Gender-sensitive budgeting does not mean dividing budgets for women; rather, it tries to address financial gender inequality concerns including gender hierarchies and income differences between men and women in order to meet gender-specific demands without jeopardising the budget's gender neutrality. It might also be viewed as a much-needed feminist or equality-oriented strategy, with the primary purpose of re-orienting public resource allocation, pushing for a more advanced

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A Study On Women Empowerment Of Self-Help Group With Reference To Indian Context

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Abstract

Empowerment is really a group of procedure, which usually assists individuals to obtain power over their own life via increasing consciousness, getting actions plus doing work in purchase in order to exercising higher handle. Personal strength may be the sensation that will triggers the particular mental power to complete your objectives. The research is regarding examining the particular self-employment of women's across the nation. The conclusion is that the women empowerment appraisal of self-help groups has a higher impact on the women empowerment style particularly with critical women empowerment style and that can be used for effective work by the women business persons with the society which leads to increase in the turnover of

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A STUDY ON THE IMPACT OF SERVICE QUALITY, CUSTOMER SATISFACTION AND CUSTOMER LOYALTY IN ONLINE TRAVEL AGENCIES

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Abstract

Internet tourism has altered the dynamic between service suppliers and conventional middlemen. Internet travel business models launched in response to the rise in popularity of online travel sites as a means of making travel plans and purchases. Websites that allow users to bid on and compare prices, as well as vertical search engines and travel review aggregators, fall under this category. With the advent of internet travel and tourism services, travelers and tourists from across the world may now communicate their desires and requirements. The main aim of the study was to examine the influence of E-service quality on the perceived customer value, customer satisfaction and customer loyalty. The study on the impact of service quality and customer satisfaction on customer loyalty in online travel agencies was surveyed with 250 sample respondent's selected using convenient sampling technique. The data from the selected sample respondents have been collected through the Google forms. The findings of the study , will be helpful for travel firms and tourism officers .The study concluded that the service quality of the online travel agencies are not up to the mark of expected level of the customers.

Keywords

Customer satisfaction, Customer loyalty, On-line travel Agencies and Service quality.

1. Introduction

Travel agencies wrinkle information on prospective clients' exodus and appearance dates, flight time, style of lodging (economy or business class), and the number of individuals travelling in a group before making a booking. Ling, et al., (2014)[1]. Travel companies utilize the internet to obtain information about their consumers. This issue will be encountered by anyone who register on the travel agency's website to enquire about certain places[2], almost all domestic and

[1] Ling, L., Guo, X., & Yang, C. (2014). "Opening the online marketplace: An examination of hotel pricing and travel agency on-line distribution of rooms". Tourism management, 45, pp.234-243

[2] Chiou, W.-C., Lin, C.-C., & Perng, C. (2011). "A strategic website evaluation of online travel agencies. Tourism Management", 32(6), pp.1463–1473

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A DESCRIPTIVE STUDY ON FACTORS INFLUENCING INVESTMENT DECISION TOWARDS MUTUAL FUNDS

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Abstract

In today's volatile economy, many investors believe that mutual funds are their best bet. Investing in mutual funds may be done in a variety of ways. Investors' willingness to invest in mutual funds became a focus of investigation. Even though mutual fund investments include a degree of risk, the mutual fund business is expanding at a rapid pace. Researchers in this study are interested in learning about the many characteristics that entice prospective investors to participate in mutual funds, so mutual fund businesses may devise a plan to attract more investment from the market. Regardless of the amount invested, it serve by way of a conduit to ordinary investors to place their resources in a professional funds management system. The aim of the paper is to analyze the factors mostly considered by the investors towards selecting the mutual funds in India. The study has been carried out during the month of January, 2022. The investors who prefer to invest in the mutual funds are purposively selected using convenient sampling technique. The sample size is 600. The primary data collected through the interview schedule. The factors considered by the respondents are analyzed with the help of descriptive statistics. The author concluded that in order to broaden the mutual fund market's reach, product designers should devise methods for introducing unique goods; fund managers, who decide on different parts of the scheme, should develop products that are creative. The author concluded that tax saving schemes, Awareness for closed ended and Inter relationship between Risk & Return are the three factors which influence the investors for selecting mutual fund.

Keywords

Mutual funds, NAV, Risk appetite, pool of money, decision making, investment and volatility of risk.

1. Introduction:

A mutual fund is a financial intermediary that combines the funds of investors for collective investment in a diverse portfolio of assets. Investees participate in the fund's profits and losses equally, making it a "mutual" investment. Mutual funds are accessible to everybody with even a little amount of extra cash to invest. To achieve a certain financial goal, these investors purchase units in an established mutual fund plan. The fund manager then makes various investments using the money

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A research Study on Impact of Covid-19 on Investors Perception

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Abstract

This paper gives proof from funding experiments carried out with monetary specialists in December 2019 and March 2021. Our experimental technique permits us to govern loads of disruptive elements that arise throughout an actual monetary disaster or inventory marketplace crash. Financial specialists have located that funding in experiments throughout an inventory marketplace crash is 12% much less than before. The fundamental motive of this paper is to locate investor consciousness in COVID 19. For this, we used sample-sized from 50 traders. We located that gender and ordinary earner of traders performed a crucial function throughout covid19.

Key Words: Covid-19, Investors' Perceptions, Financial Management

INTRODUCTION

Human desires are limitless and to fulfil those limitless desires, finances are required which can be restrained in nature. Besides, destiny is unsure and to dispose of such uncertainties related to the destiny in economic terms, one has to make investments part of their profits in exclusive funding alternatives to be had within side the market, thinking about their economic goals. As Robbins L. (1932) outline economics as "Economics is a observe of the allocation of scare means, able to opportunity uses, amongst competing ends for the attainment of a most bring about the fulfillment of those ends." This definition rightly highlights that the sources at our disposal are very restrained in nature and feature opportunity uses. Funds are one of the maximum critical useful resources without which no economic pastime may be carried out. It is consequently required now no longer best to fulfill modern-day intake requirement of an man or woman however additionally to fulfill destiny contingencies and economic objectives.

In order to fulfill destiny contingencies and economic objectives, man or woman's should store part of their profits, with the aid of using sacrificing their current intake requirement for reinforcing their destiny economic protection with the aid of using making an investment their surplus finances. It is profitable to mention, the citation of Graham and Qadd‟s (Bhatt, 2008) here, "An funding operation is one which, upon thorough evaluation guarantees protection of major and an good enough return. Operation now no longer assembly this requirement is speculative."

For the reason of creating investments, one has to put together economic plan thinking about the funding options to be had within side the market. These funding options includes- financial institution constant deposits, NSC, lifestyles insurance, public provident finances, treasured metals, actual estate, publish workplace certificates, stocks, debentures, etc. (Kevin, 2011) (Sasidharan & Mathews, 2011) (Pandian, 2012).

A well-evolved economic device is critical for the improvement of an economic system because it will channelize finances from the excess zone to the deficit sectors thereby making

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IMPACT OF ENTERPRISE RISK MANAGEMENT ON ENHANCING COMPETITIVE ADVANTAGE AMONG BUSINESS ORGANISATIONS BY MODERATING ROLE OF INFORMATION TECHNOLOGY

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ABSTRACT

Globalisation, restructuring, ecological factors, technology changes, intricate financial models, and adjustments in governance practices are just some of the dangers that firms face today. The main goal of this study is to investigate the impact of "Enterprise Risk Management (ERM)" on "Competitive Advantage (CA)" by examining the moderating function of information technology factors such as "IT plan and IT architecture". ERM had a favourable link with the businesses' competitive advantage, according to the findings of this study. The findings also revealed that "IT strategy plan" had a direct impact on competitive advantage, as well as a moderate "impact on the ERM-competitive opportunity link". It also builds on earlier ERM research by experimentally assessing ERM, IT, competitive advantage, and their interrelationships. This article explores the value of ERM implementation in firms and how it may help them gain a competitive edge.

Keywords: *Competitive advantage, "Enterprise Risk Management (ERM)", IT strategy, Technology, Information Technology.*

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IMPLEMENTATION OF INNOVATIVE STRATEGIES ON ENTREPRENEURSHIP BUSINESS AS A DRIVER FOR ECONOMIC DEVELOPMENT AMONG EMERGING ECONOMIC

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ABSTRACT

Many organisations have realised in latest days that in order to stay alive in this turbulent and able to compete global ecosystem, it is reasonable to examine the requirements and aspirations of their relevant parties, as well as to make the economy partnerships more efficient and to implement ethical behaviours. This realisation is due to the rapid introduction of newer technology solutions and the increasingly rapid economically and socially change. Social businesses may be the answer since they offer a 21st-century company model that achieves a balance between growth, financial, cultural, social, and environmental demands throughout their operations. Indeed, themes such as social economics and enterprise, as well as social enterprise, have emerged and developed in recent decades. Social entrepreneurship may and should result in economic well-being and social development as a key technology, job creation, and productivity expansion. In this respect, it is indeed worth noting that social entrepreneurs' efforts may have a significant influence on people's condition of life all over the world. Furthermore, social entrepreneurship is a complicated and diverse notion that has piqued the interest of a number of scholars over the years. The purpose of this study is to clarify the terms "social entrepreneurship" and "quality of life," as well as to show how they are related in underdeveloped countries. In order to collect information regarding entrepreneurship and its impact on economic development, this research paper has considered secondary data collection method to gather factual and effective information related to the study.

Keywords: *Entrepreneurship, Economy, Economic development, Countries, Sustainable*

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MAKING SENSE OF MEDIATING ANALYSIS OF EMPLOYEE AWARENESS AND TRAINING IN RELATIONSHIP BETWEEN E-HRM PRACTICES AND ORGANIZATIONAL-EMPLOYEE PERFORMANCE USING SEM ANALYSIS

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Abstract:

The aim of the descriptive research study was to know the mediating effect of employee awareness and the employee training in relationship between the various digital human resource management practices and its impact on the organizational and employee performance. **Findings:** The outcome of the research witnessed that the employee awareness and the employee training are essential aspects to bring the sophisticated changes with respect to human resource management practices by implementation of digitalization practices in the organization. **Research Design/Methodology/Approach:** The researcher has developed a structured open-ended questionnaire to collect data from various respondents. Applied descriptive and inferential statistics like: Mean, SD, Correlation, Regression, Confirmatory Factor analysis, structural equation modelling. **Novelty:** The model developed with the two different new constructs as mediators in between the digital human resource management practices and the outcome of organizational-environmental performance and at the middle, employee awareness and the training. **Social Relevance:** The outcome of the research can be applied where; the need arises to implement the digital human resource management practices to bring the advancements in the organizational performance. **Generalizability:** The outcome of the research can be generalized under any circumstances where, the similar circumstances arise to implement E-HRM practices in the organization. **Novelty:** It is a novel model where two different constructs used as mediators like: employee awareness and employee training in between facilitating factors of E-HRM and organizational and employee performance in the organization. **Type of the Research:** It is a descriptive research design by nature.

Keywords: E-HRM, Digital HRM practices, Electronic HRM practices, Digital human resource management practices, Digitalization of HRM practices.

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GERMINATION AND GROWTH ANALYSIS OF WHEAT, BARLEY, AND OAT FOR HEALTH BENEFIT COMPONENTS IN GRAIN

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Abstract: Cereal grains provide half of the calories consumed by humans. In addition, they contain important compounds beneficial for health. During the last years, a broad spectrum of new cereal grain-derived products for dietary purposes emerged on the global food market. Special breeding programs aimed at cultivars utilizable for these new products have been launched for both the main sources of staple foods (such as rice, wheat, and maize) and other cereal crops (oat, barley, sorghum, millet, etc.). The breeding paradigm has been switched from traditional grain quality indicators (for example, high bread making quality and protein content for common wheat or content of protein, lysine, and starch for barley and oat) to more specialized ones (high content of bioactive compounds, vitamins, dietary fibers, and oils, etc.).

Keywords: *barley; breeding; marker-assisted selection; genes; genetic resources; genome editing; health benefits; metabolomics; oat; QTL; wheat*

Introduction

Cereal crops are the main food and feed sources worldwide, supplying more than half of the calories consumed by humans. An overwhelming majority of plant breeders and geneticists work on no other crops but cereals. Breeding methods depend on the biological features of a crop and on the genetic research standards, traditions, economic objectives, and levels of agricultural technologies in the country where plant breeding is underway. The general breeding trend of the past decades, however, was finding solutions to the problem of higher yields in cereal crops; furthermore, special attention was paid in many countries to increasing plant resistance against diseases and various abiotic stressors. The concentration of all efforts on these two targets and none other resulted in a certain decline in the genetic diversity in those plant characters that are associated with the biochemical composition of cereal grain.

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BIOCHEMICAL ANALYSIS OF WHEAT, BARLEY, FOR HEALTH COMPONENTS IN GRAIN

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ABSTRACT:

The presents Studies, Some of the latest biochemical research endeavors that aim to improve our understanding of how the various grain components can be manipulated to improve contributions of cereals to human health. The health benefits of wholegrain cereal products are now widely recognized and considered due to the presence of a wide range of bio-active components. Cereals in their natural form (as whole grain) are rich source of vitamins, minerals, carbohydrates, fats, oils, and protein. Also, such cereals are chosen for consumption and they have the higher fiber which is an important nutrient that helps to prevent weight gain and heart disease. For best results, fruits, vegetables and whole grains may be eaten every day to provide extra nutrition and fiber. The meal can be made healthier by eating high-fiber whole-grain cereals that has low sugar. However, eating a variety of cereals rather than just feeding on one item is more helpful to health.

Key words: *Cereal, grain, human, health, diet,*

INTRODUCTION

The term cereal is a derivative from Latin word 'cerealis' meaning ‘grain’ which is botanically, a type of fruit called a caryopsis, composed of the endosperm, germ, and bran. The cereals are annual common grass members of the grass family (a monocot family Poaceae, also known as Gramineae), which usually have long, thin stalks, such as wheat, rice, maize, sorghum, millet, barley and rye, whose starchy grains are used as food. The term cereal is not limited to these grains, but, also refers to foodstuff prepared from the starchy grains of cereal like flours, breads and pasta. Cereal science is a study concerned with all technical aspects of cereal. It is to study the nature of the cereals and the changes that occur naturally, and as a result of handling and processing.

Cereals constitute the major source of calories for humans as rice in India and the Far East, maize in Mexico and wheat and barley in Europe and North America. Staple food grains are often called corn.

Materials AND Methods

biomolecules

MDPI

Article

Myristic Acid Supplementation Aggravates High Fat Diet-Induced Adipose Inflammation and Systemic Insulin Resistance in Mice

Viswanathan Saraswathi [1,2,*], Narendra Kumar [1,2], Weilun Ai [1,2], Thiyagarajan Gopal [1,2], Saumya Bhatt [1,2], Edward N. Harris [3], Geoffrey A. Talmon [4] and Cyrus V. Desouza [1,2]

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Abstract: Saturated fatty acids (SFAs) are considered to be detrimental to human health. One of the SFAs, myristic acid (MA), is known to exert a hypercholesterolemic effect in mice as well as humans. However, its effects on altering adipose tissue (AT) inflammation and systemic insulin resistance (IR) in obesity are still unclear. Here, we sought to determine the effects of a high fat (HF) diet supplemented with MA on obesity-associated metabolic disorders in mice. Wild-type C57BL/6 mice were fed a HF diet in the presence or absence of 3% MA for 12 weeks. Plasma lipids, plasma adipokines, AT inflammation, systemic IR, glucose homeostasis, and hepatic steatosis were assessed. The body weight and visceral adipose tissue (VAT) mass were significantly higher in mice receiving the HF+MA diet compared to HF diet-fed controls. Plasma total cholesterol levels were marginally increased in HF+MA-fed mice compared to controls. Fasting blood glucose was comparable between HF and HF+MA-fed mice. Interestingly, the plasma insulin and HOMA-IR index, a measure of insulin resistance, were significantly higher in HF+MA-fed mice compared to HF controls. Macrophage and inflammatory markers were significantly elevated in the AT and AT-derived stromal vascular cells upon MA feeding. Moreover, the level of circulating resistin, an adipokine promoting insulin resistance, was significantly higher in HF+MA-fed mice compared with HF controls. The insulin tolerance test revealed that the IR was higher in mice receiving the MA supplementation compared to HF controls. Moreover, the glucose tolerance test showed impairment in systemic glucose homeostasis in MA-fed mice. Analyses of liver samples showed a trend towards an increase in liver TG upon MA feeding. However, markers of oxidative stress and inflammation were reduced in the liver of mice fed an MA diet compared to controls. Taken together, our data suggest that chronic administration of MA in diet exacerbates obesity-associated insulin resistance and this effect is mediated in part, via increased AT inflammation and increased secretion of resistin.

Keywords: myristic acid; saturated fatty acids; obesity; insulin resistance; adipose inflammation

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1. Introduction

Consumption of saturated fatty acids (SFAs) is strongly associated with metabolic syndrome and cardiovascular disease (CVD) (reviewed in [1–3]). However, SFAs appear to exert differential effects on metabolic disorders, depending on their chain length. For example, the short- and medium-chain SFAs are beneficial against metabolic disorders [4,5] whereas, the long-chain SFAs are considered to increase the risk for CVD [6]. Regarding the

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Early treatment with anti-$\alpha_4\beta_7$ antibody facilitates increased gut macrophage maturity in SIV-infected rhesus macaques

Samuel D. Johnson[1,2], Lindsey A. Knight[2], Narendra Kumar[2], Omalla A. Olwenyi[1,2], Michellie Thurman[2], Smriti Mehra[3], Mahesh Mohan[3] and Siddappa N. Byrareddy[2,4,5]*

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Despite advances in combination antiretroviral therapy (cART), people living with HIV (PLWH) continue to experience gastrointestinal dysfunction. Infusions of anti-$\alpha_4\beta_7$ monoclonal antibodies (mAbs) have been proposed to increase virologic control during simian immunodeficiency virus (SIV) infection in macaques with mixed results. Recent evidences suggested that therapeutic efficacy of vedolizumab (a humanized anti-$\alpha_4\beta_7$ mAb), during inflammatory bowel diseases depends on microbiome composition, myeloid cell differentiation, and macrophage phenotype. We tested this hypothesis in SIV-infected, anti-$\alpha_4\beta_7$ mAb-treated macaques and provide flow cytometric and microscopic evidence that anti-$\alpha_4\beta_7$ administered to SIV-infected macaques increases the maturity of macrophage phenotypes typically lost in the small intestines during SIV disease progression. Further, this increase in mature macrophage phenotype was associated with tissue viral loads. These phenotypes were also associated with dysbiosis markers in the gut previously identified as predictors of HIV replication and immune activation in PLWH. These findings provide a novel model of anti-$\alpha_4\beta_7$ efficacy offering new avenues for targeting pathogenic mucosal immune response during HIV/SIV infection.

KEYWORDS

simian immunodeficiency virus (SIV), $\alpha_4\beta_7$ integrin, microbiome, butyrate, myeloid cells, macrophage maturation, mucosal immunology, viral reservoir

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The 2022 outbreak and the pathobiology of the monkeypox virus

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ABSTRACT

Following two reports of monkeypox virus infection in individuals who returned from Nigeria to the USA, one who returned to Texas (July 2021) and the other to the Washington, DC area (November 2021), the number of monkeypox infection have dramatically increased. This sounded an alarm of potential for spreading of the virus throughout the USA. During 2022, there was a report of monkeypox virus infection (May 6, 2022) in a British national following a visit to Nigeria who developed readily recognizable signs and symptoms of monkeypox virus infection. Soon following this report, case numbers climbed. By June 10, 2022, more than 1,500 cases were reported in 43 countries, including Europe and North America. While the prevalence of the monkeypox virus is well known in central and western Africa, its presence in the developed world has raised disturbing signs for worldwide spread. While infection was reported during the past half-century, starting in the Democratic Republic of Congo in 1970, in the United States, only sporadic monkeypox cases have been reported. All cases have been linked to international travel or through African animal imports. The monkeypox virus is transmitted through contact with infected skin, body fluids, or respiratory droplets. The virus spreads from oral and nasopharyngeal fluid exchanges or by intradermal injection; then rapidly replicates at the inoculation site with spreads to adjacent lymph nodes. Monkeypox disease begins with constitutional symptoms that include fever, chills, headache, muscle aches, backache, and fatigue. Phylogenetically the virus has two clades. One clade emerged from West Africa and the other in the Congo Basin of Central Africa. During the most recent outbreak, the identity of the reservoir host or the primary carriage remains unknown. African rodents are the suspected intermediate hosts. At the same time, the Centers for Disease Control (CDC) affirmed that there are no specific treatments for the 2022 monkeypox virus infection; existing antivirals shown to be effective against smallpox may slow monkeypox spread. A smallpox vaccine JYNNEOS (Imvamune or Imvanex) may also be used to prevent infection. The World Health Organization (WHO), has warned that the world could be facing a formidable infectious disease challenge in light of the current status of worldwide affairs. These affairs include the SARS-COVID-19 pandemic and the Ukraine-Russia war. In addition, the recent rise in case of numbers worldwide could continue to pose an international threat. With this in mind, strategies to mitigate the spread of monkeypox virus are warranted.

Abbreviations: AIDS, Acquired Immunodeficiency Syndrome; cART, Combination Antiretroviral Therapy; CDC, Centres for Disease Control and Prevention; COVID-19, Coronavirus disease 2019; DNA, Deoxyribose Nucleic Acid; DRC, Democratic Republic of Congo; ELISA, Enzyme Linked Immunosorbent Assay; EMA, European Medicines Agency; EA-IND, Expanded Access Investigational New Drug; FDA, Food and Drug Administration; HIV, Human Immunodeficiency Virus; MPV, Monkeypox Virus; MSM, Men having Sex with Men; MTCT, Mother-to-Child Transmission; MVA, Modified Vaccinia Virus Ankara; PCR, Polymerase Chain Reaction; PLWH, People Living With HIV; PPE, Personal Protective Equipment; RNA, Ribose Nucleic Acid; RT-PCR, Real time Polymerase Chain Reaction; SARS-CoV-2, Severe Acute Respiratory Syndrome Coronavirus 2; STDs, Sexually Transmitted Diseases; TCR, T-cell Receptor; VIGIV, Vaccinia Immune Globulin Intravenous; WHO, World Health Organization.

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ORIGINAL RESEARCH

Effect of change in environment on reliability growth modeling integrating fault reduction factor and change point: a general approach

Vikas Dhaka[1] · Nidhi Nijhawan[2]

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Abstract

This paper presents a generalized software reliability modeling framework that predominantly encompasses randomness of field environment, fault reduction factor (FRF), and change point to study their simultaneous effect on software bug removal process. To address and capture unpredicted randomness of the field environment in testing phase it is assumed that the environment before and after a change point may not be the same and therefore there is a need to consider distinct environment factors before and after the change point in the modeling of bug removal action. Based on the general approach, three new change point-based software reliability growth models (SRGMs) are proposed incorporating time-dependent exponentiated Weibull (EW) FRF and distinct random environment distributions. To elaborate, in SRGM-I and SRGM-II, a steady environment is supposed before the change point whereas one-parameter exponential environment is assumed after the change point in SRGM-I and a two-parameter Gamma environment is considered after the change point in SRGM-II while in SRGM-III, exponential environment before change point and Gamma environment after change point are taken into consideration. In addition, a few established FRF-based models are deduced from the proposed general approach. Estimation of parameters of proposed SRGMs is carried out in two phases using three real test data sets and their validation is evaluated through several performance measures including coefficient of determination, mean square error, bias, variation, root mean square prediction error and Akaike information criteria. Fitting of the models to the datasets is also examined in related goodness of fit curves. Further, numerical illustration is worked out to conduct a cost-reliability assessment and suggest optimum release time.

Keywords SRGM · Random environment · Fault reduction factor · Change point · Software reliability · Release time

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Application of homotopy analysis method (HAM) to the non-linear KdV equations

Astha Chauhan and Rajan Arora

Abstract. In this work, approximate analytic solutions for different types of KdV equations are obtained using the homotopy analysis method (HAM). The convergence control parameter h helps us to adjust the convergence region of the approximate analytic solutions. The solutions are obtained in the form of power series. The obtained solutions and the exact solutions are shown graphically, highlighting the effects of non-linearity. We have compared the approximate analytical results which are determined by HAM, with the exact solutions and shown graphically with their absolute errors. By choosing an appropriate value of the convergence control parameter, we can obtain the solution in few iterations. All the computations have been performed using the software package MATHEMATICA.

1 Introduction

Many nonlinear physical phenomena arise in various fields of engineering and science such as fluid dynamics, nuclear reactor dynamics, plasma physics, biology, optical fibres and solid state physics. To describe these complex physical phenomena, nonlinear differential equations play a significant role. Therefore, obtaining the solutions of these nonlinear equations is a topic of great interest in the study of many fields of science. To better understand the working of the physical problem, mathematical model came into picture in the form of nonlinear PDEs. The solutions of partial differential equations give the detailed summary about the nature of phenomena involved. Many numerical and analytical methods have been derived to deal with these kind of scientific problems.

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Keywords: KdV equations, Homotopy analysis method, Approximate series solutions, Convergence control parameter, Symbolic computation.
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Physics of Fluids ARTICLE scitation.org/journal/phf

Shock wave propagation in a non-ideal rotating medium with azimuthal magnetic field effect using Lie group technique

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ABSTRACT

The present article demonstrates the propagation of a strong cylindrical shock wave in a rotating adiabatic flow of a van der Waals gas in the presence of an azimuthal magnetic field. Using the Lie group technique, self-similar solutions are obtained with an assumption of uniform density in the undisturbed medium. In contrast, the azimuthal component of the fluid velocity and the magnetic field are supposed to vary. The profiles of the flow variables are depicted graphically, followed by a brief discussion on the behavior of the solutions obtained through the graph. The effects of variation in the values of the adiabatic index, Alfvén Mach Number, non-idealness parameter, and the ambient azimuthal velocity exponent on the flow variables are discussed in detail. The computational work is performed by using Mathematica (a software package).

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I. INTRODUCTION

Many interesting phenomena arising in nature are modeled in mathematical forms with the help of non-linear partial differential equations. These partial differential equations (PDEs) play a prominent role in different areas of science such as astrophysics, plasma physics, combustion theory, gas dynamics, and cosmology. Non-linear models arising in the real world often face serious mathematical difficulties such as discontinuity and resonance between wave speeds. It is a challenging task for researchers all around the world to obtain solutions for non-linear PDEs. In the case of non-linear PDEs, the superposition law does not hold; therefore, at present, there is no general technique to obtain the analytical solution for such non-linear PDEs, and each problem requires a special technique to obtain its solution. To obtain the solutions of non-linear PDEs, several analytical and numerical techniques have been introduced in the literature by researchers.

The classical Lie group method[1] is widely used to obtain solutions to the problem of gas dynamics involving shock phenomena modeled by non-linear PDEs. The basic idea of this method is that it reduces the dimension of the one-dimensional system of non-linear PDEs, which represents the flow field, by one. For the basic concepts and applications of the classical Lie group method of invariance, one can go through Refs. 2–7.

The study of shock waves has been always remained an attractive topic for researchers in the scientific community because of its vast applications in many fields such as astronomy, astrophysics, and star formation. Shocks are generated by volcanic eruptions, earthquakes, and meteorite impacts. In the present article, we have studied the cylindrically symmetric motion of strong shock waves for an unsteady rotating gas in a non-ideal medium under the presence of an azimuthal magnetic field. For our study, we have considered a single fluid one-dimensional model of Euler–Poisson equations in a rotating magnetogasdynamics model. "When the energy of the electric field is much smaller than that of a magnetic field, then all the electromagnetic quantities can be expressed in terms of a magnetic field, then only the interaction between gas-dynamic field and magnetic field can be considered. Such analysis is known as a Magnetogasdynamics." Magnetic field effects have various applications in the investigation of cylindrical shock waves including experiments on pinch effects and in many areas of science such as astrophysics, aerodynamics, oceanography, and atmospheric sciences. There is vast literature related to the study of the propagation of shock waves in the presence of a magnetic field (see Refs. 8–13). Pai and Speth[9] investigated the general R–H conditions for a shock wave in radiation magnetogasdynamics. Vishwakarma *et al.*[14] studied the problem of shock waves in magnetogasdynamics, and obtained an exact similarity solution for their problem.

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डॉ. संतोष सैन

उषा प्रियंवदा के कथा-साहित्य में भारतीय जीवन-मूल्य

समकालीन हिंदी लेखन में उषा प्रियंवदा का नाम चर्चित रहा है। उनके कथा लेखन में मुख्य रूप से आधुनिक जीवन की ऊब, घुटन, तनाव, अजनबीपन, उससे उत्पन्न संत्रास, बनते-बिगड़ते रिश्ते, बनती-बिगड़ती जिंदगी, पढ़े-लिखे व्यक्तियों की मानसिक यंत्रणा का अंकन रहा है। जीवन का यथार्थ चित्रण उषा प्रियंवदा की रचना के केंद्र में है। उन्होंने टूटते परिवेश में जीवन की परिवर्तनशीलता और जीवन-मूल्यों को गहरी मार्मिकता एवं सहानुभूति से अभिव्यक्त किया है। लेखिका ने अपने कथा लेखन में बदलते हुए जीवन मूल्यों, बदलती हुई मान्यताओं, विश्वासों और परिस्थितियों के बदलाव को आधार बनाया है। आज का व्यक्ति नई परिस्थिति में स्वयं से टूटते हुए, जिंदगी से जूझते हुए आर्थिक संकट से संघर्ष कर रहा है। मध्य वर्ग कभी आदर्श तथा नैतिकता से जूझता है, तो कभी आधुनिक यथार्थ से। यही लेखिका के कथा साहित्य के केंद्र में है।

पचपन खंभे लाल दीवारें, रुकोगी नहीं राधिका, शेष यात्रा, अंतर्वंशी उपन्यासों में जीवन-मूल्यों की अभिव्यक्ति में लेखिका पूर्णतः सफल रही है। उनके पात्र आधुनिक व्यक्ति की संवेदना और अनुभव के एकदम निकट है। वर्तमान और अतीत के बीच आधुनिक व्यक्ति की मनःस्थितियों, द्वंदों एवं जीवन संघर्षों को मार्मिकता से अभिव्यक्त किया है। उषा प्रियंवदा के उपन्यासों के सभी पात्र आधुनिक हैं। आधुनिक व्यक्ति किसी-न-किसी समस्या से त्रस्त है। ये सभी पात्र आधुनिक मध्यवर्गीय एवं उच्चवर्गीय समाज से लिए गए हैं। उनके पात्र कभी भारतीय परिवेश से जुड़े हुए हैं तो कभी विदेश की धरती से। ये सभी पात्र अपनी सारी कमियों, खूबियों के बावजूद हमारे सामने आदर्श जीवन-मूल्यों के साथ प्रस्तुत हुए हैं। उनके उपन्यासों में मध्यवर्गीय जीवन है। जिससे उनके कथा साहित्य में विविधता है। जीवन-मूल्यों और विश्वासों तथा संस्कारों के संघर्ष की, रिश्तों की मार्मिकता की अभिव्यक्ति है। इस दृष्टि से उषा प्रियंवदा का 'पचपन खंभे लाल दीवारें' सर्वप्रसिद्ध है।

'पचपन खंभे लाल दीवारें' की आधुनिक स्त्री पात्र सुषमा अजनबीपन एवं अकेलेपन के कारण अपने ही परिवार के द्वारा शोषण का शिकार होने के बावजूद भी नारीमय आदर्श और जीवन-मूल्यों का निर्वाह करती है। नारी जहाँ आत्मनिर्भर होकर समाज में अपनी पहचान बनाती है वहीं उसे इस आत्मनिर्भरता का मूल्य भी चुकाना पड़ रहा है। सुषमा संस्कारी है। और संस्कारों

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समीक्षा आलेख

भारतेंदु के नाटकों का वैविध्य

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शोध सारांश

नवजागरण के अग्रदूत भारतेंदु के नाटकों में उनके संयत और सामंजस्यपूर्ण दृष्टिकोण का परिचय मिलता है। देशोद्धार की भावना से परिपूर्ण भारतेंदुने अपने नाटकों में राष्ट्रीय और समाज-सुधार सम्बन्धी विचारों को प्रभावशाली रूप में अभिव्यक्त किया है। अपने नाटकों के द्वारा भारतेंदु सीधे भारतीय जनता से सम्वाद करते हुए आम जनता की समस्याओं को अत्यंत ही विरोधी तेवरों के साथ अपने नाटकों में अभिव्यक्त करते हुए भारतीय संस्कृति के महत्त्व को उजागर करते हैं और आधुनिकता के पक्षकार बनकर समाज की विभिन्न समस्याओं पर गंभीर चिंतन तो करते हैं लेकिन साथ ही समाधान भी खोज निकालते हैं। इन्हीं सभी क्रियों पर विचार करते हुए भारतेंदु के साहित्य चिन्तन के विविध आयामों पर प्रकाश डालने का प्रयास इस लेख में किया गया है।

बीज शब्द :

नाटक, साहित्य, समाज, संस्कृति, भविष्यद्रष्टा, देशोद्धार, आधुनिकता के पक्षधर, सामाजिक और धार्मिक बाह्य आडम्बरों का विरोध, सामाजिक रुढियों से मुक्ति।

भारतेंदु के साहित्य की सबसे बड़ी विशेषता है सामाजिक और सांस्कृतिक पक्ष। उन्होंने सामाजिक और सांस्कृतिक क्षेत्रों में कार्य करते हुए साहित्य को भी साधारण जनता के साथ जोड़ दिया। साहित्य, समाज और भारतीय संस्कृति को लेकर भारतेंदु का उत्साह अदम्य था। अतः समाज के कल्याण के लिए, देश के उद्धार के लिए, राष्ट्र की सेवा का ध्येय लेकर साहित्य सृजन किया। एक समाज सुधारक की नजर से और भविष्य द्रष्टा की भांति उन्होंने यह भांप लिया कि एक स्वतंत्र राष्ट्र की पहचान और उन्नति अपनी भाषा से ही संभव है -

"निज भाषा उन्नति अहै, सबै उन्नति को मूल।
बिन निज भाषा ज्ञान के, मिटत न हिय को सूल।"[1].

सं.डॉ. नागनाथ कुंटे, पृ.सं. ७१

२. बंद स्पर्श — माहेश्वरी, पृ.सं. ४६

३. सुनो मालिक सुनो — मैत्रेयी पुष्पा, पृ.सं. १८०

४. गोमा हंसती है (अपनी बात) — मैत्रेयी पुष्पा, पृ.सं. १२

५. सुनो मालिक सुनो — मैत्रेयी पुष्पा, पृ.सं. १८१

६. वही, पृ.सं. १८१

७. वही, पृ.सं. १८४

८. वही, पृ.सं. १८४

९. वही, पृ.सं. १८५

१०. वही, पृ.सं. १८५

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स्त्री विमर्श : हिंदी सिनेमा के सन्दर्भ में

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आजकल स्त्री—अधिकारों, स्त्री—अस्मिता और स्त्री — चर्चा जहाँ कहीं भी हो चाहे वह किसी भी विषय से आरम्भ हो किन्तु उसका अंत स्त्री—अधिकारों, स्त्री—अस्मिता और संघर्ष पर ही होता है। प्रत्येक स्त्री, प्रत्येक दूसरा पुरुष (चाहे भीतर से वह स्वयं कितना ही बड़ा भेड़िया हो), प्रत्येक तीसरा साहित्य, हर चौथा सेमिनार और इनके सबके ऊपर बैठी राजनीती सभी के भीतर स्त्री—अस्मिता और अधिकारों की चिंता गहरे तक पैठी हुई दिखाई देती है। ऐसा प्रतीत होता है कि सारा समाज ही स्त्री कि दशा को सुधारने में युद्ध स्तर पर लीन है, फिर भला सिनेमा इतने महत्वपूर्ण मुद्दे पर पीछे कैसे रह सकता है। हालाँकि इसमें दो राय नहीं हैं कि सिनेमा का केवल एक ही अभिप्राय माना जाता है और वह है एंटररटेन्मेंट, मतलब साफ है मनोरंजन। सिनेमा में इस मनोरंजन को कई रूपों में प्रस्तुत करने का प्रयास किया जाता है, जैसे भड़कीले दृश्य, उत्तेजक गीत—संगीत, नायक—नायिका की परदे पर वास्तविक प्रेमी—प्रेमिका जैसी केमिस्ट्री आदि लेकिन गौर करने वाले बात यह है की इस मनोरंजन को दर्शकों के समक्ष प्रतुत कौन करता है? छोटे एवं तंग कपड़े पहने, नायक को रिझाने एवं कुछ गिने—चुने दृश्यों में स्तरीय अभिनय करने वाली नायिका या फिल्म में दिखाई जाने वाली अन्य स्त्री पात्र सबका प्रयोग इसी मनोरंजन शब्द को सार्थक

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वृन्दावन लाल वर्मा के उपन्यास 'झाँसी की रानी' में स्त्री चेतना

शीतल कुमारी
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दिल्ली विश्वविद्यालय

सारांश

स्त्री के प्रति पितृसत्तात्मक समाज का रवैया निश्चित मानदंडों और आदर्शों से संचालित होता रहा है जिसमें स्त्री की भूमिका पहले से तय कर दी जाती है। धर्म, वर्ण, जाति और वर्ग के स्तर पर स्त्री को दोयम दर्जे का प्राणी समझा जाता है। स्त्री को उस आदर्श आचरण संहिता के अनुसार साथ जीना होता है जिसका निर्धारण सदियों से पुरुषों ने अपने पास रखा है। ऐसे में वृन्दावन लाल वर्मा का ऐतिहासिक उपन्यास 'झाँसी की रानी' आज भी उतना ही प्रासंगिक जान पड़ता है जितना इतिहास में था। रानी लक्ष्मीबाई ने जिस स्त्री चेतना को प्रस्तुत किया उसे इस प्रकार समझा जा सकता है कि इससे स्त्रियों में उस असीमित शक्ति का प्रवाह होता है, जिससे स्त्रियाँ अपने जीवन से जुड़े हर फैसले को स्वयं ले सकती हैं।

बीज शब्द : *नारी विमर्श, अस्मिता, स्वराज्य, समानता, पितृसत्तात्मक, स्वाभिमान।*

प्रस्तावना

आज दलित विमर्श, दलित - स्त्री विमर्श और स्त्री विमर्श के साथ-साथ आदिवासी विमर्श समकालीनता के केंद्र में है। हमारे यहाँ मानवता का सवाल दलित मुक्ति, वर्ण व्यवस्था और नारी अस्मिता से जुड़ा हुआ है। ऐसे में लक्ष्मीबाई का पूरा व्यक्तित्व, उनका संघर्ष, विद्रोह औरआत्मसमर्पण का संबंध किसी ना किसी तरह स्त्री अस्मिता की पहचान और नारी मुक्ति की भावना से है। लक्ष्मीबाई का 13 वर्ष की उम्र में अपने पिता से कहना कि "जब मैं सवाल करती हूँ तो आप इसी प्रकार मेरा मुहँ बंद कराने लगते है"।[1] ये बात भले ही आज से लगभग 170 वर्ष पूर्व की है, पर आज भी उतनी ही प्रासंगिक है। स्त्री के प्रति पितृसत्तात्मक समाज का रवैया निश्चित मानदंडों और आदर्शों से संचालित होता रहा है जिसमें स्त्री की भूमिका पहले से तय कर दी जाती है। धर्म, वर्ण, जाति और वर्ग के स्तर पर स्त्री को दोयम दर्जे का प्राणी समझा जाता है। स्त्री को उस आदर्श आचरण संहिता के अनुसार जीना होता है जिसके निर्धारण सदियों से पुरुषों ने अपने पास रखा है।

ऐसे में वृन्दावन लाल वर्मा का ऐतिहासिक उपन्यास 'झाँसी की रानी' आज भी उतना ही प्रासंगिक जान पड़ता है जितना इतिहास में था।सामान्यतः 'झाँसी की रानी' लक्ष्मीबाई का नाम सामने आते ही, वर्ष१८५७ की क्रांति, तलवार की चमक और युद्ध की प्रचंड ध्वनि स्वतः ही कानों में गुंजने लगती है।अगर अतीत के कालखंड में थोड़ा पीछे जाके देखा जाये तो एक बात स्पष्ट रूप से दिखाई देती है, रानी लक्ष्मीबाई को सिर्फ युद्ध में वीरता दिखाने या उनके विद्रोही स्वभाव के लिये याद नहीं किया जा सकता बल्कि उनका पूरा जीवन स्त्री चेतना से लैस था। वह स्त्रियों के लिये मार्ग प्रशस्त करती है। उनका जीवन साक्षात स्त्री सशक्तीकरण का उदाहरण पेश करता है। जिसे वर्तमान में स्त्री विमर्श और स्त्री चेतना कहा जा रहा है, उसकी सशक्त अभिव्यक्ति, रानी लक्ष्मीबाई के व्यक्तित्व और कृतित्व में देखने को मिलती

[1]वृंदावन लाल वर्मा (१९५६) झाँसी की रानी – लक्ष्मीबाई (षष्ठम संस्करण,(झाँसी.१८ ,मयूर प्रकाशन :

हिंदी दलित कहानियाँ और ओमप्रकाश वाल्मीकि

विजय कुमार

दलित कहानियों की संरचना दलित जीवन के आचार-विचार, व्यवहार-संस्कार, रहन-सहन, भाषा-बोली और आस-पास के सामाजिक, धार्मिक, आर्थिक और राजनैतिक संबंधों से निर्मित होती है। दलित कहानियों में भाषा की कृत्रिमता नहीं दिखाई पड़ती है क्योंकि दलित पात्र या गैर दलित पात्र जिस परिवेश में पलता-बढ़ता है उसी की भाषा का प्रयोग करता है। दलित कहानियों की भाषा, शिल्पएवं घटना पात्रों केअनुकूल है। उसका अनगढ़पन ही उसकी विश्वसनीयता और प्रामाणिकता का आधार है जो लेखक के द्वारा अनुभूत है।

दलित कहानी के संदर्भ में उपर्युक्त बातों को हम ओमप्रकाश वाल्मीकि की कहानियों के माध्यम से देख सकते हैं। इनकी कहानियों में उपेक्षित और वंचित दलित जीवन के विविध पक्षों को प्रस्तुत किया गया है। उन्होंने दलित जीवन की पीड़ा, संत्रास और छटपटाहट जीवन की विवशता को रचनात्मक रूप प्रदान किया है। अपनी कहानियों में उन्होंने दलित तथा गैरदलित रिश्तों को भी सचेत ढंग से प्रस्तुत किया है। साथ ही एक बड़े वर्ग के लोगों के असंवेदनशील चेहरे को दिखाया है। दलित कहानियों के कलात्मक पक्ष को लेकर जो पूर्वाग्रह आलोचकों में दिखाई पड़ता है उसे ओमप्रकाश वाल्मीकि की कहानियाँ चुनौती देती। क्योकि इनकी कहानियाँ कलात्मक स्तर पर सशक्त है।

ओमप्रकाश वाल्मीकि के भाव पक्ष तथा कला पक्षको हम उनकी कहानियों 'सलाम' 'खानाबदोश' 'घुसपैठिये' 'जिनावर' आदि के आधार पर देख सकते हैं। श्सलाम ' कहानी उस सामंती सोच और व्यवस्था के खिलाफ है जो वर्षों से चली आ रही है जिसके कारण दलित वर्ग को अपमानित और हेयतर दृष्टि से देखा जाता है। कहानी के शीर्षक पर नजर डाले तो स्पष्ट होता कि सलाम एक वर्ग के लिए तो अभिवादन के लिए प्रयुक्त होता किंतुवही सलाम दूसरे वर्ग को हेयतर दृष्टिसे देखने तथा अपमानित करने के लिए प्रयुक्तहोता है। कहानी में हरीश शिक्षित है तथा शहर से गाँव ब्याहके लिए आया है। वह गाँव में घूम-घूमकर बड़े लोगों के दरवाजे पर जाकर सलाम प्रथा को निभाने के खिलाफ है। वह थोड़े से कपड़े और बरतन के लिए अपने स्वाभिमान को गिरवी नहीं रखना चाहता है। अपने स्वाभिमान गिरवी न रखना ही उसके चेतना से लैस होने को दर्शाता है। कहानी में लेखक नेगाँव और शहर के फर्क को भी दिखाया है। शहर के लोग शिक्षित होने के कारण अपने अधिकारों के प्रति सचेत है।

ओमप्रकाश वाल्मीकि कहानी में ब्राह्मण वर्ग के युवक को दलित युवक की बारात में लाते हैं जबकि ज्योतिबा फूले एक ब्राह्मण मित्र की बारात में गए थे। कहानीकार का ब्राह्मण वर्ग के युवक को दलित वर्ग के यहाँबारात में लाने का उद्देश्य कहीं न कहीं दलित वर्ग की यातना और अपमान की सच्चाई से अवगत कराना भी रहा होगा। क्योंकि हरीश जब कमल को ग्रामीण जीवन में होने वाली दलित घटनाओं के बारे में बताता है तो उसे विश्वास नहीं होता किंतु बारात में आने पर तब उसे असलियत महसूस होती है।

कहानी में स्पष्ट दिखाई पड़ता है कि जाति का महत्त्व बहुत है क्योंकि चायवाला जब तक कमल को नहीं जानता कि वह कहाँ से आया है तब तक चाय बना कर देने को कहता है। किंतु जैसे ही पता चलता है कि वह चूहड़ों की बारात में आया है वैसे ही पहचान जाता है कि इसकी जातिक्या है? उसका यह कथन "सहर में चूतिया बणना...में तो आदमी कू देखते ही पिछाणलूँ...कि किस जाति की है?"[2] इस ओर संकेत करता है कि व्यक्ति किस प्रकार झूठी और कि किस दम्भ पूर्ण जिंदगी जी रहा है। कहानी में लेखक इस ओर भी संकेत करता कि दलित वर्ग का व्यक्ति सवर्णवर्ग के व्यक्ति के साथ भाई का रिश्ता भी नहीं जोड़ सकता है। कहानी में रामपाल का यह कथन–"ओ सहरी जनमे हम तेरे भाई है? साले जवान सिभाल के बोल, गॉड में डंडा डाल के उलट दूँगा।"[3] इसको बखूबी प्रकट करता है। गाँव में सवर्ण समाज दलित स्त्रियों के प्रति कैसी भावना रख सकता है इसका प्रमाण कहानी के इस प्रसंग–"अरे, लौडिया को किसी गाँव में ब्याह देता तो म्हारे जैसो का भी कुछ भला हो जाता...। एक तीखी हँसी का फव्वारा छूटा। आस पास खड़े लोगों में अपनी हँसी मिला दी।"[4] में दिखाई पड़ता है। अपनी बेटी जैसी युवती के बारे में व्यक्ति के अंदर किस तरह की हीन भावना है तथा उस पर सामूहिक रूप में लोगों की हँसी, उनके अंदर की अमानवीयता की दर्शाती है।

कहानी में हरीश का सलाम से इंकार पूरे समाज की चुनौती है। प्रतिरोध के

चन्द्रधर शर्मा गुलेरी की कहानियों में व्यक्त प्रेम संवेदना

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कहानी के क्षेत्र में महज तीन कहानियाँ लिखने वाले चन्द्रधर शर्मा गुलेरी ने 'उसने कहा था' कहानी के बल पर ऐसे अमर हुए कि हिन्दी लेखकों के लिए यह मुहावरा बन गया कि ये तो गुलेरी है, इसीलिए कहा जाता है कि कम लिखो, मगर अच्छा लिखो। दो-चार रचनाएँ लिखकर भी व्यक्ति अमर हो सकता है। इस धारणा को हिन्दी कहानी के निर्माता चन्द्रधर शर्मा पुष्ट किया है।

गुलेरी की तीन कहानियाँ- 'सुखमय जीवन' , ' बुद्धु का काँटा' और 'उसने कहा था' हैं। पहली दो कहानियाँ 1910 ई० से 1915 ई० के मध्य रचित मानी जाती है। 'उसने कहा था' 1915 ई० में सरस्वती पत्रिका में प्रकाशित हुई थी। 'सुखमय जीवन' और 'बुद्धु का काँटा' कहानियाँ नयी जमीन के बावजूद बहुत चर्चित न हो सकी। लेकिन 'उसने कहा था' कहानी ने लोकप्रियता के सारे कीर्तिमान तोड़ दिये। जिस समय प्रेमचन्द और प्रसाद कहानी लेखन को सुधार रहे थे, उस समय कलात्मक उत्कर्ष की ऐसी मिसाल प्रस्तुत करना अपने आप में बड़ी बात थी।

हिन्दी कथा साहित्य में स्त्री-पुरुष संबंध, प्रेम, कर्तव्य व बलिदान का जो रुप प्रारम्भ से चलता आया है, उसकी अभिव्यक्ति गुलेरी की कहानियों में एकदम अलग है। जो दाम्पत्य जीवन प्रेमचन्द के समय में था, वह जैनेन्द्र के समय तिकोने प्रेम के रूप में सामने आया जो कई जगह बहुत संश्लिष्ट और उलझाव पूर्ण हो गया है। गुलेरी के प्रेम, कर्तव्य और बलिदान का एक क्रमिक विकास कहानियों में दिखाई पाता है।

हिंदी दलित कविता और जयप्रकाश कर्दम की कविता संवेदना

विजय कुमार

दलित साहित्य एक प्रकार से जीवन का साहित्य है कला का नहीं। यह वह साहित्य है जिसमें जीने का संघर्ष है। हिंदी दलित कविता उस मनुष्य की कविता है जो स्वतंत्रता और सम्मान के साथ जीवन जीने का अभिलाषी है। हिंदी साहित्य के इतिहास पर दृष्टि डाले तो हम देखते है कि आदिकालीन साहित्य के रासो काव्यों में कहीं भी मनुष्य की पीड़ा या शोषण को नहीं दर्शाया गया है। अपितु राज्याश्रित कवियों ने राजाओं की वीरता का अतिशयोक्ति वर्णन किया है। वह वीरता का वर्णन भी इस प्रकार–

बारह बरस लौ कूकर जीवै, अरु तेरह लौ जियै सियार
बरस अठारह क्षत्रिय जीवै, आगे जीवन कौ धिक्कार।।[1]

सिद्धों, नाथों और जैनों की रचनाओं में यद्यपि ब्राह्मणों के शोषण के खिलाफ आवाज दिखाई पड़ती है किंतु वे ईश्वर की और गुरु की सत्ता को स्थापित करने के चक्कर में उतना मुखर नहीं हो सके। भक्तिकालीन साहित्य में भी ईश्वर और मनुष्य के मिलन की ही चर्चा ज्यादा दिखाई पड़ती है। संत काव्य में यद्यपि कबीर, रैदास, दादूदयाल आदि ने सामाजिक असमानता, विडंबना, धार्मिक पाखंड का पुरजोर विरोध किया लेकिन ये संत कवि भी आत्मा-परमात्मा के मिलन, गुरु की महत्ता और नाम स्मरण की महत्ता से आगे नहीं बढ़ पाए। सगुण भक्त कवि अपने आराध्या राम और कृष्ण की भक्ति में ही व्यस्त रहे। रीतिकालीन कवि दरबारी होने के कारण राजाओं से प्रशंसा पाने के लिए रीति निरूपण के चमत्कार कौशल पूर्व ग्रंथ लिखे। जो नायक-नायिकाओं की काम-भावना तथा उनके रूप सौंदर्य तक ही सीमित रह गए। इनके लिए सामान्य मनुष्य की पीड़ा से कोई सरोकार नहीं था। अपितु इनके लिए ज्यादा महत्त्वपूर्ण था विरह में नायिका कितनी तड़प रही है। जैसे बिहारी का यह दोहा–

औधाई सीसी, सु लखि बिरह–बरनि बिललात।
बिच ही सूखि गुलाबु गौ, छीटौ छुई न गात।।[2]

आधुनिक काल में भारतेंदु युग, द्विवेदी युग में देश की स्वतंत्रता का प्रश्न ही मुखरता से दिखाई पड़ता है। चाहे तो भारतेंदु हरिश्चंद्र हो या मैथिलीशरण गुप्त, माखनलाल चतुर्वेदी आदि सभी के यहाँ देश मुक्ति का प्रश्न बड़ा है। कहीं भी मनुष्य की सामाजिक पीड़ा या शोषण का चित्रण नहीं है।

मैथिलीशरण गुप्त एक प्रकार से 'उर्मिला' जो रामायण की उपेक्षित पात्र थी, उसको केंद्र में रखकर 'साकेत' महाकाव्य की रचना की। किंतु वे भी अपने काव्य का नायक या नायिका किसी दलित या निम्न जाति के चरित्र को नहीं बना सके। लेकिन वही द्विवेदी युग में अकेले दलित कवि के रूप में हीराडोम है जो ईश्वर को कटघरे में खड़ा करते हैं–

खंभवा के फारि पहलाद के बचवले जा
ग्राह के मुँह से गजराज के बचवले...
मरले रवनवा के पलले भभिखना के
कानी अंगुरी पै धैके पथरा उठवले,
कहँवा सुवल बाँटे सुनत न बाटे अब
डोम जानि हमनी के छुए से डेरइले।।[3]

छायावादी कविता में 'मैं' की ही अभिव्याक्ति ज्यादा हुई है। प्रसाद, महादेवी, पंत के यहाँ कही भी सामाजिक शोषण के खिलाफ आवाज उठाते नहीं दिखाई पड़ते है इस युग में प्रकृति और मनुष्य के संबंध की ज्यादा मुख्यता से दिखाया गया है। साथ ही नायिका के सौंदर्य को भी उकेरने में कवि चूके नहीं है। निराला के यहाँ सामाजिक विडंबना के प्रति आक्रोश दिखाई पड़ता है। जैसे उनकी कविताओं 'तोड़ती पत्थर', 'विधवा' आदि में देख सकते हैं। किंतु वे भी जातिगत छुआ-छूत की समस्याओं को नहीं उठा पाए। इसका कारण है कि निराला जातिगत उत्पीड़न के दंश को नहीं झेले थे। इसलिए वे इस ओर ध्यान नहीं दे सके। इसी प्रकार प्रगतिवाद, प्रयोगवाद, नई कविता के कवियों ने भी समग्रता में इन प्रश्नों को अपनी कविता के विषय के रूप में नहीं चुना। त्रिलोचन की कविताओं–'नगई महरा', 'चित्रा जाम्बोदकर', नागार्जुन की 'हरिजनगाथा', 'घिन ती नहीं आती', धूमिल की 'मोचीराम' कविताओं में कुछ हद तक चीजों को रेखांकित करने का प्रयास किया है। लेकिन दलित चौतना का स्वर इसमें दिखाई नहीं पड़ता है। केवल समस्याओं को ही दर्शाया गया है।

इस प्रकार समग्रता में देखा जाए तो हिंदी साहित्य के इतिहास में दलितों के शोषण, दमन, उत्पीड़न तथा उनके संघर्ष का चित्रण किसी भी कवि या रचनाकार के यहाँ सूक्ष्मता से नहीं दिखाई पड़ता है। यही कारण है कि दलितों ने अपनी पीड़ाओं को चित्रित करने के लिए अपना साहित्य सृजित किया। इसी क्रम में दलित कविताओं के सृजन के मूल में सामाजिक और आर्थिक परिवर्तन है। दलित कविता का स्वर हिंदू धर्म के प्रति आस्थावान नहीं है। इसका कारण है हिंदू धर्म की सामंतवादी या ब्राह्मणवादी व्यवस्था।

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Local Complaints' Committees under the Sexual Harassment of Women at Workplace Act: Key to Gender Justice at Grassroot Level

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ABSTRACT

This paper is a critical analysis of the constitution, composition and functioning of the Local Complaints Committees (LCC's) that are mandated to be constituted under the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013- referred to as POSH (prevention of sexual harassment for short). The need for this analysis is imperative because it is this committee where women at workplace can seek justice if faced with sexual harassment. The LCC is constituted for specific kinds of complaints. These include the complaints from the unorganized sector like the domestic workers, labourers, daily wagers etc. It would be a big leap if the provisions of this noble Act are spread to the grassroot level. It would empower women and help question and change the deep patriarchal mindset of the Indian Society. The authors have worked as part of or observed the functioning closely. Thus the authors critically analyse the LCC's- the constitution, the composition and the functioning. They further suggest the ways to make the LCC's more proactive.

Keywords: POSH ACT, Women Empowerment, Sexual Harassment, Gender Equality.

PURPOSE:

The vision of the committee that formulates the Acts and the actual implementors on the ground are different set of people. Unless everyone on the ground understands the vision, the spirit behind formulation of the law, it may not be implemented with the enthusiasm and honesty that it so deserves. An attempt is being made to share the theoretical provisions of the Act and where the gap exists in implementation.

METHODOLOGY:

The theoretical provisions of the Act were studied in detail. Also, the practical experience of authors either as part of the LCC or as close observers reveals the ground reality. The authors and their team have been

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JUST IN 10 MINUTES: A CASE STUDY ON ZEPTO

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Avani Pandey**

ABSTRACT

This case discusses the working of Zepto, an e-commerce company founded in April 2021 in Bandra, Mumbai by two 19-year-old Stanford dropouts Aadit Palicha and Kaivalya Vohra. Well, they are not newbies in the start-up world, this is their third start-up after GoPool and Kiranakart. They came with this ground-breaking idea while sitting in their homes and waiting for their groceries to be delivered in 2-3 days. Zepto belongs to those start-up subgroups that experienced meteoric development in the post-Covid period. This case explains the development process of how the company is making it possible to deliver items in 10 minutes. Zepto has raised $360 million in funding with the lead investors being the American start up accelerator company Y Combinator and the American growth equity firm Glade Brook Capital Partners. Currently, the company has a valuation of $900 million.[1] So, the possibility that Zepto will soon turn into a unicorn is not a daft idea. However, there is a major concern surrounding Zepto' s business model as they have still not made the business profitable. Zepto is also facing tough competition from its rival Blinkit (formerly known as Grofers) who was founded in December 2013.

Keywords: *Zepto, Start-up, E-commerce, Business Model, Post-Covid.*

Introduction

Zepto is a quick e-commerce company that started its operations in 2021.

The company started its operations in Bandra, Mumbai and has subsequently extended its delivery areas to Pune, Delhi, Gurgaon, Noida, Ghaziabad, Bangalore, Chennai, Hyderabad and Kolkata.

On October 31, 2021, a total of 8 investors, led by Glade Brook Capital Partners, invested in them $60 million after which more investors began to notice them. Later, they raised additional funding through their series C and series D rounds. Y Combinator Continuity Fund became the major investor in both of these rounds.

The Series C and D rounds were held on December 20, 2021 and May 2, 2022 and raised $100 million and $200 million respectively[2].But Zepto is not the only quick commerce start-up that is backed by strong funding, it is up against fierce competition in India from Blinkit. Blinkit has received backing from 24 investors and has gone through a total of 19 fundraising rounds. Blinkit is currently valued at $1 billion[3]. And then there is also Dunzo which is backed by Google.

Zepto' s tagline is "Groceries delivered in 10 minutes". They do this with the help of Dark stores. They are nothing but warehouses that are not open to the public and are located in such area in the neighbourhood where demand is high.Only commonly requested commodities are kept in these warehouses, preventing the loss of unsold stock. Zepto' s dark stores are designed in a way so that orders are filled as rapidly as possible, effectively and efficiently reducing time. Currently, Zepto is delivering 2500+ goods, including food and drink, personal care products, fresh produce, home cleaning supplies, and snacks and beverages, from its 100+ dark stores. As stated by the CEO of zepto Aadit Palicha the average delivery time taken by Zepto is 8 minutes and 47 seconds.

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1 https://www.crunchbase.com/organization/zepto-29b1
2 https://timesofindia.indiatimes.com/topic/zepto
3 https://www.crunchbase.com/organization/grofers-trusted-delivery-partner

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GENDER BUDGETING : NOT AN ACCOUNTING EXERCISE BUT AN ONGOING PROCESS

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ABSTRACT

The paper initiates by introducing readers to the concept of gender budgeting and how it should not be mistaken for a separate budget but a tool to make the budget more gender sensitive and bridge the inequalities between men and women. The paper is specific to India and attempts to describe why do we need gender budgeting and what are the components of it. Data is collected from 2018 to 2022 and critically evaluated to determine the percentage of funds allocated to fulfil gender specific needs as a percentage of the total budget. The paper further highlights current position of India in terms of progress made over the years in gender budget. The conclusion of the paper raises various questions about what are the problems that prevail in the current gender budgets. The researchers have tried to give some recommendations to reduce the above stated deficiencies and address the multi-dimensional inequalities that exist for women in India. This will in turn promote dignified position for Indian women.

Key Words*: Budgeting, Gender Budgeting, Gender sensitive budgeting, gender equality*

Introduction

The advancement of a country is inextricably related to the standing of its women. In other words, a country cannot flourish unless the well-being of half of its population is guaranteed. Article 14 of the Constitution of India states as following: “The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India.” We can infer from this that the concept of 'equal protection of the laws' demands the State to provide special treatment to persons in various situations in order to achieve equality for everyone.

Gender-sensitive budgeting does not mean dividing budgets for women; rather, it tries to address financial gender inequality concerns including gender hierarchies and income differences between men and women in order to meet gender-specific demands without jeopardising the budget's gender neutrality. It might also be viewed as a much-needed feminist or equality-oriented strategy, with the primary purpose of re-orienting public resource allocation, pushing for a more advanced

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A Study On Women Empowerment Of Self-Help Group With Reference To Indian Context

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Abstract

Empowerment is really a group of procedure, which usually assists individuals to obtain power over their own life via increasing consciousness, getting actions plus doing work in purchase in order to exercising higher handle. Personal strength may be the sensation that will triggers the particular mental power to complete your objectives. The research is regarding examining the particular self-employment of women's across the nation. The conclusion is that the women empowerment appraisal of self-help groups has a higher impact on the women empowerment style particularly with critical women empowerment style and that can be used for effective work by the women business persons with the society which leads to increase in the turnover of

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A STUDY ON THE IMPACT OF SERVICE QUALITY, CUSTOMER SATISFACTION AND CUSTOMER LOYALTY IN ONLINE TRAVEL AGENCIES

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Abstract

Internet tourism has altered the dynamic between service suppliers and conventional middlemen. Internet travel business models launched in response to the rise in popularity of online travel sites as a means of making travel plans and purchases. Websites that allow users to bid on and compare prices, as well as vertical search engines and travel review aggregators, fall under this category. With the advent of internet travel and tourism services, travelers and tourists from across the world may now communicate their desires and requirements. The main aim of the study was to examine the influence of E-service quality on the perceived customer value, customer satisfaction and customer loyalty. The study on the impact of service quality and customer satisfaction on customer loyalty in online travel agencies was surveyed with 250 sample respondent's selected using convenient sampling technique. The data from the selected sample respondents have been collected through the Google forms. The findings of the study , will be helpful for travel firms and tourism officers .The study concluded that the service quality of the online travel agencies are not up to the mark of expected level of the customers.

Keywords

Customer satisfaction, Customer loyalty, On-line travel Agencies and Service quality.

1. Introduction

Travel agencies wrinkle information on prospective clients' exodus and appearance dates, flight time, style of lodging (economy or business class), and the number of individuals travelling in a group before making a booking. Ling, et al., (2014)[1]. Travel companies utilize the internet to obtain information about their consumers. This issue will be encountered by anyone who register on the travel agency's website to enquire about certain places[2], almost all domestic and

[1] Ling, L., Guo, X., & Yang, C. (2014). "Opening the online marketplace: An examination of hotel pricing and travel agency on-line distribution of rooms". Tourism management, 45, pp.234-243

[2] Chiou, W.-C., Lin, C.-C., & Perng, C. (2011). "A strategic website evaluation of online travel agencies. Tourism Management", 32(6), pp.1463–1473

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A DESCRIPTIVE STUDY ON FACTORS INFLUENCING INVESTMENT DECISION TOWARDS MUTUAL FUNDS

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Abstract

In today's volatile economy, many investors believe that mutual funds are their best bet. Investing in mutual funds may be done in a variety of ways. Investors' willingness to invest in mutual funds became a focus of investigation. Even though mutual fund investments include a degree of risk, the mutual fund business is expanding at a rapid pace. Researchers in this study are interested in learning about the many characteristics that entice prospective investors to participate in mutual funds, so mutual fund businesses may devise a plan to attract more investment from the market. Regardless of the amount invested, it serve by way of a conduit to ordinary investors to place their resources in a professional funds management system. The aim of the paper is to analyze the factors mostly considered by the investors towards selecting the mutual funds in India. The study has been carried out during the month of January, 2022. The investors who prefer to invest in the mutual funds are purposively selected using convenient sampling technique. The sample size is 600. The primary data collected through the interview schedule. The factors considered by the respondents are analyzed with the help of descriptive statistics. The author concluded that in order to broaden the mutual fund market's reach, product designers should devise methods for introducing unique goods; fund managers, who decide on different parts of the scheme, should develop products that are creative. The author concluded that tax saving schemes, Awareness for closed ended and Inter relationship between Risk & Return are the three factors which influence the investors for selecting mutual fund.

Keywords

Mutual funds, NAV, Risk appetite, pool of money, decision making, investment and volatility of risk.

1. Introduction:

A mutual fund is a financial intermediary that combines the funds of investors for collective investment in a diverse portfolio of assets. Investees participate in the fund's profits and losses equally, making it a "mutual" investment. Mutual funds are accessible to everybody with even a little amount of extra cash to invest. To achieve a certain financial goal, these investors purchase units in an established mutual fund plan. The fund manager then makes various investments using the money

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A research Study on Impact of Covid-19 on Investors Perception

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Abstract

This paper gives proof from funding experiments carried out with monetary specialists in December 2019 and March 2021. Our experimental technique permits us to govern loads of disruptive elements that arise throughout an actual monetary disaster or inventory marketplace crash. Financial specialists have located that funding in experiments throughout an inventory marketplace crash is 12% much less than before. The fundamental motive of this paper is to locate investor consciousness in COVID 19. For this, we used sample-sized from 50 traders. We located that gender and ordinary earner of traders performed a crucial function throughout covid19.

Key Words: Covid-19, Investors' Perceptions, Financial Management

INTRODUCTION

Human desires are limitless and to fulfil those limitless desires, finances are required which can be restrained in nature. Besides, destiny is unsure and to dispose of such uncertainties related to the destiny in economic terms, one has to make investments part of their profits in exclusive funding alternatives to be had within side the market, thinking about their economic goals. As Robbins L. (1932) outline economics as "Economics is a observe of the allocation of scare means, able to opportunity uses, amongst competing ends for the attainment of a most bring about the fulfillment of those ends." This definition rightly highlights that the sources at our disposal are very restrained in nature and feature opportunity uses. Funds are one of the maximum critical useful resources without which no economic pastime may be carried out. It is consequently required now no longer best to fulfill modern-day intake requirement of an man or woman however additionally to fulfill destiny contingencies and economic objectives.

In order to fulfill destiny contingencies and economic objectives, man or woman's should store part of their profits, with the aid of using sacrificing their current intake requirement for reinforcing their destiny economic protection with the aid of using making an investment their surplus finances. It is profitable to mention, the citation of Graham and Qadd‟s (Bhatt, 2008) here, "An funding operation is one which, upon thorough evaluation guarantees protection of major and an good enough return. Operation now no longer assembly this requirement is speculative."

For the reason of creating investments, one has to put together economic plan thinking about the funding options to be had within side the market. These funding options includes- financial institution constant deposits, NSC, lifestyles insurance, public provident finances, treasured metals, actual estate, publish workplace certificates, stocks, debentures, etc. (Kevin, 2011) (Sasidharan & Mathews, 2011) (Pandian, 2012).

A well-evolved economic device is critical for the improvement of an economic system because it will channelize finances from the excess zone to the deficit sectors thereby making

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IMPACT OF ENTERPRISE RISK MANAGEMENT ON ENHANCING COMPETITIVE ADVANTAGE AMONG BUSINESS ORGANISATIONS BY MODERATING ROLE OF INFORMATION TECHNOLOGY

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ABSTRACT

Globalisation, restructuring, ecological factors, technology changes, intricate financial models, and adjustments in governance practices are just some of the dangers that firms face today. The main goal of this study is to investigate the impact of "Enterprise Risk Management (ERM)" on "Competitive Advantage (CA)" by examining the moderating function of information technology factors such as "IT plan and IT architecture". ERM had a favourable link with the businesses' competitive advantage, according to the findings of this study. The findings also revealed that "IT strategy plan" had a direct impact on competitive advantage, as well as a moderate "impact on the ERM-competitive opportunity link". It also builds on earlier ERM research by experimentally assessing ERM, IT, competitive advantage, and their interrelationships. This article explores the value of ERM implementation in firms and how it may help them gain a competitive edge.

Keywords: *Competitive advantage, "Enterprise Risk Management (ERM)", IT strategy, Technology, Information Technology.*

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IMPLEMENTATION OF INNOVATIVE STRATEGIES ON ENTREPRENEURSHIP BUSINESS AS A DRIVER FOR ECONOMIC DEVELOPMENT AMONG EMERGING ECONOMIC

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ABSTRACT

Many organisations have realised in latest days that in order to stay alive in this turbulent and able to compete global ecosystem, it is reasonable to examine the requirements and aspirations of their relevant parties, as well as to make the economy partnerships more efficient and to implement ethical behaviours. This realisation is due to the rapid introduction of newer technology solutions and the increasingly rapid economically and socially change. Social businesses may be the answer since they offer a 21st-century company model that achieves a balance between growth, financial, cultural, social, and environmental demands throughout their operations. Indeed, themes such as social economics and enterprise, as well as social enterprise, have emerged and developed in recent decades. Social entrepreneurship may and should result in economic well-being and social development as a key technology, job creation, and productivity expansion. In this respect, it is indeed worth noting that social entrepreneurs' efforts may have a significant influence on people's condition of life all over the world. Furthermore, social entrepreneurship is a complicated and diverse notion that has piqued the interest of a number of scholars over the years. The purpose of this study is to clarify the terms "social entrepreneurship" and "quality of life," as well as to show how they are related in underdeveloped countries. In order to collect information regarding entrepreneurship and its impact on economic development, this research paper has considered secondary data collection method to gather factual and effective information related to the study.

Keywords: *Entrepreneurship, Economy, Economic development, Countries, Sustainable*

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MAKING SENSE OF MEDIATING ANALYSIS OF EMPLOYEE AWARENESS AND TRAINING IN RELATIONSHIP BETWEEN E-HRM PRACTICES AND ORGANIZATIONAL-EMPLOYEE PERFORMANCE USING SEM ANALYSIS

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Abstract:

The aim of the descriptive research study was to know the mediating effect of employee awareness and the employee training in relationship between the various digital human resource management practices and its impact on the organizational and employee performance. **Findings:** The outcome of the research witnessed that the employee awareness and the employee training are essential aspects to bring the sophisticated changes with respect to human resource management practices by implementation of digitalization practices in the organization. **Research Design/Methodology/Approach:** The researcher has developed a structured open-ended questionnaire to collect data from various respondents. Applied descriptive and inferential statistics like: Mean, SD, Correlation, Regression, Confirmatory Factor analysis, structural equation modelling. **Novelty:** The model developed with the two different new constructs as mediators in between the digital human resource management practices and the outcome of organizational-environmental performance and at the middle, employee awareness and the training. **Social Relevance:** The outcome of the research can be applied where; the need arises to implement the digital human resource management practices to bring the advancements in the organizational performance. **Generalizability:** The outcome of the research can be generalized under any circumstances where, the similar circumstances arise to implement E-HRM practices in the organization. **Novelty:** It is a novel model where two different constructs used as mediators like: employee awareness and employee training in between facilitating factors of E-HRM and organizational and employee performance in the organization. **Type of the Research:** It is a descriptive research design by nature.

Keywords: E-HRM, Digital HRM practices, Electronic HRM practices, Digital human resource management practices, Digitalization of HRM practices.

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GERMINATION AND GROWTH ANALYSIS OF WHEAT, BARLEY, AND OAT FOR HEALTH BENEFIT COMPONENTS IN GRAIN

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Abstract: Cereal grains provide half of the calories consumed by humans. In addition, they contain important compounds beneficial for health. During the last years, a broad spectrum of new cereal grain-derived products for dietary purposes emerged on the global food market. Special breeding programs aimed at cultivars utilizable for these new products have been launched for both the main sources of staple foods (such as rice, wheat, and maize) and other cereal crops (oat, barley, sorghum, millet, etc.). The breeding paradigm has been switched from traditional grain quality indicators (for example, high bread making quality and protein content for common wheat or content of protein, lysine, and starch for barley and oat) to more specialized ones (high content of bioactive compounds, vitamins, dietary fibers, and oils, etc.).

Keywords: *barley; breeding; marker-assisted selection; genes; genetic resources; genome editing; health benefits; metabolomics; oat; QTL; wheat*

Introduction

Cereal crops are the main food and feed sources worldwide, supplying more than half of the calories consumed by humans. An overwhelming majority of plant breeders and geneticists work on no other crops but cereals. Breeding methods depend on the biological features of a crop and on the genetic research standards, traditions, economic objectives, and levels of agricultural technologies in the country where plant breeding is underway. The general breeding trend of the past decades, however, was finding solutions to the problem of higher yields in cereal crops; furthermore, special attention was paid in many countries to increasing plant resistance against diseases and various abiotic stressors. The concentration of all efforts on these two targets and none other resulted in a certain decline in the genetic diversity in those plant characters that are associated with the biochemical composition of cereal grain.

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BIOCHEMICAL ANALYSIS OF WHEAT, BARLEY, FOR HEALTH COMPONENTS IN GRAIN

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ABSTRACT:

The presents Studies, Some of the latest biochemical research endeavors that aim to improve our understanding of how the various grain components can be manipulated to improve contributions of cereals to human health. The health benefits of wholegrain cereal products are now widely recognized and considered due to the presence of a wide range of bio-active components. Cereals in their natural form (as whole grain) are rich source of vitamins, minerals, carbohydrates, fats, oils, and protein. Also, such cereals are chosen for consumption and they have the higher fiber which is an important nutrient that helps to prevent weight gain and heart disease. For best results, fruits, vegetables and whole grains may be eaten every day to provide extra nutrition and fiber. The meal can be made healthier by eating high-fiber whole-grain cereals that has low sugar. However, eating a variety of cereals rather than just feeding on one item is more helpful to health.

Key words: *Cereal, grain, human, health, diet,*

INTRODUCTION

The term cereal is a derivative from Latin word 'cerealis' meaning ‘grain’ which is botanically, a type of fruit called a caryopsis, composed of the endosperm, germ, and bran. The cereals are annual common grass members of the grass family (a monocot family Poaceae, also known as Gramineae), which usually have long, thin stalks, such as wheat, rice, maize, sorghum, millet, barley and rye, whose starchy grains are used as food. The term cereal is not limited to these grains, but, also refers to foodstuff prepared from the starchy grains of cereal like flours, breads and pasta. Cereal science is a study concerned with all technical aspects of cereal. It is to study the nature of the cereals and the changes that occur naturally, and as a result of handling and processing.

Cereals constitute the major source of calories for humans as rice in India and the Far East, maize in Mexico and wheat and barley in Europe and North America. Staple food grains are often called corn.

Materials AND Methods

biomolecules

MDPI

Article

Myristic Acid Supplementation Aggravates High Fat Diet-Induced Adipose Inflammation and Systemic Insulin Resistance in Mice

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Abstract: Saturated fatty acids (SFAs) are considered to be detrimental to human health. One of the SFAs, myristic acid (MA), is known to exert a hypercholesterolemic effect in mice as well as humans. However, its effects on altering adipose tissue (AT) inflammation and systemic insulin resistance (IR) in obesity are still unclear. Here, we sought to determine the effects of a high fat (HF) diet supplemented with MA on obesity-associated metabolic disorders in mice. Wild-type C57BL/6 mice were fed a HF diet in the presence or absence of 3% MA for 12 weeks. Plasma lipids, plasma adipokines, AT inflammation, systemic IR, glucose homeostasis, and hepatic steatosis were assessed. The body weight and visceral adipose tissue (VAT) mass were significantly higher in mice receiving the HF+MA diet compared to HF diet-fed controls. Plasma total cholesterol levels were marginally increased in HF+MA-fed mice compared to controls. Fasting blood glucose was comparable between HF and HF+MA-fed mice. Interestingly, the plasma insulin and HOMA-IR index, a measure of insulin resistance, were significantly higher in HF+MA-fed mice compared to HF controls. Macrophage and inflammatory markers were significantly elevated in the AT and AT-derived stromal vascular cells upon MA feeding. Moreover, the level of circulating resistin, an adipokine promoting insulin resistance, was significantly higher in HF+MA-fed mice compared with HF controls. The insulin tolerance test revealed that the IR was higher in mice receiving the MA supplementation compared to HF controls. Moreover, the glucose tolerance test showed impairment in systemic glucose homeostasis in MA-fed mice. Analyses of liver samples showed a trend towards an increase in liver TG upon MA feeding. However, markers of oxidative stress and inflammation were reduced in the liver of mice fed an MA diet compared to controls. Taken together, our data suggest that chronic administration of MA in diet exacerbates obesity-associated insulin resistance and this effect is mediated in part, via increased AT inflammation and increased secretion of resistin.

Keywords: myristic acid; saturated fatty acids; obesity; insulin resistance; adipose inflammation

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1. Introduction

Consumption of saturated fatty acids (SFAs) is strongly associated with metabolic syndrome and cardiovascular disease (CVD) (reviewed in [1–3]). However, SFAs appear to exert differential effects on metabolic disorders, depending on their chain length. For example, the short- and medium-chain SFAs are beneficial against metabolic disorders [4,5] whereas, the long-chain SFAs are considered to increase the risk for CVD [6]. Regarding the

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Early treatment with anti-$\alpha_4\beta_7$ antibody facilitates increased gut macrophage maturity in SIV-infected rhesus macaques

Samuel D. Johnson[1,2], Lindsey A. Knight[2], Narendra Kumar[2], Omalla A. Olwenyi[1,2], Michellie Thurman[2], Smriti Mehra[3], Mahesh Mohan[3] and Siddappa N. Byrareddy[2,4,5]*

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Despite advances in combination antiretroviral therapy (cART), people living with HIV (PLWH) continue to experience gastrointestinal dysfunction. Infusions of anti-$\alpha_4\beta_7$ monoclonal antibodies (mAbs) have been proposed to increase virologic control during simian immunodeficiency virus (SIV) infection in macaques with mixed results. Recent evidences suggested that therapeutic efficacy of vedolizumab (a humanized anti-$\alpha_4\beta_7$ mAb), during inflammatory bowel diseases depends on microbiome composition, myeloid cell differentiation, and macrophage phenotype. We tested this hypothesis in SIV-infected, anti-$\alpha_4\beta_7$ mAb-treated macaques and provide flow cytometric and microscopic evidence that anti-$\alpha_4\beta_7$ administered to SIV-infected macaques increases the maturity of macrophage phenotypes typically lost in the small intestines during SIV disease progression. Further, this increase in mature macrophage phenotype was associated with tissue viral loads. These phenotypes were also associated with dysbiosis markers in the gut previously identified as predictors of HIV replication and immune activation in PLWH. These findings provide a novel model of anti-$\alpha_4\beta_7$ efficacy offering new avenues for targeting pathogenic mucosal immune response during HIV/SIV infection.

KEYWORDS

simian immunodeficiency virus (SIV), $\alpha_4\beta_7$ integrin, microbiome, butyrate, myeloid cells, macrophage maturation, mucosal immunology, viral reservoir

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The 2022 outbreak and the pathobiology of the monkeypox virus

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ABSTRACT

Following two reports of monkeypox virus infection in individuals who returned from Nigeria to the USA, one who returned to Texas (July 2021) and the other to the Washington, DC area (November 2021), the number of monkeypox infection have dramatically increased. This sounded an alarm of potential for spreading of the virus throughout the USA. During 2022, there was a report of monkeypox virus infection (May 6, 2022) in a British national following a visit to Nigeria who developed readily recognizable signs and symptoms of monkeypox virus infection. Soon following this report, case numbers climbed. By June 10, 2022, more than 1,500 cases were reported in 43 countries, including Europe and North America. While the prevalence of the monkeypox virus is well known in central and western Africa, its presence in the developed world has raised disturbing signs for worldwide spread. While infection was reported during the past half-century, starting in the Democratic Republic of Congo in 1970, in the United States, only sporadic monkeypox cases have been reported. All cases have been linked to international travel or through African animal imports. The monkeypox virus is transmitted through contact with infected skin, body fluids, or respiratory droplets. The virus spreads from oral and nasopharyngeal fluid exchanges or by intradermal injection; then rapidly replicates at the inoculation site with spreads to adjacent lymph nodes. Monkeypox disease begins with constitutional symptoms that include fever, chills, headache, muscle aches, backache, and fatigue. Phylogenetically the virus has two clades. One clade emerged from West Africa and the other in the Congo Basin of Central Africa. During the most recent outbreak, the identity of the reservoir host or the primary carriage remains unknown. African rodents are the suspected intermediate hosts. At the same time, the Centers for Disease Control (CDC) affirmed that there are no specific treatments for the 2022 monkeypox virus infection; existing antivirals shown to be effective against smallpox may slow monkeypox spread. A smallpox vaccine JYNNEOS (Imvamune or Imvanex) may also be used to prevent infection. The World Health Organization (WHO), has warned that the world could be facing a formidable infectious disease challenge in light of the current status of worldwide affairs. These affairs include the SARS-COVID-19 pandemic and the Ukraine-Russia war. In addition, the recent rise in case of numbers worldwide could continue to pose an international threat. With this in mind, strategies to mitigate the spread of monkeypox virus are warranted.

Abbreviations: AIDS, Acquired Immunodeficiency Syndrome; cART, Combination Antiretroviral Therapy; CDC, Centres for Disease Control and Prevention; COVID-19, Coronavirus disease 2019; DNA, Deoxyribose Nucleic Acid; DRC, Democratic Republic of Congo; ELISA, Enzyme Linked Immunosorbent Assay; EMA, European Medicines Agency; EA-IND, Expanded Access Investigational New Drug; FDA, Food and Drug Administration; HIV, Human Immunodeficiency Virus; MPV, Monkeypox Virus; MSM, Men having Sex with Men; MTCT, Mother-to-Child Transmission; MVA, Modified Vaccinia Virus Ankara; PCR, Polymerase Chain Reaction; PLWH, People Living With HIV; PPE, Personal Protective Equipment; RNA, Ribose Nucleic Acid; RT-PCR, Real time Polymerase Chain Reaction; SARS-CoV-2, Severe Acute Respiratory Syndrome Coronavirus 2; STDs, Sexually Transmitted Diseases; TCR, T-cell Receptor; VIGIV, Vaccinia Immune Globulin Intravenous; WHO, World Health Organization.

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ORIGINAL RESEARCH

Effect of change in environment on reliability growth modeling integrating fault reduction factor and change point: a general approach

Vikas Dhaka[1] · Nidhi Nijhawan[2]

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Abstract

This paper presents a generalized software reliability modeling framework that predominantly encompasses randomness of field environment, fault reduction factor (FRF), and change point to study their simultaneous effect on software bug removal process. To address and capture unpredicted randomness of the field environment in testing phase it is assumed that the environment before and after a change point may not be the same and therefore there is a need to consider distinct environment factors before and after the change point in the modeling of bug removal action. Based on the general approach, three new change point-based software reliability growth models (SRGMs) are proposed incorporating time-dependent exponentiated Weibull (EW) FRF and distinct random environment distributions. To elaborate, in SRGM-I and SRGM-II, a steady environment is supposed before the change point whereas one-parameter exponential environment is assumed after the change point in SRGM-I and a two-parameter Gamma environment is considered after the change point in SRGM-II while in SRGM-III, exponential environment before change point and Gamma environment after change point are taken into consideration. In addition, a few established FRF-based models are deduced from the proposed general approach. Estimation of parameters of proposed SRGMs is carried out in two phases using three real test data sets and their validation is evaluated through several performance measures including coefficient of determination, mean square error, bias, variation, root mean square prediction error and Akaike information criteria. Fitting of the models to the datasets is also examined in related goodness of fit curves. Further, numerical illustration is worked out to conduct a cost-reliability assessment and suggest optimum release time.

Keywords SRGM · Random environment · Fault reduction factor · Change point · Software reliability · Release time

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Application of homotopy analysis method (HAM) to the non-linear KdV equations

Astha Chauhan and Rajan Arora

Abstract. In this work, approximate analytic solutions for different types of KdV equations are obtained using the homotopy analysis method (HAM). The convergence control parameter h helps us to adjust the convergence region of the approximate analytic solutions. The solutions are obtained in the form of power series. The obtained solutions and the exact solutions are shown graphically, highlighting the effects of non-linearity. We have compared the approximate analytical results which are determined by HAM, with the exact solutions and shown graphically with their absolute errors. By choosing an appropriate value of the convergence control parameter, we can obtain the solution in few iterations. All the computations have been performed using the software package MATHEMATICA.

1 Introduction

Many nonlinear physical phenomena arise in various fields of engineering and science such as fluid dynamics, nuclear reactor dynamics, plasma physics, biology, optical fibres and solid state physics. To describe these complex physical phenomena, nonlinear differential equations play a significant role. Therefore, obtaining the solutions of these nonlinear equations is a topic of great interest in the study of many fields of science. To better understand the working of the physical problem, mathematical model came into picture in the form of nonlinear PDEs. The solutions of partial differential equations give the detailed summary about the nature of phenomena involved. Many numerical and analytical methods have been derived to deal with these kind of scientific problems.

MSC 2020: 65H20, 90C30
Keywords: KdV equations, Homotopy analysis method, Approximate series solutions, Convergence control parameter, Symbolic computation.
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Physics of Fluids ARTICLE scitation.org/journal/phf

Shock wave propagation in a non-ideal rotating medium with azimuthal magnetic field effect using Lie group technique

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ABSTRACT

The present article demonstrates the propagation of a strong cylindrical shock wave in a rotating adiabatic flow of a van der Waals gas in the presence of an azimuthal magnetic field. Using the Lie group technique, self-similar solutions are obtained with an assumption of uniform density in the undisturbed medium. In contrast, the azimuthal component of the fluid velocity and the magnetic field are supposed to vary. The profiles of the flow variables are depicted graphically, followed by a brief discussion on the behavior of the solutions obtained through the graph. The effects of variation in the values of the adiabatic index, Alfvén Mach Number, non-idealness parameter, and the ambient azimuthal velocity exponent on the flow variables are discussed in detail. The computational work is performed by using Mathematica (a software package).

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I. INTRODUCTION

Many interesting phenomena arising in nature are modeled in mathematical forms with the help of non-linear partial differential equations. These partial differential equations (PDEs) play a prominent role in different areas of science such as astrophysics, plasma physics, combustion theory, gas dynamics, and cosmology. Non-linear models arising in the real world often face serious mathematical difficulties such as discontinuity and resonance between wave speeds. It is a challenging task for researchers all around the world to obtain solutions for non-linear PDEs. In the case of non-linear PDEs, the superposition law does not hold; therefore, at present, there is no general technique to obtain the analytical solution for such non-linear PDEs, and each problem requires a special technique to obtain its solution. To obtain the solutions of non-linear PDEs, several analytical and numerical techniques have been introduced in the literature by researchers.

The classical Lie group method[1] is widely used to obtain solutions to the problem of gas dynamics involving shock phenomena modeled by non-linear PDEs. The basic idea of this method is that it reduces the dimension of the one-dimensional system of non-linear PDEs, which represents the flow field, by one. For the basic concepts and applications of the classical Lie group method of invariance, one can go through Refs. 2–7.

The study of shock waves has been always remained an attractive topic for researchers in the scientific community because of its vast applications in many fields such as astronomy, astrophysics, and star formation. Shocks are generated by volcanic eruptions, earthquakes, and meteorite impacts. In the present article, we have studied the cylindrically symmetric motion of strong shock waves for an unsteady rotating gas in a non-ideal medium under the presence of an azimuthal magnetic field. For our study, we have considered a single fluid one-dimensional model of Euler–Poisson equations in a rotating magnetogasdynamics model. "When the energy of the electric field is much smaller than that of a magnetic field, then all the electromagnetic quantities can be expressed in terms of a magnetic field, then only the interaction between gas-dynamic field and magnetic field can be considered. Such analysis is known as a Magnetogasdynamics." Magnetic field effects have various applications in the investigation of cylindrical shock waves including experiments on pinch effects and in many areas of science such as astrophysics, aerodynamics, oceanography, and atmospheric sciences. There is vast literature related to the study of the propagation of shock waves in the presence of a magnetic field (see Refs. 8–13). Pai and Speth[9] investigated the general R–H conditions for a shock wave in radiation magnetogasdynamics. Vishwakarma *et al.*[14] studied the problem of shock waves in magnetogasdynamics, and obtained an exact similarity solution for their problem.

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Steepening of waves in non-ideal radiative magnetogasdynamic flow with dust particles

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Abstract. The singular surface theory is used for the planar and cylindrically symmetric flow of a dusty gas in radiative magnetogasdynamics to study the behaviour of different modes of wave propagation, and their culmination into a steepened form. We have considered one-dimensional steepening of waves. The transport equation for the jump discontinuity in the velocity gradient at the wave heads is determined and solved numerically. The effects of the van der Waals excluded volume of the medium, the mass concentration of solid particles, the ratio of densities, the ratio of specific heats, the radiation parameter and the magnetic field strength on the shock formation are analysed in detail. It is observed that the gradient of density, velocity, pressure and magnetic field are related to each other.

Keywords. Breaking of waves; singular surface theory; radiative magnetogasdynamics; dusty gas.

PACS Nos 02.90.+p; 47.40.Nm; 05.90.+m

1. Introduction

While studying the propagation of a wave in a medium, certain types of discontinuities, such as acceleration waves, shock waves, etc., are encountered. Hence, the mathematicians and physicists pay great attention to the analysis of non-linear systems due to their significant applications in astrophysics. Shock waves have a great scope in the medical field also as they can be used to break the kidney stones of a patient by focussing infinite weak shock waves on that stone. These broken stones can exit from the patient's body through the urinary tract by natural process. Shock waves are also used in the treatment of tendons, ligaments and bones of horses in veterinary medicine. Shock waves have osteogenetic potential and stimulate fracture healing. Shock wave therapy is safe and effective but careless application may cause severe damage. Shock waves are very useful in industrial fields too as they are used for the removal of micron size dust from silicon water surface. They can also be used as wood preservatives, food preservatives, in the extraction of sandalwood oil and in pencil industry. Shock waves can be formed by the steepening of ordinary waves, e.g., ocean waves break on the shore; during supersonic explosions generated by heavy explosives like TNT, which is known as detonations; during the gravitational collapse of large-sized stars into black holes, neutron stars and supernovae; in fluid dynamics during the process of cavitation (when the cavitation bubbles, formed in a liquid, say, by a propeller moving with high speed, get hastily collapsed by the ambient liquid); etc.

A wave may be thought of as a moving surface across which some variables and their derivatives undergo certain discontinuities carried along by the moving surface. The discontinuities are bound to be inter-related across the surface. The relations, which connect the variables and their derivatives on both sides of the discontinuity surface, are known as compatibility conditions. These compatibility conditions form as a result of dynamical conditions. These conditions describe the behaviour of the material medium. The first set of compatibility conditions, termed as Rankine–Hugoniot jump conditions, arises from conservation law applicable over discontinuity surface. The compatibility condition of first-order describes the relation of first-order derivatives. The second or higher-order compatibility condition for a singular surface which describes the relations of derivatives of second or higher order, were first given by Thomas [1] by developing the kinematical and geometrical compatibility conditions for the singular surface. Coleman and Gurtin [2] focussed on how discontinuities grow

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Invariance analysis and some new exact analytic solutions of the time-fractional coupled Drinfeld-Sokolov-Wilson equations

Astha Chauhan, Rajan Arora

Abstract. In this work, the fractional Lie symmetry method is used to find the exact solutions of the time-fractional coupled Drinfeld-Sokolov-Wilson equations with the Riemann-Liouville fractional derivative. Time-fractional coupled Drinfeld-Sokolov-Wilson equations are obtained by replacing the first-order time derivative to the fractional derivatives (FD) of order α in the classical Drinfeld-Sokolov-Wilson (DSW) model. Using the fractional Lie symmetry method, the Lie symmetry generators are obtained. With the help of symmetry generators, FCDSW equations are reduced into fractional ordinary differential equations (FODEs) with Erdélyi-Kober fractional differential operator. Also, we have obtained the exact solution of FCDSW equations and shown the effects of non-integer order derivative value on the solutions graphically. The effect of fractional order α on the behavior of solutions are studied graphically. Finally, new conservation laws are constructed along with the formal Lagrangian and fractional generalization of Noether operators. It is quite interesting the exact analytic solutions are obtained in explicit form.

1 Introduction

Water waves in oceans is always a topic of great interest for researchers. However, the phenomena is very complex and no single model is available that may describe the fully non-linear dynamics of the waves. Many mathematical models have been

MSC 2020: 35R11, 34A08, 26A33, 76M60
Keywords: Time-fractional coupled Drinfeld-Sokolov-Wilson equations, Fractional Lie symmetry method, Erdelyi-Kober operator, Exact solutions, Conservation laws.
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Effect of Earth's Equatorial Ellipticity on the Resonant Curve and Phase Portrait of Geo-centric Satellite Under the Gravitational Effect of the Earth–Moon–Sun System by Using Unperturbed Solution

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Abstract In this article, we investigated the resonant curves of geo-centric satellite due to the rate of change in earth's equatorial ellipticity parameter ($\dot{\gamma}$), moon's angular velocity around the earth ($\dot{\vartheta}$), and angular velocity of bary-center ($\dot{\Theta}$) around the sun. We expressed the equations of the motion of the satellite in a spherical coordinate system using the earth's potential. The system of equations are reduced into a second-order ordinary differential equation and determined its solution. From the solution, it is noted that resonance appears due to the frequencies $\dot{\delta_{s0}}$, $\dot{\gamma}$, $\dot{\Theta}_0$ and $\dot{\vartheta}_0$ at ten resonant points $\dot{\delta}_{s0} = 2\dot{\gamma}$, $\dot{\delta}_{s0} = \dot{\gamma}$, $\dot{\delta}_{s0} = 2\dot{\Theta}_0$, $\dot{\delta}_{s0} = \dot{\Theta}_0$, $\dot{\delta}_{s0} = \frac{2\dot{\Theta}_0}{3}$, $\dot{\delta}_{s0} = \frac{\dot{\Theta}_0}{2}$, $\dot{\delta}_{s0} = 2\dot{\vartheta}_0$, $\dot{\delta}_{s0} = \dot{\vartheta}_0$, $\dot{\delta}_{s0} = \frac{2\dot{\vartheta}_0}{3}$, and $\dot{\delta}_{s0} = \frac{\dot{\vartheta}_0}{2}$, where $\dot{\delta}_{s0}$, $\dot{\Theta}_0$ and $\dot{\vartheta}_0$ are the steady-state value of $\dot{\delta}_s$, $\dot{\Theta}$ and $\dot{\vartheta}$ respectively. We have drawn the resonant curves corresponding to the resonant points. From the graph, it is observed that the effect of earth's equatorial ellipticity parameter on the resonant curves are very small. Also, we have shown the effect of eccentricity (e) and semi-major axes (a) on the oscillatory amplitudes (A_i), where $i = 1, 2, 3 \ldots 21$. Finally, we have analyzed the phase portrait by using Poincaré section method when the system is free from forces.

List of Symbols

(X, Y, Z)	Initial reference coordinate system of the sun and center of sun be its origin (Fig. 1)
(X', Y', Z')	Initial reference coordinate system of the earth-moon system and the center of mass be its origin (Fig. 1)
(X'', Y'', Z'')	Initial reference coordinate system of the earth and the center of earth be its origin (Fig. 1)
(x, y, z)	Initial reference coordinate system with origin at the center of the earth and xy-plane in the earth's equatorial plane (Fig. 1)
$\vec{x}_1, \vec{y}_1, \vec{z}_1$	Unit vectors for the (X, Y, Z), (X', Y', Z') and (X'', Y'', Z'') coordinate systems
a_{r_s}	Acceleration component of satellite along the direction $\vec{r_1}$
a_{δ_s}	Acceleration component of the satellite along the direction $\vec{r_2}$
a_{φ_s}	Acceleration component of satellite along the direction $\vec{r_3}$

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Analysis of resonant curves and phase portrait in the earth–moon system by using its unperturbed solution and earth's equatorial ellipticity

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ABSTRACT

In this research article, we have investigated resonant curves due to the rate of change of earth's equatorial ellipticity parameter ($\dot{\gamma}$), steady-state value of the angular velocity of the moon ($\dot{\theta}_{m_0}$), and angular velocity of barycenter (α_0) in the Earth-Moon system. Equations of motion of the moon are determined in a spherical coordinate system with the help of the gravitational potential of the earth. By using the unperturbed solution, equations of motion of the moon reduced into the second-order differential equation. From the solution it is observed that resonance occurs due to the frequencies $\dot{\gamma}$, $\dot{\theta}_{m0}$, and α_0 at the resonant points $\dot{\theta}_{m0} = 2\dot{\gamma}$, $3\dot{\theta}_{m0} = 2\dot{\gamma}$, $\dot{\theta}_{m0} = \dot{\gamma}$, $\dot{\theta}_{m0} = \alpha_0$. Finally, we have analyzed the phase portrait and phase space by method of Poincaré section when the system is free from forces.

1. Introduction

Resonance is a common phenomenon in our solar system. If ω_i $(i = 1, 2, 3...n)$ are basic frequencies in any dynamical system and $\sum_{i=1}^{n} a_i\omega_i = 0$, where not all a_i are zero, then the frequencies are called commensurable. The resonance occurs due to commensurability between at least two frequencies. Planets or satellites are in resonance if the geometric configuration of their position concerning their orbits has repeated within a short time period. The motion of the moon is affected by many forces like earth's gravitational field, atmospheric drag, solar radiation pressure, solar gravitational field, and the Poynting Robertson drag, etc.

Shaw and Holmes (1983) studied the phase portrait and phase space using the Poincaré section for periodically forced piecewise linear oscillators. Formiga and Moraes (2011) studied the resonance effect on the motion of the satellite due to the frequencies of earth rotational motion and the mean orbital motion. They have discussed the phase space of the resulting system. Sampaio et al. (2012) studied the resonance due to frequencies, the angular rate of synchronous satellite and the angular rate of the earth. They obtained the resonance in the ratio of 2 : 1 for the zonal harmonic J_{20} and J_{40}.

Zhang et al. (2012) discussed several criteria on the existence of periodic solutions and stability for a tethered satellite system (TSS) in an elliptical orbit, as well as the uniqueness of periodic solutions for the TSS in a circular orbit by using coincidence degree theory. Gao and Zhang (2014) studied non-trivial 2π-periodic solution of the homogeneous system by using Reissig's theory in the circular restricted three-body problem (CR3BP). The resonance problems including the earth's equatorial ellipticity parameter in the motion of the geo-centric satellite due to the frequencies are investigated by Yadav and Aggarwal (2014). They studied the time period and amplitude of the resonance oscillation using the method of Brown and Shook (1933). Qian et al. (2016a) investigated the station-keeping strategy for quasi-periodic orbits near the translunar libration point with full consideration of the contribution from the sun's gravity and the moon's eccentricity. They derived a high-fidelity model to describe the motions of the quasi-periodic orbits. Qian et al. (2016b) studied the energy analysis and trajectory design for low-energy escaping orbit in Earth–Moon system. Qian et al. (2018b) analyzed the periodic motion around the libration points by polynomial expansion method in the planar circular restricted three-body problem. Qian et al. (2018a) investigated an improved numerical method that can construct Halo/Lissajous orbits in the vicinity of collinear libration points in an entire solar system model. Shamolin (2018) studied the phase portrait of a rigid body in a resistive medium by using quasi-stationarity conditions. Andrade-Ines and Robutel (2018) studied the secular resonance of the system consisting of N-2 planets. They considered a canonical coordinate system and obtained a general formalism by combining both the Laplace coefficient and Legendre polynomial. Kaur et al. (2019) studied the resonance problem and observed resonant points due to the Poynting–Robertson drag by assuming that the earth, the sun, and the satellite lie

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Resonant curves of geo-centric satellite under the gravitational effect of the Earth-Moon-Sun system including Earth's equatorial ellipticity and resistive force using unperturbed solutions

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Abstract

This research article presents the effect of the Earth's equatorial ellipticity and the resistive force on a geocentric satellite's resonant curves. The resonance occurs in the motion of the satellite due to the frequencies, the angular velocity of the satellite, the rate of change of Earth's equatorial ellipticity parameter $(\dot{\gamma})$, the steady-state angular velocity of the Moon around the Earth $(\dot{\vartheta}_0)$, and the steady-state angular velocity of barycenter $(\dot{\Theta})$ around the Sun. We express the equations of motion of the satellite in a spherical coordinate system by using the Earth's potential. By applying the unperturbed solution, we reduced the system of equations into a second-order differential equation and obtained its solution. From the solution it is observed that the resonance appears between the frequencies $\dot{\delta}_{s0}$, $\dot{\gamma}$, $\dot{\Theta}_0$ and $\dot{\vartheta}_0$ at ten resonant points. We analyze the resonant curves corresponding to the resonant points and show the effect of resistive force and latitude of a satellite. Also, We show the effect of eccentricity (e) and semi-major axis (a) on the oscillatory amplitudes (A_i), for $i = 1, 2, 3 \ldots 21$.

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Keywords: Earth-Moon-Sun system; Resonance; Unperturbed solution; Earth's Equatorial Ellipticity Parameter (EEEP); Resistive force

1. Introduction

Resonance is a common phenomenon in our solar system. If ω_i $(i = 1, 2, 3 \ldots n)$ are basic frequencies in any dynamical system and $\sum_{i=1}^{n} a_i \omega_i = 0$, where not all a_i are zero then the frequencies are called commensurable. The resonance occurs due to commensurability between at least two frequencies. Planets and satellites are in resonance if the geometric configuration of their position concerning their orbits repeats within a short period. The satellite's motion is affected by many forces like the gravitational field of the Moon, the Earth, and the Sun, Atmospheric Drag, Solar Radiation Pressure, Poynting Robertson drag, Resistive force, and others.

Wytrzyszczak et al. (2007) discussed the different families of geosynchronous satellites and identified the region of chaotic motion. They have analyzed a separatrix zone of the 1:1 tesseral resonance. Their chaotic nature results from the interchange between libration and circulation type of motion and the significant eccentricity growth caused by the Kozai–Lidov resonance. Valk et al. (2009) formulated the equations of motion of an artificial satellite using the Hamiltonian technique. They have formulated a theory of order one using canonical and non-singular elements for eccentricity and inclination. They have discussed resonant motion and its main characteristics also. Formiga

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ANALYSIS OF RESONANT CURVE AND PHASE PORTRAIT DUE TO EARTH'S EQUATORIAL ELLIPTICITY IN THE EARTH-MOON SYSTEM USING PERTURBATION TECHNIQUE

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ABSTRACT. In this paper, the resonance due to equatorial ellipticity of Earth, spin rate of Earth and angular velocity of bary-center are investigated. Using spherical coordinate system, we have determined equations of motion of the moon. By using perturbations relative to moon, equations of motion are simplified to second order ordinary differential equation containing the equatorial ellipticity parameter of the Earth. Two types of resonant curves due to the frequencies (a) $\dot{\gamma}$, $\dot{\theta}_E$, and (b) $\dot{\alpha}$, $\dot{\theta}_E$ are analyzed. It is observed that the amplitudes of the oscillation are different at different resonant points due to different size of the bandwidth. Finally, the phase portrait of the orbits of the moon and the phase spaces are analyzed by using Poincare section with periodicity $\frac{\pi}{\dot{\gamma}}$ in time t for the unpertubed system.

AMS Classification: 54H20.

Keywords: Resonance; Earth-Moon System; Earth's equatorial ellipticity; Perturbation; Phase portrait.

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UNDERSTANDING THE IMPACT OF DEPLOYMENT ON CHILDREN FROM INDIAN MILITARY FAMILIES

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ABSTRACT

Background: Frequent moves, change of schools, separation from the father and adapting to unfamiliar cultures are some of the stressors that tag along with being a "military kid". Though considerable research is available from the West on the impact of deployment on the military, there is sparse work in this field in India. Aim: The purpose of the study is to determine the impact of deployment on children from Indian military families and recognize the resources/strategies used by children to cope with the challenges faced by deployment. Method: Semi structured interviews were conducted through snowball sampling with children from Indian military families from 7-18 years who had at least experienced one deployment of their father serving in the Indian Army. Analysis: Deductive content analysis was used to delineate themes through the contents of the interviews. Results: Response themes indicate both negative and positive impact of deployment on children from Indian military families. However, the negative impact has increased effects on children's academic, social and emotional areas of life. Children resorted to distraction, avoidance, seeking support and communicating as strategies to cope with the stressors of deployment. Most children understood the demands of the military profession and were proud of their father, accepting their father's choice of a military life and wanting to follow the same path as their father. While children shared a close bond with the mother due to the absence of their fathers, all of them felt a sense of void in the absence of their father. Interestingly, reintegration was not stressful and they felt that their lifestyle was unique compared to civilian children.

Keywords: *Military, Children, Indian, Deployment.*

INTRODUCTION

Military deployments are one of the toughest times for military families (Flake et al.,2009, Sharma & Nagle, 2018) as they live a life with unique stressors associated with the military life that place greater hardships for them compared to a civilian family. Frequent moves, change of schools, separation from father, adapting to unfamiliar cultures, uncertainty about the father's safety are some of the stressors that come along with being a 'military kid'.

Impact of Deployment

The impact of deployment has been studied vastly in the US and UK; however, only a sparse amount of research (Trautman et al., 2015; Liberman et al.,2013;Misra & Singh, 2014;Sriram & Sarkar, 2019) is available to understand the experiences of children from Indian military families. Pye& Simpson, (2017) conceptualises military deployment as "similar to other major life events having important implications when trying to understand the potential effect of those left at home, particularly children". The emotional impact of deployment can be understood with the help of the 5-stage emotional cycle of deployment as described by Pincus et al., (2001). The 5 stages of deployment are: pre-deployment, deployment, sustainment, redeployment and post-deployment. Family members are expected to deal with the emotional challenges at each stage with finesse.

As cited in existing literature, the impact of deployment is shown to have increased internalizing, externalizing symptoms along with academic difficulties in children (Card et al., 2011; Lyle 2006). Children find it difficult to adjust to new family adaptations, altered rules and regulations. They tend to show changes in eating patterns, tantrums, regressed behaviours, develop somatic problems and act out (Sullivan, 2019). Other than this, frequent moves require children to leave behind their schools and peers which can be overwhelming as they tend to find solace in their peers (Chandra et al., 2011). As reported by Chandra et al., (2009) and Lester et al., (2010), children whose parents are deployed are at an increased risk of depression, behavioural issues and distress. Thus, the impact of deployment can affect children emotionally, behaviourally, psychologically and academically (Lyle, 2006).

The impact of deployment can be looked at through the lenses of Bowlby's attachment theory (Riggs & Riggs, 2011). The relationship of the child with the caregiver is important for the child to form secure attachments in childhood as well as adulthood (Cassidy, 2001). Having a caregiver who is responsive to the needs of the child, available all the time for open communication allows the child to feel a sense of security and warmth (Bowlby, 1969). Not having the deployed caregiver around all the time may affect the wellbeing of the children

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What do Eating Patterns Reveal? Implications for Mood and Cognition

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With the sudden entrance of COVID-19 Pandemic, people were forced to stay indoors. This led to their eating habits being altered and their food choices deteriorated. As the lockdown period increased, people often used eating food as a coping mechanism to deal with stress, further leading to faulty eating patterns. The aim of the study was to understand how eating patterns of young adults affect their cognitive processes and mood. A total of 253 participants (118- Males and 135- Females; 18-24 years old) completed the 18-item Three Factor Eating Questionnaire (TFEQ-r18) and a 19-item qualitative questionnaire, pertaining to the influence of food on Self, Cognition, Emotional, and Physical aspects. Correlation between the 3 aspects of TFEQ showed significant positive correlation. Emotional Eating was positively correlated with both, Uncontrolled Eating and Cognitive Restraint. Moreover, based on the qualitative questionnaire, it was found that eating habits affected not only one's cognition and emotions, but also had an impact on their self and physical image. The questionnaire also included questions about comfort foods which conclude the different types of foods one likes to eat under different circumstances. Majority people felt happy, calm, relaxed, less anxious or stressed, and experienced an improved and uplifted mood that lasted for about a day. A minority number of respondents reported feeling guilty after eating their favorite food. Implications of faulty eating patterns on cognition and mood are discussed, emphasizing the need to develop educational intervention programs promoting healthy food choices.

Keywords: Eating Patterns, Mood, Cognition, Comfort Foods

Entering university is a new chapter in the life of a young adult where there is ample opportunity to explore one's freedom and decisions pertaining to making choices in life. One such choice is regarding the food we consume. Many students experience a negative change in their dietary habits after entering university (Mansour et al., 2020). This research was particularly interested in examining how this new found independence mediates their food choices and impacts their mood and cognition. Over the years, adequate amounts of research have been done over the eating habits of university students and how males and females have differing eating habits. However, most of these studies focused on eating disorders and obesity among high school students and not the general eating patterns. This study attempts to explore the eating patterns during the pandemic among Indian university students to understand how eating choices may act as a resource for maintaining wellbeing as well as focusing on academic pursuits.

Most of the previous studies focused on the female population neglecting the eating habits of males, therefore, the emphasis will be to explore eating habits of both males and females and to see whether any gender differences exist.

The theory of Emotional Eating states that negative emotions of a person have the power of inducing eating as eating has the ability to reduce the intensity of negative emotions (Macht et. al., 2010). Female university students tend to consume more fatty foods than males, although their fruit and vegetable intake remains similar (Racette et al., 2005; Deshpande et al., 2009). In a study by Lambert et al. (2018), social media was a majorly influencing food choice due to its influence on body shape. It was also found that most young adults have unhealthy diets, including higher fast food intake and lower intake of fruits and vegetables, regardless of

The evidence in chocolate and mood studies is highly controversial. As more is known about the impact of chocolate on mood, the reasons for these effects appear increasingly complex.

Eating Patterns and Mood

Mood states act as hyper preceding above the unpredictability of emotions (Clark et al., 2018). Since mood is highly subjective, it is difficult to understand but it can be expressed in different tones (Boccara et al., 1993). Mood and food have a complex relationship, with both affecting each other (Albeesh et al., 2020). Recent research has revealed that healthy eating patterns may lead to long-term well-being (Oswald and Mucjic, 2016) and better mental health (Conner et al., 2017).

Gardner et. al (2014) suggested that a positive mood signs abstract construal, distal, and increases the importance of long-term goals like health, leading to greater inclination to healthy foods. The results revealed that a negative mood signs proximal construal and increases the lucidity of immediate goals like mood management, leading to greater preference for indulgent foods over healthy foods. Bongers et. al (2013) concluded that emotional eaters are usually expected to eat in response to negative emotions, whereas positive emotions have been overlooked. Analysis showed a major increase in food consumption for emotional eaters in the positive compared to the neutral condition, and a higher food consumption than non-emotional eaters.With regard to mood changes during food intake, an association between number of calories consumed and mood improvement after 5 minutes of food consumption was seen. Albeesh et. al (2020) concluded that the mood significantly impacts food consumptions and food preferences. On the other hand, food also affects the mood, which alters the illnesses, either positively or negatively. Advertisement is another reason that negatively affects mood and food choices and contributes to many illnesses. Men did not alter in consuming sweet foods as their mood changed. However, women believed they were more likely to consume sweets after a sad event. Regardless of one's gender and BMI, stress and bad mood significantly improved with healthy eating (Albeesh et al., 2020).

These studies conclude that even though mood is a subjective concept, it is definable in relation to food and eating patterns. Unhealthy eating behavior leads to low self-esteem which ultimately leads to depressed mood and positive coping approaches are required to avoid unhealthy eating habits and low mood. It has also been found that a positive mood leads to healthy eating habits. And it has been found that mood is often the predictor of food consumption and choices.

Eating Patterns and Cognition

Cognition is a connection between a thinking mind and the neurophysiological activities that follow (Solso, Maclin, Maclin, 2005). Masuda et al. (2010) investigated that conviction of disordered eating-related cognitions was positively correlated with general psychological ill-health and emotional distress in interpersonal backgrounds. Disordered eating and cognition was contrastingly related to psychological adaptability. This was conversely related to poor emotional distress and psychological health in interpersonal situations.

An association was observed between emotional eating with stress, worries, and tension among adolescent girls, confused mood in adolescent boys (Unger et al., 2009), with anxiety and loss of control (Goossens et al., 2009). It has been found that overeating negatively impacts cognition and impairs cognitive development, thus increasing the risk for psychiatric disorders (Mattson, 2019). Bellisle (2004) suggested that good regular dietary habits are the best way to ensure desirable behavioral and mental performance all the time. Contrastingly, children and adolescents with weak nutritional status are susceptible to changes in mental and/or behavioral functions that can be corrected, to a certain level, by dietary habits. White et al. (2020) argued that language, attention, learning, metacognition, and memory are imperative in developing food preferences through chemical senses.

All the studies conclude that worrying or being anxious led to emotional eating and the feeling of loss of control. It is also concluded that emotional eating was for the link to higher consumption of sweet foods. Lastly it was also

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RESEARCH IN PROGRESS

Life Satisfaction and Well-Being at the Intersections of Caste and Gender in India

Akshay Johri[1] · **Pooja V. Anand**[2]

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Abstract Psychological research has a paucity of studies on caste and well-being. Existing literature on caste has extensively focused on pathological conditions in rural areas. In contrast, individuals who experience vulnerabilities in urban areas at the intersections of caste and gender identities are still underrepresented in the research literature on the psychology of well-being. The present study recognises this gap in research and explores the interaction of caste and gender on life satisfaction and well-being in urban areas. On administering the Satisfaction with Life Scale and Mental Health Continuum-short form to a sample of 465 young adults, the results revealed significant caste differences in both life satisfaction and well-being. The findings highlight that general caste individuals have higher life satisfaction and well-being than scheduled caste individuals. The findings also indicate significant gender differences in life satisfaction, with women having higher life satisfaction than men across caste groups. Results revealed no interaction effect between caste and gender. Consistent with earlier studies, the results on caste suggest that despite its discourses of diminishing importance, especially in urban areas, caste does play a significant role in an individual's well-being and life satisfaction. Hence, the findings have implications for policy-making, education, and training to understand caste-based experiences better.

Keywords Caste · Gender · Well-being · Intersectionality · Life satisfaction · Mental health

Abbreviations

EWB	Emotional Well-Being
MHC-SF	Mental Health Continuum- Short form
OBC	Other Backward Class
PWB	Psychological Well-Being
SC	Scheduled Caste
ST	Scheduled Tribe
SWB	Social Well-Being
WHO	World Health Organisation

Introduction

The caste system is a centuries-old system of social stratification which classifies people into hierarchically ranked endogamous groups. These groups are based on hereditary social roles and occupations, determining access to wealth, power and privilege (Deshpande, 2010). Since these groups are ascribed at birth, they cannot be changed in one's lifetime (Simon & Thorat, 2020). As a result of which, the deeply entrenched nature of social stratification of the caste system has created massive social (Bros, 2014), educational (Parashari, 2019) and economic (Munshi, 2019) inequalities. Higher in the hierarchical structure, upper castes have more education, influence, and privileges than the lower castes. Lower castes at the bottom of the hierarchy have traditionally been ostracised and suffered from social stigma. Furthermore, existing at the bottom of caste, class and gender hierarchies, women from marginalised groups experience the worst forms of stigma,

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Self-compassion and posttraumatic growth: The mediating role of psychological flexibility

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Self-compassion and posttraumatic growth have previously been associated with positive mental health and functioning. They have recently garnered increased research interest in psychotherapeutic milieu as they have also been found to promote adaptive responses to trauma. On the other hand, psychological flexibility represents a variable known to have an impact on many human abilities including the capacity to shift mindsets and behavioural responses and is increasingly being understood as a crucial trait to develop for therapeutic change. The present study sought to examine whether self-compassion would lead to posttraumatic growth as well as the mediating role of psychological flexibility in this relationship. Data was obtained from 208 participants (females=143, males=65), age range=18 to 50 years (M =27 years, SD = 6.89) who reported being exposed to at least one traumatic experience in the last 5 years. The results found positive correlations between all the three variables used in the study. It was found that self-compassion does lead to post-traumatic growth (c' = 4.9303, CI = 0.4947 to 9.3659, p = 0.0295). Psychological flexibility proved as the mediator between self-compassion and post-traumatic growth, with indirect effect IE = 5.9091 at 95% CI = (3.2340, 8.9695). The findings add to the host of literature on positive functions served by self-compassion, specifically in its contribution towards post traumatic growth. Further, this study explicates the mediating mechanism through which self-compassion exerts its potential effects by pointing out to the role of psychological flexibility.

Keywords: flexibility; mediation analysis; posttraumatic growth; psychological flexibility; self-compassion

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New Models of Meaning in life, Happiness and Well-being:

SARRThAC and SARRThAC PLUS

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Abstract

The present study aimed to gain a deeper understanding of happiness and meaning in life in the Indian context. Sample consisted of 80 young adults in the age range of 18-30 years. In-depth interviews were conducted with questions on happiness and meaning. Thematic analysis of the responses yielded broad themes related to happiness and meaning. New models of meaning in life, happiness, and well-being emerged - the new model of meaning in life is named SARRThAC which is an acronym for Savouring, Accomplishment, Relationships, Resilience, Transcendence, Activity, and Character strengths and virtues while the new model of happiness is named SARRThAC PLUS where SARRThaC represents sources of meaning while PLUS stands for Physiological needs, Safety needs and Leisure. Comparisons with existing models of well-being are presented. These new models of happiness, meaning in life, and well-being can provide a new direction for deeper understanding of these constructs.

Keywords: happiness, meaning, well-being, new models

Traditionally psychology has overemphasized on what is wrong with people and hence it focussed on correcting the weaknesses in people. However, with the coming of positive psychology in the 1990s the focus of psychology has shifted to more positive aspects such as happiness, well-being, hope, optimism, wisdom, flourishing etc. The study of happiness has increased manifold with the emergence of positive psychology. One of the most important variables of interest in positive psychology is happiness.

Different researchers have understood and defined happiness differently. Happiness is often defined as subjective well-being (Diener, 1984, 2000; Diener, Lucas & Oishi, 2002). Happiness is associated with pleasure and fleeting and transient pleasant experiences. However, some researchers have focussed on the important role of meaning in life which is often not included in definitions of happiness. Meaning in life is understood in terms of how one transcends oneself and connects to something beyond oneself. There is often an overlap in terms of the sources of happiness and meaning leading to confusion. Hence, many researchers have attempted to study the relationship between happiness and meaning in life.

Meaning in life is often related to integrating one's past as well as future. Meaning helps in making sense of one's life. A meaningful life is often related to an outcome in the future which is desirable. On the contrary, happiness is often related to the present. Vallacher and Wegner (1985, 1987) have found that meaning is often related to longer time frames. Less meaningful ways of thinking are more related to here and now. According to Baumeister (1991) even though life constantly keeps changing, human beings strive for stability and meaning is an important source

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Relationship Between Prosocialness, Affect, and Mental Wellbeing

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Abstract : The aim of the present study was to assess the relationship between prosocialness, affect and mental wellbeing. A total of 184 young adults studying in various colleges of Delhi were recruited for the study. The sample consisted of 92 males and 92 females in the age range of 18-24 years (Mean age=20.9, SD=1.45) selected using a purposive sampling method. Measures to assess prosocialness, affects and mental wellbeing were administered on all the participants. Prosocialness was found to have a significant positive correlation with positive affect and mental well-being, while no significant correlation was found between prosocialness and negative affect. The study demonstrates that increase in prosocial behaviour is associated with increase in both positive affect and mental wellbeing. The results of this study contribute to a growing literature supporting the benefits of indulging in prosocial behaviour in different aspects of life. It highlights the significance of educating the masses about the benefits of prosocial behaviour to ourselves in addition to development of a more benevolent and compassionate society.

Keyword: Negative Affect, Positive affect, Pro-socialness, Well Being.

I. INTRODUCTION

Kindness is rewarding. One does not become poor by giving away to charity. The above statements may seem like sweet words to tempt someone into indulging in charity but in fact nothing is more true than these proverbs. Being kind to fellow beings not just does good to others but also augments our own wellbeing. An act of kindness, no matter how trivial or big it may seem, goes a big way in promoting happiness and brotherhood in the society. It positively impacts on the lives of both the good Samaritan and the person receiving the good act, and encourages both to perform similar acts of kindness to more people. Acts of kindness are rewarding for the giver, especially so when these acts are performed without the intent of receiving anything in return. Baron, Branscombe, and Bhardwaj (2013) defined prosocial behaviour as an action by an individual with the intent to help another person, often with no immediate benefit to the helper. Such behaviour develops as a reaction of complex psychological processes involving attentional, evaluative processes, moral reasoning, social competence and self-regulatory capacities. We are more likely to indulge in prosocial acts when we feel empathy, a sense of similarity with ourselves and when we know that the other person is not responsible for his own problems etc.

A growing body of evidence suggests prosocial action can promote positive affect and emotion. Positive affect refers to enthusiasm, activeness and alertness while negative affect is a dimension of subjective distress and unpleasurable mood. Both positive and negative effects are related to corresponding affective trait dimensions of positive and negative emotionality (Watson & Tellegen, 1985). Supporting this claim Nelson, Layous, Cole, and Lyubomirsky (2016) conducted a longitudinal study in which adults were assigned to commit either kind acts for others or kind acts for themselves for the 6 week period. It was observed that kindness directed towards others led to greater positive affect than self-oriented kindness. Similar study done by Aknin, Broesch, Hamlin & Vondervoort (2017) showed that helping others led to emotional satisfaction. It was seen that adults purchasing goods for others reported greater positive emotion than adults receiving goods for themselves. These findings indicate that the emotional rewards of giving are noticeable in people and support the likelihood that the hedonic benefits of generosity are universal. A particular theory of pro social behaviour is that empathic joy or state of happiness arises whenever we do a kind or charitable thing for another person. Research has proven that pro social behaviour leads to positive feelings, and positive feelings in turn lead to the increase in pro social behaviour. Carlson, Charlin and Miller (1988) discussed several theoretical rationales for the relationship between positive moods and prosocial behaviour. The simplest way to explain the relation may be that people in a good mood tend to perceive stimuli with a more positive and enhanced social outlook, thus having more yearning to extend help.

Being mentally healthy is not just the mere absence of mental illnesses. Mental well-being relates to a person's psychological functioning and ability to maintain mutually beneficial relationships. It includes the ability to sustain a sense of autonomy, self-acceptance, purpose in life and personal growth. A recent meta-analysis of 201 independent researches by Hui, Berzaghi, Cunningham-Amos and Kogan, (2020) suggested that prosocial behaviour was strongly related to psychological wellbeing. In

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Critical Aspects of Attachment Style in Determining Empathy

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ABSTRACT

Attachment is the degree to which a person is comfortable in being emotionally close to others. It is formed during the early years of an individual and continues to develop throughout life. It plays a major role in creating bonds in human relationships. Empathy is a benevolent quality that permits a person to understand the perspective of others and feel their emotions. It involves good communication skills and strong interpersonal bonding. Empathy allows a people-oriented outlook and an enthusiasm to help others in need. The present study was conducted with the aim to study the role of attachment style in developing the sense of empathy in adults. The Adult Attachment Revised Scale and Interpersonal Reactivity Index were administered on 146 adults. The results of the present study indicated that close and dependent attachment style had a significant positive relationship with perspective taking dimension of empathy. Attachment style in adult was also found to be significant predictor of personal distress dimension of empathy i.e., the tendency to experience distress and discomfort in response to extreme distress in others. Empathy is an indispensable quality of human beings. It is a virtue that enables one to understand the perspective of others, and keenness to listen to other. A secure attachment would lead to greater sense of empathy and therefore, a greater interpersonal relationship.

Keywords: Adults, Attachment style, Empathy, Interpersonal Relationship

I. INTRODUCTION

Attachment is defined as "a strong desire to establish a contact or seek intimacy with a figure when the individual is scared, tired, or ill" (Bowlby, 1982). Initially conceptualized by Bowlby (1969), attachment theory evolved from the study of infant behavior on attachment, separation and loss. According to this theory early experiences with primary caregivers determine the functioning of subsequent relationships in life. Giving more credence to the theory, Ainsworth, Blehar, Waters, and Wall, (1978) demonstrated the link between the receptiveness of primary caregiver to infants needs and subsequent development of three different attachment styles (secure, avoidant and anxious-ambivalent).

The more recent model of attachment styles proposed by Bartholomew and Horowitz, (1991) involves a quart (four) attachment structure of secure, dismissing, fearful, and preoccupied attachments. a) Secure attachment style involves a combination of positive self (low anxiety) and positive others (low avoidance) models. Individuals with a secure attachment style make positive appreciations towards self and others. b) Dismissing attachment style involves a combination of positive self (low anxiety) and negative others (high avoidance) models. They are assertive, found to have high self respect and try to establish control on their relations. c) Preoccupied attachment style is a combination of negative self (high anxiety) and positive others (low avoidance) models. They are characterized with high levels of dependency. d) Fearful attachment style involves a combination of negative self (high anxiety) and negative others (low avoidance) models. They usually tend to consider others negatively, have low self respect as well as low regard for others.

The attachment theory is built on the basic premise that early experiences with caregivers during the initial years of development are incorporated in building any future relationship. The quality of relationship and attachment with parents or guardians during early childhood determines to a large extent the development of secure relations in adulthood. The bond of attachment between mother and child greatly influences the child's growth into a healthy adult in both mental and physical terms (Ainsworth 1989).

Davis (1983) defined empathy as the "reaction of one individual to the observed experiences of another." In the general sense empathy relates to the ability of a person to experience others' situation and feel for them, to put oneself in someone

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Perceived Stress and Psychological Health of North Eastern Students in Delhi

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Abstract: *Every year thousands of North-East (NE) people migrate to Delhi for higher education. Due to huge differences in physical features, culture and lifestyle this socio-cultural interaction has a large impact on the lives of migrants. The present study aims to compare the psychological health of Delhi and NE students residing in Delhi. A sample of 124 female students between the ages of 18-21 years was taken for the purpose of this study. Fifty nine of these participants were residents of Delhi, while the other sixty five were NE students residing in Delhi. Two questionnaires, i.e., Perceived Stress Scale and General Health Questionnaire, were administered on all the participants and an open ended question to determine the factors behind the stress was asked to the NE students. The study adopted a mixed method design involving both quantitative as well as qualitative methods. The results revealed that the NE students reported higher levels of stress compared to the students from the host culture. Almost 86% of the NE students experienced moderate to high levels of stress. Further, the qualitative analysis revealed racial discrimination, adjusting to the fast life, feeling excluded, language problem, lack of support, and perceived threat to safety as the main causes of stress perceived by them. However, in spite of these stressors, these students still showed resilience and experienced almost the same level of psychological functioning as Delhi students. These findings could be used to increase awareness among the people in the host culture about the problems of migrants and help them prepare a more conducive environment for the migrants.*

Key Words: *Migration, Northeast India, Stress, Psychological Health.*

1. INTRODUCTION:

Mother earth provides all beings with enough sustenance. However not all places are endowed with enough resources. And in places where there seemed enough, the means of livelihood became ultimately depleted. Sometimes forces of nature create havoc and lay waste to lands. In all these circumstances, animals and humans cope by migrating to new places with better opportunities. Human history is not complete with stories of migration across vast lands and seas. While our forefathers migrated in search of better farmlands and food, today we migrate in search of better education and employment opportunities. Human migration occurs on both local and global scales. The phenomenon of migration has changed drastically since ancient ages. From a matter of survival, it has now become a matter of personal choice and luxury. The rapid expansion of transport and development of means of communication has enabled millions of people, especially the youth to migrate easily to their dream destinations. Industrialization and economic development has led people to migrate in huge numbers; today migration usually occurs from villages to towns, towns to cities and to other countries (Lusome & Bhagat, 2006).

Migration is not a fairytale story for many. Besides the financial and physical hardships involved, the process takes a toll on the mental health of migrants (Virupaksha, Kumar, & Nirmala, 2014). In a cross sectional study on a population of slum residents in New Delhi, most migrants were found to be at risk for mental illness (Bhardwaj, Sharma, George, & Khan, 2012). Poor social support, family disputes, lack of satisfaction with living conditions were the major problems identified as reasons for poor mental health. In a similar study done in Lucknow, Sethi, Gupta, Mahendru and Kumari (1972) found that the prevalence of psychiatric disorders were more in the post partition refugee population (9.6%) compared to the local population (4.2%). Krishnaveni (2010) conducted a similar study on Sri Lankan refugee children staying in Bangalore and found that they exhibited adjustment problems, low self esteem and emotional problems. They showed signs of high psychological and social distress indicating a poor mental health status.

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PHOTOCATALYTIC PROPERTIES OF BIOLOGICALLY SYNTHESIZED UNCOATED AND CALCIUM COATED ZnO NANOPARTICLES USING CUCUMBER JUICE

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ABSTRACT

Uncoated ZnO and calcium-coated ZnO nanoparticles (Ca-ZnO) were biologically synthesized using cucumber juice as a reducing and capping agent. Cucumber belongs to *Cucurbitaceae* family, is rich in water content and possesses antioxidant activity. The chemical composition and morphology of the synthesized NPs were determined by scanning electron microscopy (SEM), energy dispersive X-ray spectrophotometer (EDS), high-resolution transmission electron microscopy (HR-TEM), X-ray diffraction (XRD)and FT-IR. The spherical as well as hexagonal-shaped ZnO nanoparticles were obtained in the size range of 4-70 nm. Coated and uncoated ZnO nanoparticles were evaluated for their photo degradability of methylene blue (MB) and rhodamine B (RB) dyes. They showed nearly 100% photodegradation of methylene blue in lesser time, however, showed minimum degradation of rhodamine B dye. Calcium coating over ZnO NPs enhanced their photocatalytic properties.

Keywords: Cucumber Juice, Methylene Blue, Rhodamine Blue, Biological Method, ZnO NPs, Photocatalysts.

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This manuscript is focusing **SDG-6:** Clean Water and Sanitation

INTRODUCTION

These days world is facing two major challenges associated with "P" i.e., Population explosion and Pollution. Both Ps are in the hands of human beings. Although population explosion has been controlled to some extent by awareness campaign programs, but pollution seems to be difficult in the era of rapid industrialization. Several agricultural practices as well as industrial activities like the use of pesticides, herbicides, dyes, pharmaceuticals, etc.[1-3] are the matter of concern for the scientific world and environmentalists. These anthropogenic activities lead to water and soil pollution. Organic pollutant effluents in water, textile and pharmaceutical industries, in particular, are the biggest challenges that require attention to maintain a healthy environment. Textile industries discharge dyes and pigments loaded water into natural water resources. These organic pollutants adversely disturb the ecological balance in aquatic life due to their toxicity, complexity of structure and perseverance. However, industries have been using various physical techniques such as coagulation, ion exchange chromatography, activated carbon, reverse osmosis, and ultrafiltration for their disposal.[4-5] In this regard, the development of efficient technology for water as well as soil remediation is imperative to safeguard the environment. In recent years, several nano-based technologies have been adopted due to wide applications from solar fuel, cosmetic, medicaland photocatalytic properties. Several metal/metal oxide nanoparticles such as Ag, Au, TiO_2, CuO, ZnO, etc. have been examined for their photocatalytic properties in the decolorization of textile wastewater.[6-9] These nanoparticles have frequently been used in the treatment of wastewater as they lead tothe complete mineralization of contaminants due to redox reactions.[10-11] Nanoparticles of rare earth metals have also been gaining interest because of their good optical and catalytic properties.[12-14] Among all, Titanium oxide (TiO_2)

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PHOTOCATALYTIC PROPERTIES OF BIOLOGICALLY SYNTHESIZED UNCOATED AND CALCIUM COATED ZnO NANOPARTICLES USING CUCUMBER JUICE

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ABSTRACT

Uncoated ZnO and calcium-coated ZnO nanoparticles (Ca-ZnO) were biologically synthesized using cucumber juice as a reducing and capping agent. Cucumber belongs to *Cucurbitaceae* family, is rich in water content and possesses antioxidant activity. The chemical composition and morphology of the synthesized NPs were determined by scanning electron microscopy (SEM), energy dispersive X-ray spectrophotometer (EDS), high-resolution transmission electron microscopy (HR-TEM), X-ray diffraction (XRD)and FT-IR. The spherical as well as hexagonal-shaped ZnO nanoparticles were obtained in the size range of 4-70 nm. Coated and uncoated ZnO nanoparticles were evaluated for their photo degradability of methylene blue (MB) and rhodamine B (RB) dyes. They showed nearly 100% photodegradation of methylene blue in lesser time, however, showed minimum degradation of rhodamine B dye. Calcium coating over ZnO NPs enhanced their photocatalytic properties.

Keywords: Cucumber Juice, Methylene Blue, Rhodamine Blue, Biological Method, ZnO NPs, Photocatalysts.

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APPLICATION OF PHOTOSENSITIZER-INCORPORATED INDIUM OXIDE NANOPARTICLES IN PHOTODYNAMIC THERAPY

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ABSTRACT

Many disorders, both cancerous and non-cancerous, may be effectively treated using photodynamic therapy. In this scenario, photosensitizer drugs are first excited by light of the appropriate wavelength (in the visible-NIR range), after which they transmit their extra energy to molecular oxygen, resulting in the creation of strongly cytotoxic singlet oxygen. Indium oxide nanoparticles are optically transparent materials and can be used to incorporate fluorophores and photosensitizer drugs. Herein, we report the use of indium oxide nanoparticles incorporated with a photosensitizer. These nanoparticles have been synthesized in a methanolic medium. The characterization of prepared nanoparticles included FTIR, XRD, TEM, and optical studies (UV-visible and fluorescence spectroscopy). Cell viability studies demonstrated that the photosensitizer-incorporated nanoparticles showed cytotoxic effects only upon light irradiation. The results indicate the promise of photosensitizer-incorporated indium oxide nanoparticles as delivery agents in photodynamic therapy.

Keywords: Photodynamic Therapy (PDT), Photosensitizer (PS), Laser Light, Singlet Oxygen ($^1O_2$), Cytotoxicity.
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INTRODUCTION

A large band-gap, optically transparent semiconductor is indium oxide. It has been extensively used in solar cells, liquid crystal displays, and microelectronic window heaters. Most of the studies involving indium-oxide nanoparticles or thin films have been focused on their electrical and optical properties. Various indium oxide nanostructures including nanoparticles, nanowires, and nanotubes have recently been synthesized using the vapor-liquid-solid method.[1,3] They possess remarkable qualities including strong electrical conductivity and great transparency to visible light.[4-6] In the treatment and management of cancerous and non-cancerous disorders, photodynamic therapy (PDT), a noninvasive method, is recognized for its low toxicity.[7-9] It includes the direct (topical) or systemic injection of a photosensitizer (PS) medicine, which when in contact with the right wavelength of light releases reactive singlet oxygen ($^1O_2$) species (visible or NIR). The effects of PDT are caused by this cytotoxic singlet oxygen. The PDT action stays isolated to the irradiated (diseased) spot because singlet oxygen has a short half-life and a small diffusion range in aqueous media (0.1µm), protecting nearby healthy tissues and cells from harm.[10-12] Although theoretically simple, the PDT method has many shortcomings. One disadvantage of PS medicines is their hydrophobic nature, which prevents optimal biodistribution and pharmacokinetics.[13-16] Incorporation of PS within aqueous dispersed nanoparticles can render aqueous formulations of PS. In the past decade, several reports involving nanoparticulate formulations of PS have surfaced, most of which involve porous and optically-transparent inorganic-based nanoparticles.[17-20] It may be noted that the release of the PS from the nano formulation is not a prerequisite for PDT action, as long as the nanoparticle matrix is permeable to the oxygen species.[21] We synthesized indium oxide nanoparticles and combined them with a PS molecule to see whether this may improve the PS's efficiency at producing singlet oxygen through photogeneration. Here, 2-diazo-3-oxo-5,10,15,20-tetraphenyl chlorin is the PS

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RESEARCH ARTICLE

Synthesis and Characterization of 2-Bromo-3-hydroxy-2-nitropropylcinnamate

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Abstract: In this paper we have reported the synthesis of 2-bromo-3-hydroxy-2-nitropropyl-cinnamate through esterification of 2-bromo-2-nitropropan-1,3-diol (Bronopol) with cinnamoyl chloride. Bronopol (2-bromo-2-nitro-1,3-propanediol) is an organic compound that is used as an antimicrobial. The synthesised compound was confirmed by ^{1}H NMR, ^{13}C NMR, FT IR, UV-Vis and Fluorescence spectra.

Keywords: Bronopol, Esterification, Antimicrobial

Introduction

The geminal bromonitroalkanes possess antifungal activitywas suggested by Zsolnai[1] and Hodge, Dawkins and Kropp[2]. Bronopol (2-bromo-2-nitro-1,3-propanediol) is an organic compound that is used as an antimicrobial. It is a white solid and in commercial samples appears yellow. The first synthesis of 2-bromo-2-nitro-1,3-propanediol was reported in 1897. The Boots Company PLC invented bronopol in the early 1960s and studied its first applications as a preservative for pharmaceuticals. Because of its high activity against bacteria and low mammalian toxicity at in-use levels, especially gram-negative species[3]. It was being adopted as an antimicrobial in numerous different industrial environments like paper mills, oil exploration and production facilities, as well as cooling water disinfection plants. Bronopol is employed as a good preservative agent in client merchandise, as well as a wide variety of industrial applications (industrial water system provides a potential environment for bacterial growth, which leads to slime and corrosion problems in many of these cases bronopol can be a highly effective treatment). Bronopol is being used as for preserving in numerous household preparations, toiletry and cosmetic, mainly as because of the high activity against Gram-negative bacteria, specifically *Pseudomonas aeruginosa* and other *pseudomonads*, which are the most common inhabitants in water and cause contamination and spoilage problems in toiletries and cosmetics[4-7]. The broad spectrum antibacterial properties

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BETA VULGARIS MEDIATED BIO-INSPIRED COPPER NANOPARTICLE AND ITS APPLICATION AS A ANTIBACTERIAL AGENT

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ABSTRACT
Metal nanoparticles have witnessed incredible growth due to their wide applications in a variety of areas. The present paper describes the biological synthesis of Cu NPs by aqueous extract of Beta Vulgaris, commonly called beetroot. Betalains present in the Beta Vulgaris have the capability of reducing and capping Cu NPs preventing the agglomeration and oxidation of Cu NPs. The formation of Cu NPs was confirmed by various spectroscopic techniques such as UV-Visible spectrophotometer, FT-IR, SEM and EDAX analysis. After confirmation, antibacterial properties were analyzed against three bacterial strains E. coli, Promicromonospora and Bacillus subtilis. They were found to show good antibacterial properties.
Keywords: Beta Vulgaris, Green Method, Copper NPs, Antibacterial Properties.
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INTRODUCTION

Due to their ideal size and exclusive properties, nanoparticles have been the area of attention to be employed in several fields such as electronics, food industries, drug delivery, cancer treatment, catalysis, treatment of wastewater, antimicrobial agents, etc.[1-2] Several efforts have been successfully made in synthesizing NPs with small size and excellent shape.[3-4] But they are mainly limited to chemical and physical techniques.[5-6] These approaches employ toxic chemicals, high-temperature conditions and radiations, involve the generation of hazardous by-products, need specialized apparatus and consume energy that limits their applications for further use.[7-8] Bio-nanotechnology is the fast-growing area in which natural organisms/molecules are used to synthesize nano-size materials and in the future will be a crucial part of green chemistry.[9] Biosynthesis of silver and gold nanoparticles as antibacterial agents have been reported in the literature.[10-11] Bactericidal effect of metal NPs is mainly the result of their very small size and high surface-to-volume ratio. As a result, there is a close interaction with microbial membranes.[12] Both silver and gold are expensive metals and also, they show low resistivity towards the migration of ions. Nanomaterials prepared from economical metals have engrossed considerable attention as they could be promising alternatives to expensive noble metals.[13] Cu NPs in particular, are an area of attraction as copper is highly abundant in nature, has a high melting point and is cheaper, has low electrochemical migration behavior, chemical stability and possesses catalytic as well as antimicrobial properties.[14] Copper is an important metal needed for various metabolic activities in human beings as it acts as a cofactor for various enzymes, cell signaling and defense mechanism.[15-16] It is one of the important elements for plant growth.[17] Cu nanoparticles can be a substitute for noble metals in the field such as catalysis, organic reaction, inkjet printing etc.[18-19] Although Cu nanoparticles have been synthesized by various chemical, physical and biological methods.[20] Plants parts have extensively been used for the biosynthesis of Cu NPs due to abundant secondary metabolites present in the plants.[21-22] Plant-based synthesis is simple, biocompatible, and involves a one-pot reaction. Aqueous extract of plant materials can reduce and stabilize nanoparticles during synthesis. It is amenable to scale up.[23] Moreover, the process is cost-effective. To design an experiment that involves the biosynthesis of Cu NPs, the choice of solvent, environment-friendly reducing agent and stabilizing agents are essential considerations. In the present paper, the authors have adopted green technology for the biosynthesis of Cu nanoparticles using an aqueous extract of Beta Vulgaris and

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Ethnobotanical uses of plants of Mandakini valley in Rudraprayag, Uttarakhand

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ABSTRACT

The present study describes ethnobotanical uses of plants in Mandakini valley of Rudraprayag district. Total 112 plant species in 100 genera and 63 families (both wild and cultivated) were recorded. These plants were categorised as herbs (59%), tree (28%), shrubs (10%) and climbers (3%). Ethnobotanically significant taxa were classified into eight different service categories like as medicine, edible, construction, oil, fodder, fuel, fibre and miscellaneous. The highest number of taxa (7 *spp*) were found of Rosaceae followed by that of Asteraceae, Lamiaceae (5 *spp*), Euphorbiaceae, Poaceae (4 *spp*), Cucurbitaceae, Solanaceae (3 *spp*), and Berberidaceae, Pinaceae, Adiantaceae (2 *spp* each). A total of 10 taxa such as *Acorus calamus*, *Berberis chitra*, *Berginia straychi*, *Kalanchoe integra*, *Litsea glutinosa*, *Paris polyphylla*, *Potentilla fulgens*, *Satyrium nepalense*, *Taxus wallichiana*, and *Zanthoxylum armatum* were observed to be of rare and endangered category, were found in the area. These plants should be conserved with sustainable management.

Key words: Endangered, Mandakini valley, Medicine, Rare, Rosaceae.

INTRODUCTION

The Himalaya harbours a rich diversity of medicinal plants. Where about 8000 species of angiosperms, gymnosperms (44 species), and pteridophytes (600 species) were reported in the Indian Himalaya (Agrawal, 1997). The highest number of taxa used as medicines were reported from Uttarakhand (Kala, 2004). Of these, sixty two taxa are endemic to the Himalaya. Uttarakhand is well known for its rich diversity of medicinal plants and associated traditional knowledge and most of the plants have high curative properties (Bisht *et al*., 2013). The Large human population with unique traditions and culture inhabiting Garhwal Himalaya has been using the local plant species in various ways (Dangwal, 2010).

The application of various plants species as food, medicine, fuel, timber and various other purposes has been well documented in ancient Hindu literature (Tulsidas, 1631; Charak and Drdhbala,1996). With the

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RESEARCH ARTICLE

Respiratory Quinone Switches from Menaquinone to Polyketide Quinone during the Development Cycle in *Streptomyces* sp. Strain MNU77

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ABSTRACT Type III polyketide synthases (PKSs) found across *Streptomyces* species are primarily known for synthesis of a vast repertoire of clinically and industrially relevant secondary metabolites. However, our understanding of the functional relevance of these bioactive metabolites in *Streptomyces* physiology is still limited. Recently, a role of type III PKS harboring gene cluster in producing alternate electron carrier, polyketide quinone (PkQ) was established in a related member of the *Actinobacteria*, *Mycobacteria*, highlighting the critical role these secondary metabolites play in primary cellular metabolism of the producer organism. Here, we report the developmental stage-specific transcriptional regulation of homologous type III PKS containing gene cluster in freshwater *Streptomyces* sp. strain MNU77. Gene expression analysis revealed the type III PKS gene cluster to be stringently regulated, with significant upregulation observed during the dormant sporulation stage of *Streptomyces* sp. MNU77. In contrast, the expression levels of only known electron carrier, menaquinone biosynthetic genes were interestingly found to be downregulated. Our liquid chromatography–high-resolution mass spectrometry (LC-HRMS) analysis of a metabolite extract from the *Streptomyces* sp. MNU77 spores also showed 10 times more metabolic abundance of PkQs than menaquinones. Furthermore, through heterologous complementation studies, we demonstrate that *Streptomyces* sp. MNU77 type III PKS rescues a respiratory defect of the *Mycobacterium smegmatis* type III PKS deletion mutant. Together, our studies reveal that freshwater *Streptomyces* sp. MNU77 robustly produces novel PkQs during the sporulation stage, suggesting utilization of PkQs as alternate electron carriers across *Actinobacteria* during dormant hypoxic conditions.

IMPORTANCE The complex developmental life cycle of *Streptomyces* sp. mandates efficient cellular respiratory reconfiguration for a smooth transition from aerated nutrient-rich vegetative hyphal growth to the hypoxic-dormant sporulation stage. Polyketide quinones (PkQs) have recently been identified as a class of alternate electron carriers from a related member of the *Actinobacteria*, *Mycobacteria*, that facilitates maintenance of membrane potential in oxygen-deficient niches. Our studies with the newly identified freshwater *Streptomyces* sp. strain MNU77 show conditional transcriptional upregulation and metabolic abundance of PkQs in the spore state of the *Streptomyces* life cycle. In parallel, the levels of menaquinones, the only known *Streptomyces* electron carrier, were downregulated, suggesting deployment of PkQs as universal electron carriers in low-oxygen, unfavorable conditions across the *Actinobacteria* family.

KEYWORDS respiration, polyketide quinones, type III PKS, *Streptomyces* sp., *Streptomyces*, hypoxia

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The repetitive DNA sequence landscape and DNA methylation in chromosomes of an apomictic tropical forage grass, *Cenchrus ciliaris*

Priyanka Rathore[1,2], Trude Schwarzacher[2,3,4], J. S. Heslop-Harrison[2,3,4]*, Vishnu Bhat[1] and Paulina Tomaszewska[2,5]

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Cenchrus ciliaris is an apomictic, allotetraploid pasture grass widely distributed in the tropical and subtropical regions of Africa and Asia. In this study, we aimed to investigate the genomic organization and characterize some of the repetitive DNA sequences in this species. Due to the apomictic propagation, various aneuploid genotypes are found, and here, we analyzed a $2n = 4x + 3 = 39$ accession. The physical mapping of Ty1-*copia* and Ty3-*gypsy* retroelements through fluorescence *in situ* hybridization with a global assessment of 5-methylcytosine DNA methylation through immunostaining revealed the genome-wide distribution pattern of retroelements and their association with DNA methylation. Approximately one-third of Ty1-*copia* sites overlapped or spanned centromeric DAPI-positive heterochromatin, while the centromeric regions and arms of some chromosomes were labeled with Ty3-*gypsy*. Most of the retroelement sites overlapped with 5-methylcytosine signals, except for some Ty3-*gypsy* on the arms of chromosomes, which did not overlap with anti-5-mC signals. Universal retrotransposon probes did not distinguish genomes of *C. ciliaris* showing signals in pericentromeric regions of all 39 chromosomes, unlike highly abundant repetitive DNA motifs found in survey genome sequences of *C. ciliaris* using graph-based clustering. The probes developed from RepeatExplorer clusters gave strong *in situ* hybridization signals, mostly in pericentromeric regions of about half of the chromosomes, and we suggested that they differentiate the two ancestral genomes in the allotetraploid *C. ciliaris,* likely having different repeat sequence variants amplified before the genomes came together in the tetraploid.

KEYWORDS

repetitive DNA, methylation, retrotransposons, chromosomes, polyploidy, aneuploidy, breeding

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Epigenetic variation: A major player in facilitating plant fitness under changing environmental conditions

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Recent research in plant epigenetics has increased our understanding of how epigenetic variability can contribute to adaptive phenotypic plasticity in natural populations. Studies show that environmental changes induce epigenetic switches either independently or in complementation with the genetic variation. Although most of the induced epigenetic variability gets reset between generations and is short-lived, some variation becomes transgenerational and results in heritable phenotypic traits. The short-term epigenetic responses provide the first tier of transient plasticity required for local adaptations while transgenerational epigenetic changes contribute to stress memory and help the plants respond better to recurring or long-term stresses. These transgenerational epigenetic variations translate into an additional tier of diversity which results in stable epialleles. In recent years, studies have been conducted on epigenetic variation in natural populations related to various biological processes, ecological factors, communities, and habitats. With the advent of advanced NGS-based technologies, epigenetic studies targeting plants in diverse environments have increased manifold to enhance our understanding of epigenetic responses to environmental stimuli in facilitating plant fitness. Taking all points together in a frame, the present review is a compilation of present-day knowledge and understanding of the role of epigenetics and its fitness benefits in diverse ecological systems in natural populations.

KEYWORDS

epigenetic variability, DNA methylation, phenotypic plasticity, fitness, epigenetic memory, adaptive evolution, natural populations, climate change

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(IV)

A Check list on Wild Nutraceutical Tuberous Plants of India

India is a home for tribal communities that account for 8.6% of the country's total population (Sujatha and Renuga, 2013). From the ancient times, human beings have depended on plant products for their survival (Dutta, 2015). Majority of the wild plants are medicinally important. According to WHO (World Health Organisation), about 80% of the world's population depend on plants for their health care needs (Kumar *et al*., 2013). Both in developing and developed countries, traditionally therapeutic systems have been using wild plants which has further increased their demand. The knowledge of traditional medicine comes from the ancient literature of Ayurveda, Unani and Siddha (Fahricant and Farnsworth, 2001). In the modern era, huge number of chemical drugs are available and are used to cure different diseases and disorders. Yet people still incline towards herbal products due to them having less or no side effects as opposed to modern medicine. Medicinal values of a plant depend on its constitution which causes a physiological action in the human body (Savithramma *et al*., 2012). Alkaloids, flavonoids, tannin and phenolic compounds are the most common and important bioactive compounds of plants (Edeoga *et al*., 2005). About 2500 types of plant-based formulations are known and are used as medicine by tribal communities. Different parts of the plant are used as medicine in the form of tonic, decoction or as crude extracts. Crude extracts are prepared from dried parts of a plant viz. roots, leaves, tubers, bark, stem flower, seed and whole plants (Bhuvaneswari *et al*., 2015).

India is home to many tuberous plants like *Dioscorea bulbifera, Dioscorea pentaphylla, Amorphophallus campanulatus, Arisaema tortuosum, Acorus calamus, Colocasia esculenta, Curcuma angustifolia, Lasia spinosa* etc. Some of the important tuberous plants belong to families like Dioscoreaceae, Araceae, Zingiberaceae, Costaceae, Liliaceae etc. The major distinguishing character of a tuberous plant is its storage organ which may reside below or above the soil (Swarnkar and Katewa, 2008). The main function of the storage organ is that it helps the plant to survive for long periods of environmental stress (Ramanathan *et al*., 2014). The tribal communities of India use wild tuberous plants for their food and medicinal purposes. They have their own traditional ways of using them. Most of the time, the tubers are kept overnight in running water or are burned before being used. Keeping the importance of tuberous plants for rural and tribal areas in mind, an attempt has been made to survey different parts of the country and collect information as a base line data for future nutraceuticals.

Collection of ethnobotanical values

Field surveys were done in different states of India (Manipur, Sikkim, Odisha, Jharkhand, Kerala, West Bengal and Chhattisgarh) during 2009 to 2021. The ethnobotanical information on the wild medicinal tuberous plants were collected using questionaries from local people. Inventory on the diversity of species of root and tuber plants used as medicine were gathered and the scientific and local names were identified and written on the spot. The detailed information pertaining on habitat of plants, their botanical names, common name and medicinal uses were recorded on field notebook. By consulting the local people, the medicinal uses of plants were cross-checked and collected specimens were identified by authors following flora's book (Hains, 1921-1925; Saxena and Brahmam, 1995). The Passport Data Form (PDF) used in ethnobotanical data collection of plant specimen is deposited in the Herbarium unit, Ambika Prasad Research Foundation, Odisha, India.

The field survey works and literature revealed that about 53 wild medicinal tuberous plants were enumerated belonging to 23 families. The most commonly used species belongs to the family Zingiberaceae having 13 species followed by Dioscoreaceae with 12 species and Araceae with 5 species. Most of the tubers are used in the form of paste or was boiled to prepare juice or was made into decoctions to treat various diseases and disorders. Majorly these enumerated tuberous plants are used to cure skin infections, scorpion bite and diarrhoea. Some tuber plants are observed to have nutraceutical values whereas most of species belongs to genus *Dioscorea* which is used as a birth control agent. Details are listed in Table 1.

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Risk assessment of a municipal extended aeration activated sludge treatment plant using physico-chemical and *in vitro* bioassay analyses

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ABSTRACT

The present study involves physico-chemical profiling and toxicity assessment of wastewater and sludge samples collected from subsequent treatment stages of extended aeration activated sludge (EAAS) process based municipal wastewater treatment plant (WWTP). Wastewater samples were collected from inlet, aeration tank, final settling tank and outlet, while sludge samples were collected from sludge bed. All the samples were tested for their physico-chemical properties using titrimetry, multi elemental analysis and Gas chromatography and Mass spectrometry (GC–MS) (in scan and SIM (selective ion monitoring) modes). Toxicity testing was done using *in vitro* bioassays viz., 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay for cytotoxicity, 7-ethoxyresorufin-O-deethylase (EROD) assay for dioxin-like behaviour and alkaline comet assay for genotoxicity, on human hepato-carcinoma HepG2 cell line. Post-treatment liquid samples showed 12 fold chemical oxygen demand (COD) reduction and met discharge standards for most of the tested parameters. However, detection of organic contaminants such as phenols, phthalates and polycyclic aromatic hydrocarbons (PAHs) and a correlated low toxicity reduction in liquid and sludge samples after treatment revealed the need for up-gradation of the existing testing and treatment technologies.

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1. Introduction

An expanding human population and urbanization have resulted in an ever-increasing generation of municipal wastewater and sludge. These have been reported to contain varied contaminants like PAHs, phthalates and alkylphenols. Such compounds are recalcitrant to microbial degradation and are a major cause of organic pollution into the receiving environment (Liu et al., 2014; Smital et al., 2011; Tran et al., 2018). These chemicals and their transformation products (sometimes more toxic than parent compound) pose a myriad of environmental problems including bioaccumulation and toxicity (Abbas et al., 2018).

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The systematic significance of pod morphological and anatomical variations in Indian *Crotalaria* L. (Leguminosae)

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ABSTRACT

Pod morphological and anatomical variations of Indian *Crotalaria* were evaluated to understand the systematic significance and dispersal mechanisms. Pods show variation between species with respect to size, colour, persistence of calyx, presence of trichomes and number of seeds per pod. Pods with length less than 1.5 cm have thicker endocarp when compared to the combined thickness of exocarp+mesocarp (exception being *C. berteroana*). These pods are likely indehiscent and are dispersed as a unit (enclosing the seeds). On the other hand, pods 1.5 cm or longer have thicker exocarp+mesocarp with respect to the endocarp. These pods dehisce and disperse seeds by explosive mechanism. Seed dispersal is assisted by the sclerenchymatous zone. The angular arrangement of sclereids in opposite directions in the two halves of the narrow fruit enables spiralization soon after explosion of the pods. The orientation of the fibres in the endocarp relative to the longitudinal axis of the fruit is the major factor determining dehiscence. Pericarp anatomy has been categorised into two major types, Type I: with the non-sclerenchymatous zone (exocarp+mesocarp) thicker than the sclerenchymatous zone (endocarp); and Type II: with the sclerenchymatous zone (endocarp) thicker than the non-sclerenchymatous zone (exocarp+mesocarp). The seemingly identical dispersal mechanism in the form of diaspore shows convergent evolution which occurs shows convergent evolution which occurs multiple times in different clades independently (viz., *Calycinae* and *Crotalaria*). *C. pusilla* and *C. medicaginea* pods possess air cavities, which may be an additional adaptation for diaspore dispersal.

1. Introduction

The evolution of seed dispersal mechanisms has been fascinating since efficient seed dispersal confers competitive success for a species. Explosive pod dehiscence is the predominant mechanism for seed dispersal in the genus *Crotalaria* (Le Roux et al., 2011; Subramaniam et al., 2015, 2020) but how the dehiscence is achieved is little understood.

The pericarp anatomy and dehiscence mechanisms have been described for the family Leguminosae (Fahn and Zohary, 1955; Esau, 1962; Fahn, 1967, 1982; Pate and Kuo, 1981; Le Roux et al., 2011). Legume pericarp serves multiple roles; it protects the developing embryo, maintains a favourable micro-climate, carries out photosynthesis, acts as a gateway for nutrient supply to developing seeds, accumulates starch and amides which are degraded and transferred to developing embryo (Muntz et al., 1978). It plays an important role in seed dispersal mechanisms (Le Roux et al., 2011). The pericarp has an adaptive role for dehiscence as the fruits have one, two or three zones of fibrous cell layers within the endocarp alongwith occasional presence of trichomes formed from the endocarp cells (Le Roux et al., 2011). Some *Crotalaria* pods are well adapted to dispersal as diaspores with wind, water and gravity being the agents for dispersal (Le Roux et al., 2011).

Pod features also show considerable variations in terms of size, shape, colour, wall thickness, positioning and number of seeds, pericarp thickness and arrangement of sclerenchyma. Given that these features are species-specific, they have been used for taxonomic purposes (Pate

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The Role of Extended Embodied Self in the *Bhagavadgītā*

Dr. Monica Prabhakar

सारांश

भगवद्गीता में सेल्फ (स्व) की त्रिस्तरीय अवधारणा है। पहले स्तर पर सेल्फ शरीर है, जो अपनी पाँच इन्द्रियों और पाँच कर्मेन्द्रियों के साथ क्रिया का साधन है। दूसरे स्तर पर सेल्फ, शरीर और मन है, जो क्रिया का विवेचक है जो ज्ञान और समझ प्राप्त करता है और इसमें इन्टेन्शनलिटी की प्रक्रिया सन्निहित है। तीसरे स्तर पर सेल्फ, एकीकृत सेल्फ है, जिसमें आत्मा अनिवार्य कार्य करने के लिए मन और शरीर को नियंत्रित करती है। शरीर क्रिया का कर्ता है, मन कठोर विचार–विमर्श के साथ अनिवार्य क्रिया को चुनता है। आत्म–चेतना और सार्वभौमिक होने के कारण आत्मा अनिवार्य कार्य करने के लिए मन और शरीर का मार्गदर्शन करती है। भगवद्गीता क्रिया के आसन (जो मन और शरीर है) और क्रिया के एजेंट (एकीकृत सेल्फ एवं आत्मा जो मन और शरीर का मार्गदर्शन करती है) के बीच स्पष्ट अंतर प्रदान करती है। चूँकि नैतिक क्रिया की सार्वभौमिकता आत्म–सचेत सेल्फ द्वारा समझी जाती है, यही काण्ट का निर्पेक्ष आदेश भी अपनी सार्वभौमिकता के साथ स्थित है, तर्क क्वा मन में नहीं अपितु तर्क क्वा सेल्फ में जो आत्मा से युक्त है।

यह भगवद्गीता भेद केवल एक धार्मिक पाठ का कोई पुरातन मानवशास्त्रीय बंधन नहीं है, यह एक गहरा मेटा–नैतिक भेद है जो सैद्धांतिक और व्यावहारिक कार्य, अक्रासिया, एवं मानक और व्यावहारिक नैतिकता के बीच की कड़ी एवं खाई की पुरानी समस्याओं की व्याख्या कर सकता है।

भगवद्गीता के प्रारम्भ में अर्जुन जानता है कि अपने चचेरे भाइयों और रिश्तेदारों के विरूद्ध युद्ध लड़ना एक अनिवार्य कार्य है जिसे उसे अवश्य करना चाहिए, लेकिन युद्ध के मैदान में उनके चेहरों को देखकर वह भावना से अभिभूत हो जाता है और इस क्रिया को करने से आशंकित होता है और किनारे पर रहना पसंद करता है। इस अवस्था में अर्जुन मन को उसकी वासनाओं सहित क्रिया का एजेंट मानता है। श्रीकृष्ण के साथ एक लम्बी वार्ता के अंत में, अर्जुन क्रिया के आसन, जो उसका मन और शरीर है, और क्रिया के एजेंट, जो एकीकृत सेल्फ है

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(Re) Presentingranade's Understanding of The Mandukyan Nature of Self

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Abstract

This paper espouses to give an analytical exposition of Prof. Ramchandra Dattatraya Ranade's representation of *Māṇḍūkyaūpaniṣad* and *Māṇḍūkyakārikā*. The Upanishad brings out the nature of Self through a rigorous and comprehensive investigation of the three states of consciousness, universally experienced by all human beings namely, wakeful, dream and deep sleep. The methodology exhibits that the Self is nondual, continuous and pervasive in and through these three states of consciousness. The three states mutually exclude, alternate and radically differ from one another. Yet the one who goes through them remains the same (*eka-eva-tridhā-smṛtaḥ*). The Self that underlies and transcends them is unchanging. The Self is unattached to the states and unaffected by them. The Upaniṣad refers the absolute Self as Fourth (*'caturtha'*) which is the same as Turīya in order to distinguish it from the other three changing states. Turīya is the essence of the knowledge of oneself which is to be known (*savijñeyaḥ*).

The paper also focuses on the Ranade's discussion of the Upanishadic means to realize the Self through the contemplation on the syllable aum. The principle of meditation on aum prescribed by the Upanishad is to equate the letters (*mātrās*)of aum with the quarters (*pādas*) of the Self. Such a contemplation functions as a means to help the direct understanding that: 'I am the Turīya' / 'Aum is indeed the Self'.

Key Words

Māṇḍūkya Upaniṣad, Māṇḍūkyakārikā, Turīya, Aum.

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THE POETIC FORM OF THE BHAGAVADGĪTĀ AND THE METAPHOR OF AGENCY

Dr. Monica Prabhakar

Abstract

The discourse of literature is older than the discursive discourse of philosophy but literature dynamically contains rigorous philosophy and ethics. Indian philosophy has its origins in the Vedas and the Upanishads which are in verse. Philosophy is a structured activity involving arguments, analysis and construction of hypotheses and theories. The types of discursive discourse available in ancient times were not as suited for philosophy as the highly structured discourse of verse was. The *Bhagavadgītā* is a religious text, recited by millions of people every day, it is in verse which can be easily memorized by anyone and thereby the text and its meaning are internalized. The *Bhagavadgītā* is also a tract on practical and theoretical ethics. Three concurrent narratives are at play: First, it is a literal narrative of Arjuna beginning in a state of moral anguish, which is resolved when he acquires complete understanding of why joining the battle is the dutiful action. As such it is a psychological, existential journey for Arjuna. Second, it is a narrative of the journey of Indian philosophy from Vedantic to Samkhya to Yoga. Third, it is a narrative of what remains constant in the evolution of Indian philosophy, namely, the doctrines of moksha, karma and reincarnation. The verse form of the *Bhagavadgītā* is best suited to present the intricately woven three narratives. No discursive discourse could accomplish the same task. The greatest virtue of verse in the *Bhagavadgītā* is that it engages the reader in the reading and reciting of the Gita in a personal way that could not be done in a discursive discourse. Any ethical theory is a theory of action. It is about what a person ought to do in a given situation. If the *Bhagavadgītā* had been written in prose it would be a third person narrative of Arjuna's dilemma, enlightenment and resolution. But because it is in verse, the reader or reciter, I, become Arjuna and the Gita becomes a narrative of my journey from a morally anguish situated-ness to a state of a righteous decision and the performance of dutiful action.

Keywords: Moral Dilemma, Agent of action, Poetry, Ethics, Karma, Dutiful action

1. Introduction

Philosophy is often called 'the mother of all disciplines.' This is partially true and partially false. It is partially true because there is a philosophy of every discipline and that is why the highest academic degree in any discipline including philosophy and literature is called 'Doctor of Philosophy.' It is partially false because even though literature as a technical discipline is relatively new, literature as a form of discourse is older than philosophy. And within literature, though oral story-telling must be the oldest form, passed down from generation to generation

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IS RIGHT TO PRIVACY IN PERIL DUE TO SURGE OF CCTV SURVEILLANCE?

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ABSTRACT

The present study analyzed the issue of right to privacy vis-à-vis CCTV surveillance. The usage of CCTV surveillance has grown in recent years. Governments and individuals are using CCTV surveillance for reducing the risk of crimes and to get proper information of crime. Technological enhancement should be used for making life better and safe. It has been found that mishandling of CCTV surveillance results in violation of the right to life with dignity. It has also raised the concern about liberty and freedom of individuals. The study put prominence on the proper usage of CCTV surveillances. It is essential that the right of privacy should not be violated and the usage will give fruitful results. There are always two sides of the coin. CCTV surveillance has its own pluses and drawbacks and the same is narrated in the present study. Whenever it is done without proper precautions then it may enter into the private life of a person without taking their consent. Photographs and clippings of private moments are divulged and it is the annexation of the privacy of people. It is uncomfortable. It is very difficult to keep balance between uprightness and evil in the era of technological advancement. The study put emphasis on the germane usage of CCTV surveillances rather than cluttered. The right to privacy is associated with dignity, freedom and liberty. It shall not be hampered by technological expansion.

Keywords: CCTV Surveillance, Privacy, Technological development, liberty, freedom

INTRODUCTION

Technological advancement is providing solutions but there are always side effects of it. CCTV surveillance is talk of the town because of the established nexus to anonymity expectations and privacy interests. There has been a fast growth in the usage of closed circuit television cameras (CCTV) in the United States after September 11, 2001, each and every part of cities have been put under CCTV surveillance (Goold, 2006:5). The wide usage of CCTV surveillance all over the world has amplified to fight against terrorism, crime and public disorder. The rapid growth of CCTV is expected in the republic of India in the near future. The dawn of CCTV surveillance that permits the government to guard, zoom in on, trail, and preserve the actions of everyone, wherever in the world, twenty-four hours a day, plea to edict in the interest of spotless privacy (Slobogin, 2002). Surveillance systems of automated identification systems are proliferating at borders and it also enters rapidly in everyday life (Lyon 2007). The enormous extent of numerical machinery has elevated new encounters in respect of certain morals and moralities and one of the noticeable and delicate challenges is to control the usage of CCTV (Volosevici 2018). CCTV surveillance violates the inherent poise right to privacy by snooping with the individual's knack to rheostat the appearance of the self (Purshouse, 2014:525). It is vital that the Government should establish a balance between protection and control while using CCTV surveillance. (Botello, 2007:331).

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Comprehending Farmers' Distress

Suranjita Ray

The political narrative of the Bharatya Janata Party (BJP) that promised to double the farmers' income by 2022-23 has raised serious qualms not only because the real income of the farmers has remained stagnant during the last few years but also due to the farmers' increasing distress across the country. The democratic upsurge of farmers' movements has not only exposed the flaws in the agrarian policies of ineffective procurement, obstinate trade, restrictive marketing, and highly distorted pricing that have contributed to the farmers' distress, but it has also influenced the present mainstream politics of the country. Mobilisation politics by the farmers' movements in particular has compelled both the ruling as well as the Opposition political parties to pass resolutions and make promises to prioritise the farmers needs and demands.

The BJP's resolution that 'we are conceptualising an independent, able, strong and prosperous farmer as our annadata who will take the country's economy to great heights' comes in the wake of its defeat in the recent Assembly elections in Madhya Pradesh, Chhattisgarh, and Rajasthan that was ascribed to the growing agrarian distress and the farmers' anger against the government. The Congress Party misses no opportunity to assert that it will write off loans of farmers across the country after the 2019 elections as its promise to waive farm loans within ten days of elections seems to have helped it win the elections in the above States. (Ray, 2019: 23-24) Despite the fact that farm loan waivers benefit only the relatively well-off farmers with larger land holdings and excludes a majority of the farmers with small and marginal holdings who borrow from the local money lenders charging exorbitant interest of 25-50 per cent, political parties have prioritised the populist move to waive farm loans.

Several studies find that the farmers are hit the hardest due to the low prices for farm produce. The increasing prices of farm inputs and lower prices of agricultural produce have landed the farmers in the debt trap. The retail food inflation in 2017 and 2018 ruled even below the inflation of the overall consumer price index. (Damodaran, 2019:18) The marketing and trade policies remain restrictive and pro-consumer often at the cost of farmers. (Gulati, 2019:10) Studies also find that the policies to assure a Minimum Support Price (MSP) and loan waiver cannot reach to more than 20 per cent to 30 per cent of the peasantry respectively. Therefore, it has been argued that a stable income policy for farmers is a better policy approach.

Income Policy Approach

The Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) proposes a transfer of Rs 6000 a year as annual direct income support to the small and marginal farmers cultivating less than/up to five acres. It aims at benefiting a target of more than 12 crore small farmers and their families which will amount to Rs 75,000 crores in the next financial year. The Ministry of Agriculture and Farmers Welfare has written to all the States to initiate the work of identification of the beneficiaries and expedite the process of updation of land records. States have to designate a nodal department for publicising the scheme adequately to ensure early disbursement of Rs 20,000 crores in the first instalment of cash transfers of Rs 2000 each up to 10 crore farmer families before March 31.

The social protection scheme is a targeted income transfer scheme that aims at only the landholding class. Though income support is a more equitable way to address the crisis than loan waiver, it is pertinent to understand that a major step to ameliorate the farmers' distress

Building An Understanding Of Agency In Sāmkhya Tradition

सांख्य परम्परा में कर्तृत्व की ज्ञप्ति का निर्माण

* Dr. Vidhu Jain

सारांश

कर्तृत्व की अवधारणा मानव अन्वेषण के किसी भी संभाषण के लिए महत्वपूर्ण है, और इसलिए भारतीय दार्शनिक परंपराओं में विद्वत्तापूर्ण अन्वेषण की आवश्यकता है। वर्तमान पत्र में मेरा उद्देश्य द्वैतवादी सांख्य परंपरा जो कि शास्त्रीय भारतीय दार्शनिक विचार की पुरातन प्रणालियों में से एक में कर्ता के विचार की समझ का निर्माण करना है। इस परंपरा की ख़ासियत दो अलग, मौलिक, परस्पर अनन्य वास्तविकताओं, अर्थात् प्रकृति और पुरुष को बनाए रखने में निहित है। प्रकृति को एक, अचेतन, बुद्धिहीन, सदा परिवर्तनशील कहा जाता है, यह भौतिक संसार को स्वयं से विकसित करती है जबकि पुरुष शुद्ध चेतना, अनेक, अपरिवर्तनीय, बिना रूप, बिना आसक्ति, साक्षी और निष्क्रिय है। कर्ता की अवधारणा की समझ में एक जागरूक प्राणी का विचार शामिल है जो संकल्प करने और अपनी इच्छा को क्रिया में बदलने में सक्षम है। यदि पुरुष स्व चेतन है लेकिन निष्क्रिय है और प्रकृति अचेतन है लेकिन गतिशील है तो गतिविधि कैसे होती है? सांख्य परंपरा के अनुसार कर्तापन को समझने के लिए इस प्रासंगिक प्रश्न की जांच की जानी चाहिए। हालांकि एक व्यक्ति (जीव) को एक कर्ता के रूप में देखा जाता है जहां एजेंसी की अभिव्यक्ति का अनुभव होता है लेकिन यह व्यक्तिगत पुरुष और प्रकृति के बीच स्पष्ट संयोजन का परिणाम है। सांख्य विद्वानों का तर्क है कि कर्तृत्व केवल प्रकृति से संबंधित हो सकता है और पुरुष से कभी नहीं, और इस तरह की स्वीकृति के लिए उन्होंने कई तर्क दिए हैं जिन्हें इस पत्र में लिया जाएगा। इस प्रकार प्रस्तुत शोधपत्र इस समस्या की सूक्ष्म समझ बनाने का गंभीर प्रयास करता है।

मुख्य शब्द :

कर्ता (Agent), कर्तृत्व (Agency), जीव (Individual Self), प्रकृति, पुरुष, सांख्य परंपरा।

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An Investigation into the Nature of Agent in Nyāya School of Thought

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Abstract

The concept of agency is vital to any investigation into the nature of human actions, and so is the scholarly need to explore it in Indian Philosophical tradition. Nyāya school of thought, which is a realist school in the orthodox system of Indian philosophy, elaborates upon the nature of the Agency and its relation to the Self, where the agent plays a significant role in the liberation of the Self. This paper explores and investigates the nature of agency/personhood as described in the text *Nyāya Sūtra*. Naiyāyikas put forth many arguments to explain how the agency can only belong to the Self, where interestingly, though essentially the Self is the agent, this Self is independent of other conditions and cannot acquire the characteristics indispensable for the manifestation of the agency. These other necessary conditions viz. body, internal sense, external sense and external objects, for this manifestation, are only auxiliaries and not in themselves capable of independently acquiring agency. In this paper, a serious effort is made to justify the Nyāya claim that only the Self is capable of and has the potential to be an agent, whose actions are responsible for the liberation of the Self.

Keywords: Agent, Agency, Action, Self, Nyāya, *Nyāya Sūtras.*

The Nyāya system of thought is a well-known realist and a logical school of classical Indian philosophy. It predominantly deals with the sources and ways of arriving at valid knowledge which finally leads to the realization of the truth. In consonance with the views of other systems of Indian philosophy Naiyāyikas also believe that the ultimate aim of human life is to attain a state of complete cessation of pain and suffering i.e., liberation. Acquisition of valid knowledge and truth ultimately tends towards paving the way for the elimination of pain and suffering of the individual self. The individual self-existing in the world is bound to act. Activity is its very nature and this alone in the form of effort brings an end to the cycle of birth and death. Thus, the

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Locating the Concept of Toleration in the Philosophical Works of Plato

Shyamalima Borgohain

Abstract:
Toleration is a moral and political doctrine which is also considered as one of the central principles of a liberal regime. Toleration was adopted as an enlightened strategy to address the religious strife that took place during sixteenth and seventeenth century in Europe. In a modern society, it is a way of granting liberty and equality, thereby focusing on attaining a peaceful society. As a result of a range of developments in human civilization, various cultures came in contact with one another, leading the path towards adaptation and acculturation. At the same time various factors such as immigration, social movements, mass media, etc. resulted in cultural and religious diversity. With these advancements, the fear of identity and cultural deprivation also grew among the masses. Hence, the need for toleration is more pressing than ever. The present study is an attempt to investigate and locate the kernels of toleration in the ancient Greek period, especially in the philosophical works of Plato. Plato never gave any theory of toleration explicitly but various aspects of toleration such as non-interference, being patient, controlling one's own senses, heterogeneity, etc. could be associated with concepts introduced by Plato especially in his influential work *The Republic*.

Keywords: Toleration; Non-interference; Heterogeneity; Justice.

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Visibility of the Self in the Digital Space, Trolling and the Digital Panopticon

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***Abstract*— The phenomenal upsurge of the digital world in recent times forces us to examine the space available to the average subject or consumer to be visible, to express oneself in terms of the personal, emotive, social or public fronts. This paper examines the digital space utilized by the consumer subject and the vulnerability of the same through digital surveillance and trolling.**

***Index Terms:* Self, digital space, vulnerability, digital surveillance, trolling.**

INTRODUCTION

Projection of the self has always been an impulse of human beings existing in a social context. Nevertheless, the social context itself has transformed drastically over the past few years in terms of the availability of the internet social media spaces. Proliferation of the use of these spaces has led to significant changes in social existence or perception of the same, social behaviour, identity formation and related issues. A rather simplified historical analysis of the situation might be pertinent here.

The boom in the use of the digital world in the contemporary times is phenomenal. Merely one or two decades ago, internet use was the privilege of a few, in terms of economic, educational or geo-political existence. The users were mostly from the higher strata of the so called "developing" countries and/or belonging to the "developed" world. Though the dynamics of these terms have been rapidly changing, we can comfortably assume that internet resources were enjoyed by a minority in various parts of the world.

The easy availability and cost-cutting policies of mobile phone companies, complemented by the relaxation in government rules and regulations made mobile phone an everyday necessity for people belonging to widely different economic strata. This had a direct and an indirect impact on various existing equations. The transition received an impetus during the last two years of global pandemic, changing the scenario in a significant manner.

Restrictions on movements or on (social) gatherings initially imposed by the state agencies and then slowly through various media platforms led to a panic situation, creating a hesitation in the minds of people against the age old social almost ritualistic habits of coming together and enjoying a social gathering. Although there can be counter-information contesting any sort of general statements, one can at least see the dependence or rather over-dependence on social network sites instead of physical meetings or physical exchanges. Thus, there has been a massive growth in the user numbers as well as user time span of different social media platforms, specifically in a country like India.

Countrywide lockdown contributed to the growth, a rather seamless one, of the internet market space. Amazon and similar global giants entered into small towns and the nearby villages, somewhat more fervently than into the metros. Accessibility to the global brands and thus, to the global marketplace was mostly the prerogative of big cities and metros. The easy internet accessibility has opened the possibilities to the places in the periphery. This has been zealously grabbed by the market giants as well as by the eager consumers.

The introduction provided above is pertinent to understand the increased emergence, sustenance and problems with the social media space used by the people at large who do not perceive them to be consumers; whereas for the platform providers or the market business tycoons, the users obviously are all potential customers. This leads to a probable conflict of interests, which is eased out by making several tactics not obviously visible. Digital panoptical surveillance has become an un-imaginably large and emerging sector, which is academically

Geopolitics of International Migration and evolving complexities due to COVID 19 Pandemic

Pooja Sharma[1] **and Shahab Enam Khan**[2]

International Migration has been an evolving phenomenon of economic development of the human race. It has both a cause-and-effect relationship with the process of development since it plays a critical role in economic development. 'It is a global phenomenon that is growing in scope, complexity and impact' (United Nations)[3]. The human rights law advocates freedom of movement within the territory of a country and to choose one's residence, the right to leave any country, and the right to return to one's own country (Universal Declaration of Human Rights (adopted 10 December 1948) UNGA Res 217(A), Art. 13)[4]. In addition, several bilateral labor migration agreements ensure state-led cooperation and agreements that are legally binding.

Despite being recognized as a critical aspect of economic development and human rights, international migration has been witnessed as a geopolitical instrument, reflecting many times the preponderance of power, subjugation, or sometimes a repercussion of religious unrest. There are geopolitical implications and questions related to mobility, citizenship, and the nation-state (Allen et al. 2018). The most interesting aspect of the geopolitics of migration is the nature of complexities associated differs across the regions of the world (Collyer, 2016). The formation of the Euro-Mediterranean area is an outcome of migration management strategies. The European policy frameworks have strategically excluded the countries to the South which later evolved and developed into a discourse of partnership emphasizing Euro-Mediterranean character (Collyer, 2016).

The geopolitics of asylum-related migrants either keep these alien asylum populations alive or let them die during the asylum-related journeys (Foucault, 2003). Such asylum-related migrants are highly vulnerable to illness and lack of attention to their illness results in deaths. The influx of people in Turkey before joining the passage to Greece has led to overcrowding. Moreover, the philosophy of othering and not letting these migrants share the same space as EU citizens ultimately witnessed migrants that were alive but not in liveable conditions (Jauhiainen, 2020). Thus, the critical questions related to who is

Pooja Sharma[24] and Nav Jadon[25]

Abstract

Amid the outbreak of the COVID-19 pandemic, migrants have suffered immensely not only across nations but also within the countries. Migration has been an inevitable phenomenon with the onset of globalization. With the commencement of globalization, humans are driven towards more and more consumerism. Thus, increasing levels of consumption have set further pressure on the limited resources in nature. On one hand, it is not ethically viable to cease migration, while on the other hand, while following their dreams or due to unavoidable circumstances, this international and inter-regional mobility results in a high level of consumption. The paper attempts to resolve the dilemma of the ethical responsibility of embracing immigration and the crises it imposes on ecological footprints. The study reveals that by adopting the attributes of the Gandhian philosophy of non-violence, tolerance, and adaptability the immigrants themselves can ensure the immigration process as a peaceful journey of life. The other aspects of Gandhian philosophy such as self-sufficiency, self-reliance, and minimum consumption become the guiding force in setting the goals in life. Thus, migrants themselves feel responsible for maintaining the ecological balance and the state must ensure equal opportunities and secure inclusivity, the two fundamental elements of sustainable development endorsed while advocating human migration and settlement.

Keywords: *Migration, globalization, COVID 19 pandemic, ecological footprint, Gandhian perspective.*

Introduction

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Research Article

Private Sector Presence in Healthcare in India: Econometric Analysis of Patterns and Consequences

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Priyanka Yadav[1] and Amit Shovon Ray[1]

Abstract

The presence of private providers in the Indian healthcare sector remains one of the most debated issues. This article attempts to contribute to this debate from the angle of the ultimate goal of healthcare provision—a healthy population. We explore whether private sector presence (PSP) has improved the general health status of the people. We develop a theoretical argument to hypothesize that PSP in India would lead to better health status through the route of competition-driven quality, which in turn could lead to adverse economic consequences. We use district-level secondary data from government sources to confirm our hypotheses using robust tools of applied econometrics, correcting for serious problems of endogeneity. Constructing a district-level index of PSP, we identify distinct spatial/geographical clusters, explained by socio-economic prosperity as well as demonstration effect. We also find a robust positive association between PSP and general health outcomes, accompanied by an adverse economic consequence of rising catastrophic out-of-pocket expenditure. In terms of policy, the article concludes that rather than restricting the growth of the private sector, the government must strengthen the quality of the existing public healthcare delivery system and ensure effective monitoring and regulation.

JEL Codes: I10, I11, I12, I15

Keywords

Private sector healthcare, India, health behaviour, health outcomes, health policy

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Determinants of Economic Mobility in India

R. Ahalya and Sourabh Bikas Paul*

In this paper, we analyse the trends pertaining to the transition of households out of poverty and into the middle class over time. Further, we look at the factors affecting upward income mobility of urban Indian households, particularly the effect of the urban infrastructure development. The analysis of factors affecting poverty alleviation and upward economic mobility among households has been well documented in literature. The motivation of this study is to investigate whether investment in urban infrastructureis actually an important determinant of household economic mobility. Firstly, we study the state wise transitions in the income distribution of urban households over time. Secondly, we study the relationship of these economic transitions with various social and institutional factors that may have influenced them. The results indicate that infrastructure investment does not have a positive impact on transition out of poverty, but affects upward household mobility at higher income levels. However, factors such as the length of pucca roads in the district, and urban electrification (%) have a positive impact on household mobility out of poverty and middle class mobility respectively. The use of 2SLS probit regression model in order to tackle the problem of endogeneity reinforces the result that while the JNNURM spending does not affect out of poverty mobility, it significantly impacts mobility of households into global middle class.

Keywords: *Income mobility, Female education, Urban, Infrastructure*

I. INTRODUCTION

The motivation of this study is to investigate the factors affecting economic mobility in India, and whether investment in urban infrastructure leads to household economic mobility. Firstly, we analyse the state wise transitions in the income distribution of urban households over time. Secondly, we study the relationship of these economic transitions with various social and institutional factors that may have influenced them, with a focus on infrastructure facilities.

Although the method for measuring economic mobility has been contested in literature (Gottischalk and Spolaore, 2002), economic mobility refers to the changes in individual or household income/consumption over time (Fields and Ok, 1998), thereby improving/reducing the standard of living. This mobility can be either intergenerational or intra generational.While the former looks at the changes in the economic status of children in comparison to their parents, the latter looks at the

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Factors Affecting Food Consumption Patterns Across Economic Classes in India: A Demand System Estimation

R. Ahalya[1]

Sourabh Bikas Paul[2]

In this paper, the main research question that has been addressed is concerned with how the demand for different categories of food items is affected by income, prices, and other demographic variables, for different economic classes. The Quadratic Almost Ideal Demand System (QUAIDS) estimation technique is used for the purpose of our study. The results indicate that the share of consumption expenditure across households has shifted from cereals and pulses towards high value food items over the previous two decades. The results show that the middle and upper class households are more responsive to price changes, especially in urban areas. They also indicate that there is greater market segregation across classes in urban areas, and the substitutability between staple and high value food items is higher for middle class and upper class households.

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स्त्री अस्मिता का अन्वेषण हिन्दी साहित्य के प्रांगण में

– डॉ. ज्योति शर्मा
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दिल्ली विश्वविद्यालय

साहित्य अपने युग समाज का दर्पण होता है। साहित्य में अपने समय की राजनीतिक, धार्मिक, सामाजिक, सांस्कृतिक एवं दार्शनिक प्रवृत्तियों को देखा जा सकता है तथा उस युग के सामाजिक, राजनीतिक, सांस्कृतिक, आर्थिक, धार्मिक एवं दार्शनिक जीवन का अनुमान लगाया जा सकता है। किसी युग में नारी को अपने अस्तित्व का कितना ज्ञान था? उसकी स्थिति कैसी थी? वो अपने अधिकारों एवं स्वतंत्रता को लेकर कितनी जागरूक थी? इन सभी प्रश्नों को जानने का महत्वपूर्ण एवं एकमात्र आधार साहित्य ही है।

अस्मिता कोशगत अर्थ

अस्तित्व, विद्यमानता[1]

अस्मिता का अर्थ 'अपने विद्यमान होने', 'अपने अस्तित्व' 'स्व की पहचान' होने के आभास से है। भारतीय समाज पितृसत्तात्मक समाज है। जहाँ पुरुषों को स्त्रियों से अधिक महत्व दिया जाता रहा है। हमारे प्राचीन धर्मग्रंथों में नारी को देवी मानकर उपासना की जाती रही है-

यत्र नार्यस्तु पूज्यंते रमन्ते तत्र देवता:
यत्रैतास्तु न पूज्यंते सर्वास्तत्राफला: क्रिया:[2]

यद्यपि स्त्री को देवी की संज्ञा से विभूषित किया जाता रहा है। परन्तु तब भी समाज में उसकी स्थिति अच्छी नहीं है। माँ के गर्भ में कन्या भ्रूण के रूप में अपने वजूद एवं अस्तित्व की तलाश में लग जाती है उसे जीवित रहने दिया जाएगा या माँ के गर्भ में कन्या भ्रूण के रूप में मृत्यु शैया पर सुला दिया जाएगा जैसे प्रश्न उसके सामने उत्पन्न हो जाते हैं। जन्म से लेकर मृत्यु तक उसका इस प्रकार के अग्निपरीक्षा रूपी प्रश्नों से संघर्ष जारी रहता है।

हिन्दी साहित्य के आदिकालीन साहित्य में नारी को वस्तु रूप में विजेता शासक के सम्मान रूप में वर्णित किया गया है। भक्तिकालीन साहित्य में महिला रचनाकारों- मीराबाई, सहजोबाई एवं दयाबाई की रचनात्मकता देखने को मिलती है। परन्तु अधिकांश भक्तिकालीन साहित्य में नारी को माया, विष की बेल कहकर सम्बोधित किया गया है। रीतिकालीन साहित्य नारी के नख-शिख एवं शृंगार वर्णनों से सुसज्जित एवं कठ तक डूबा हुआ है।

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समकालीन भारतीय समाज में स्त्रियों के प्रति बढ़ती हिंसा

– डॉ. ज्योति शर्मा
एसोसिएट प्रोफेसर, हिन्दी विभाग
रौनकराम महाविद्यालय दिल्ली विश्वविद्यालय

भारतीय सभ्यता एवं संस्कृति विश्व की प्राचीन संस्कृतियों में से एक है। जिसने अपनी मूल्य आधारित सिद्धांत एवं वैचारिकता के चिह्न विश्व पटल पर अंकित किए हैं। भारतीय समाज पितृसत्तात्मक समाज रहा है। जहाँ पुरुषों को स्त्रियों से अधिक महत्व दिया जाता रहा है। यद्यपि हमारे प्राचीन धर्मग्रंथों में नारी को देवी मानकर उपासना की जाती रही है –

यत्र नार्यस्तु पूज्यंते रमन्ते तत्र देवता:
यत्रैतास्तु न पूज्यंते सर्वास्तत्राफला: क्रिया:।।

तथापि स्त्री को देवी की श्रेणी में संबोधित करने के उपरान्त भी उसकी स्थिति कुछ अच्छी न थी। कन्या भ्रूण हत्या, कन्या उपेक्षा, बाल विवाह, सती प्रथा, विधवाओं की दयनीय स्थिति जैसी कुप्रथाओं का ग्रहण नारी रूपी पद्मा को हमेशा ग्रसित करता रहा है। संतोष सिंह लिखते हैं-

"यों तो प्रत्येक युग में भिन्न-भिन्न कारणों से भारतीय स्त्री ने व्यक्ति परिवार तथा समाज के हिंसात्मक व्यवहार को झेला है, भुगता है किंतु आज स्थिति थोड़ी-सी भिन्न है। ऐसा प्रतीत होता है मानो हिंसात्मक आचरण एक सामाजिक व्यवहार बन चुका है। यह हिंसात्मक व्यवहार कैसा भी हो सकता है-व्यक्ति का व्यक्ति के प्रति, समूह का समूह के प्रति, शक्तिशाली का कमजोर के प्रति, धनवान का निर्धन के प्रति, एक वर्ग विशेष का दूसरे वर्ग विशेष के प्रति और पुरुष का नारी के प्रति। इस पूरे चक्रव्यूह में सर्वाधिक दयनीय स्थिति उन कन्याओं की है जो अपने ही लोगों के मध्य सुरक्षा कवच रूपी आचरण के पीछे आपत ही असुरक्षित जीवन जीने को बाध्य है।"[1]

आज की नारी पराये क्या अपने लोगों के मध्य ही सुरक्षित नहीं है। खून के रिश्ते ही उसकी मान-मर्यादा को तार-तार किए जा रहे हैं। एक पिता जो जन्मदाता है। एक भाई जिसे उसने रक्षा सूत्र बांधा है और उस भाई ने हमेशा उसकी रक्षा करने का वचन दिया था। सभी उसे देह मान उसका शोषण कर रहे हैं। इस कुकृत्य में अपराध में चाचा, मौसा, मामा,पड़ोसी आदि सभी सम्मिलित हैं। बलात्कार,सामूहिक बलात्कार, जैसी पाशविक घटनाएँ आम हो गई हैं। इस प्रकार के अपराध और अपराधियों की कलई खुल न जाए।

स्त्रियों की हत्या आज एक आम बात हो गई है। देश के विभिन्न क्षेत्रों में स्त्री के प्रति बढ़ते यौन अपराध, बलात्कार की घटनाएं उनकी समाज में दयनीय दशा की करुण कहानी कह रही हैं।

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DOIs:10.2015/IJIRMF/202203026 --:-- Research Article

The relationship between PM2.5 and incidence and severity of Covid-19

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Abstract: *Covid-19 viral pandemic enforced restrictions and consequent short term reduction in anthropogenic emissions were reported to bear a positive impact on air quality in many parts of the world. At the same time numerous reports indicated a positive correlation between exposure to certain types of air pollutants especially fine particulate matter and incidence and severity of Covid-19. Several research studies have suggested an increment of Particulate Matter (PM2.5 and PM10) with an associated increase of Covid-19 mortality. Studies have established that aerosols generated from SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) infected patients serve as a highly virulent direct transmission route while ambient aerosols can act as cargo helping indirect transmission of the virus though viability and virulence of the virus stuck on the surface of particulate matter is not confirmed yet.PM induces lung cells inflammation and exposure to PM could enhance the susceptibility and severity of the Covid-19 patients. This review study was conducted to comprehend the intricate relationship between PM2.5 and incidence and severity of Covid-19. An extensive search was carried out to gather published literature related to the review topic using online PubMed and Science direct databases. Articles focusing on relationship between Covid-19 and air pollutant PM2.5 were selected and analysed, based on their relevance with the current review topic. In conclusion, PM2.5 have a positive correlation with spread and severity of Covid-19. The study has implications for environmental intervention in regions with unusually high number of Covid-19 cases and framing stringent air quality policies to reduce the risk of other fatal outbreaks in future.*

Keywords: *Air pollutants; Covid-19; Particulate matter; PM2.5; SARS-CoV-2.*

1. INTRODUCTION:

It has been two years, world is struggling with Covid-19 a highly infectious and invasive pneumococcal disease caused by Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2) first reported in December 2019 in Wuhan, China. By March 2020 the disease transformed from epidemic to pandemic [1] as the virus spread globally, owing to its highly contagious and aggressive nature. The virus affected all sections of society across the globe and a substantially high proportion of global population was infected. As per World Health Organization (data accessed as on 17 December 2021) there have been 271,963,258 confirmed cases of Covid-19 out of which 5,331,019 individuals have lost their lives, due to the disease [2]. SARS-CoV-2 primarily causes respiratory disease as it attacks the lungs but is reported to impact other vital body organs such as brain, heart and kidney too, causing various clinical symptoms [3]. Multiple transmission modes of SARS-CoV-2 [4] enhances the chances of its spread. Though the disease is a serious global health issue but the effects are not homogenous across the globe; few parts of the world affected more severely in terms of its incidence and severity as compared to others. The factors behind the variability could be numerous and we are yet to understand them completely. However, studies have suggested air pollution as a plausible player transmitting and aggravating this novel Corona virus and indicated a positive correlation between higher air pollution levels and Covid-19 [5-11] although some indicated a negative correlation [12]. Higher levels of particulate matter (PM2.5 and PM10) and increased Covid-19 infections and mortality are reported in many cases [13-19] indicating a link between exposure to PM levels and Covid-19 (Table1). In this review study an attempt has been made to understand the impact of PM2.5, a ubiquitous air pollutant on the spread and severity of SARS-CoV-2.

2. MATERIAL AND METHODS:

An extensive search was carried out to gather published literature related to the review topic using online PubMed and Science direct databases. Articles focusing on relationship between Covid-19 and air pollutant PM2.5 were selected and analysed, based on their relevance with the current review topic. Keywords used included: Covid-19, air pollution

North-East India: A Unique Biodiversity Paradise Unexplored or Lost?

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Abstract- The North-East India region is the "gateway" for much of India's flora and fauna as the ecosystem components exhibit great dynamism and has a relatively complex biogeography. It is considered as a genetic treasure house of plants, animals and microbial resources. The region fills in as a rich archive of plant and animal riches in different biological frameworks. Forests in this area vary from tropical, temperate to alpine meadows and cold deserts, having highest diversity of biomes. These biological communities mirror a mosaic of biotic communities at different spatial and hierarchical levels and also show high evolutionary activities. The North-East (NE) region contains more than one-third of the country's total biodiversity and the extent of endemism is exceptionally high in both flora and fauna. The NE region forms a part of Indo-Burma hotspot which is amongst the 34 globally identified hotspots in the world and also four global priority ecoregions are located in this region. This paper aims to highlight the extent of biodiversity of flora and fauna in the North-Eastern region of India, since most of the biota is unexplored or underexplored due to the remoteness of the area and troublesome landscape and has led to poor documentation of the floral and faunal diversity. New species that are being continuously discovered, justify that much is yet to be identified, and studied here. Further the emphasis is placed on the deteriorating condition of the flora and fauna and the measures taken for conservation at national and global levels.

Index Terms- Ecosystem, Biodiversity, Flora and Fauna, Biotic community, Conservation and Endemism

I. INTRODUCTION

North-East India covers the eight sister states which include Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. It is geographically nestled in one of the most biodiversity-rich regions of the world [1]. The tremendous assortment of the climatic, altitudinal and soil varieties in this area pays the route for an incredible scope of natural habitats for the biotic communities. North-East India dwell a wide variety of flora and fauna. Additionally, it has extensive variety of physiographic, economic and social diversity region indicating wide land varieties that differ from the surge field plains of Assam to most noteworthy mountain pinnacles of Khanchanzenga (8586 m) in Sikkim. Also, it is portrayed by highest precipitation territories like Cherrapunji in Meghalaya and the state like Mizoram has most noteworthy level of forest cover with few steep slopes [2]. The North-East region fills in as a rich archive of plant and animal riches in different biological frameworks. These biological communities mirror a mosaic of biotic communities at different spatial and hierarchical levels.Biodiversity means variety of life. Biological diversity is that part of nature which includes the differences in genes among the individuals of a species, the variety and richness of all the floral and faunal species at different scales in space, locally, in a region, and various types of ecosystems within a defined area [3]. On the basis of variation and distribution there are four types of biodiversity (Table 1).

Table 1: Types of Biodiversity [3]

Types of Biodiversity	Definition
i) Species Biodiversity	It is the change occurring in the variety of different types of flora and fauna present in different places in the same geographical area.
ii) Genetic Biodiversity	It deals with the genetic makeup of species and the variation in the genes of the species
iii) Ecological Biodiversity	The variation in the ecological area or environment such as forests, deserts, grasslands, streams and coral reefs etc.
iv) Functional Biodiversity	It refers to study of various types of chemical processes of species like cycling of matter, energy flow etc.

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Editorial: Family Medicine Hall of Fame

Dr. Prakash Chand (PC) Bhatla: Father of Family Medicine

Raman Kumar

Founder and National President, Academy of Family Physicians of India, New Delhi, India

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Abstract

Dr. Prakash Chand (PC) Bhatla MBBS was one of the illustrious past presidents (1975–76) of Indian Medical Association (IMA). He was a General Practitioner by vocation and a towering professional leader. He made an immense contribution to the discipline of Family Medicine – the academic discipline, medical specialty, and the knowledge domain of Family Physicians/Family Doctors within India as well as the global level. He was a brilliant human being and professional par excellence. He was probably one of the greatest leaders of the medical profession in India and a rightful successor to Dr BC Roy's legacy. As a rare achievement, he received the Dr BC Roy National Award from the President of India twice. He received this prestigious recognition award in 1977 for socio-medical relief in India and again in 1982 for the promotion of Specialty of General Practice. He founded IMA CGP (Indian Medical College of General Practitioners), and his foundational work led to the recognition of Family Medicine as a specialty in India. Due to his efforts, Family Medicine was included in the list of recognized specialties by the National Board of Examinations (NBE) as well by the Medical Council of India (MCI). His contribution to medicine at a global level is also remarkable. He is also considered one of the founding forefathers of WONCA – World Organization of Family Doctors. He was associated with the foundation process of WONCA from the beginning (1964). The International Liaison Committee organized the first World meeting of General Practice in Montreal (Canada) in 1964 and the second meeting in Salsburg in 1966. Dr Bhatla was the convenor of the Third World Conference on General Practice in New Delhi, India, in 1968. A global representative body of Family Medicine/General Practice was launched in 1972 in Melbourne, Australia. Due to contribution to WONCA, he was elected for the first ever WONCA fellowship, the most prestigious global Family Medicine award. He was contemporary to other world leaders of Family Medicine and Primary Care such as Ian McWhinney and Barbara Starfeild. He is rightfully recognized and remembered as Father of Family Medicine. Dr Bhatla's intellectual, professional, and administrative contribution laid down the sound background for the foundation of a Specialty body of Family Medicine in India called the Academy of Family Physicians of India. Life and work of Dr PC Bhatla continues to inspire family doctors, family physicians, general practitioners, and Family Medicine specialists across India, South Asia, and the World in the 21st century.

Keywords: AFI, Academy of Family Physicians of India, Dr PC Bhatla, family physicians, Father of family medicine, fellowship of WONCA, Foundation of WONCA, IMA CGP, National Medical Commission, specialty of family medicine

Dr Prakash Chand (PC) Bhatla – The Legend: Early life

Dr PC Bhatla was born on December 28, 1919 in undivided India. He completed his Bachelor's in Science (BSc) in 1939 from Pubjab university and earned MBBS qualification in 1944 from the same university. Thereafter, he started practicing in Lahore (Punjab, India). After partition of India (1947 – through an act of British parliament), he migrated to Delhi, the capital city of India as

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RESEARCH ARTICLE

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Adverse events and breakthrough infections associated with COVID-19 vaccination in the Indian population

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Abstract

Vaccines against COVID-19 provide immunity to deter severe morbidities associated with the infection. However, it does not prevent infection altogether in all exposed individuals. Furthermore, emerging variants of SARS-CoV-2 impose a threat concerning the competency of the vaccines in combating the infection. This study aims to determine the variability in adverse events and the extent of breakthrough infections in the Indian population. A retrospective study was conducted using a pre-validated questionnaire encompassing social, demographic, general health, the status of SARS-CoV-2 infection, vaccination, associated adverse events, and breakthrough infections in the Indian population. Informed consent and ethical approval were obtained as per Indian Council of Medical Research (ICMR) guidelines. Participants, who provided the complete information, were Indian citizens, above 18 years, and if vaccinated, administered with either Covishield or Covaxin, were considered for the study. Data have been compiled in Microsoft Excel and analyzed for statistical differences using STATA 11. The responses from 2051 individuals fulfilling the inclusion criteria were analyzed. Among 2051, 1119 respondents were vaccinated and 932 respondents were non-vaccinated. Among 1119 vaccinated respondents, 7 were excluded because of missing data. Therefore, out of 1112 vaccinated, 413 experienced adverse events with a major fraction of younger individuals, age 18–40 years, getting affected (74.82%; 309/413). Furthermore, considerably more females than males encountered adverse consequences to vaccination ($p < 0.05$). Among vaccinated participants, breakthrough infections were observed in 7.91% (88/1112; 57.96% males and 42.04% females) with the older age group, 61 years and above (odds ratio, 3.25 [1.32–8.03]; $p = 0.011$), and males were found to be at higher risk. Further research is needed to find the age and sex-related factors in determining vaccine effectiveness and adverse events.

G. Arora and J. Taneja are equal contributors.

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Short Communication

Hesitancy and Acceptance of COVID-19 Vaccination Amidst the Second Wave of Pandemic in India: A General Population Study

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Introduction

Currently, with Delta, Omicron, and other variants on a rampage across the world, it is imperative to get vaccinated in time to curtail the burden of COVID-19 pandemic. The SARS-CoV-2 pandemic was devastating in India, infecting more than 34 million people and 4 million mortality as on December 22, 2021.[1] India is the second densest country with a population of more than 1.3 billion posing a challenge for COVID-19 vaccination.[2] In order to accelerate the pace of vaccination, the Government of India adopted an aggressive "Covid-19 Vaccine Communication Strategy" with the key elements being advocacy, capacity building, media, and social media engagement, social mobilization, community engagement, and adverse events following immunization (AEFI) crisis communication.[3] The pace of vaccination has tremendously increased from 1.26% in June 2021 to 41.2% (both doses) on December 21, 2021.[4] However, despite India being the world's leading vaccine producer, low vaccine coverage is still a problem due to hesitancy.

The effectiveness of a COVID-19 vaccine strategy in ending the pandemic will rely heavily on high coverage with vaccines to create herd immunity and minimize community transmission. Amidst the COVID-19 second wave in India, we conducted a survey and looked at the knowledge, barriers, and facilitators of the COVID-19 vaccination among the general population.

Method

The indexed study is a cross-sectional web-based and offline mode survey among Indian respondents aged ≥18 years, starting from May 1, 2021 to August 31, 2021. Data were analyzed using STATA 11 software and both descriptive and inferential analyses were used for socio-demographics and categorical data. The statistical significance level was set at a P value$<$ .05.

Results

Demographic Profile of Respondents

A total of 2051 Indians participated in the online and offline surveys with a higher representation of respondents aged 18 to 40 years (70.9%), 41 to 60 years (23.8%), and 61 years and above (5.3%). Gender was found to be almost equally distributed among respondents. About 37.7% were academicians followed by professional and managerial occupations (32.3%) and frontline workers (15.7%). Of note, about 37.1% of the study participants had experienced COVID-19.

Basic Characteristics of Vaccine Hesitancy (VH) and Vaccine Acceptance (VA) Group

Among participants, 146 (7.2%) were hesitant, and a higher number of participants, 1880 (92.8%) accepted the COVID-19 vaccine. There was a statistically significant association

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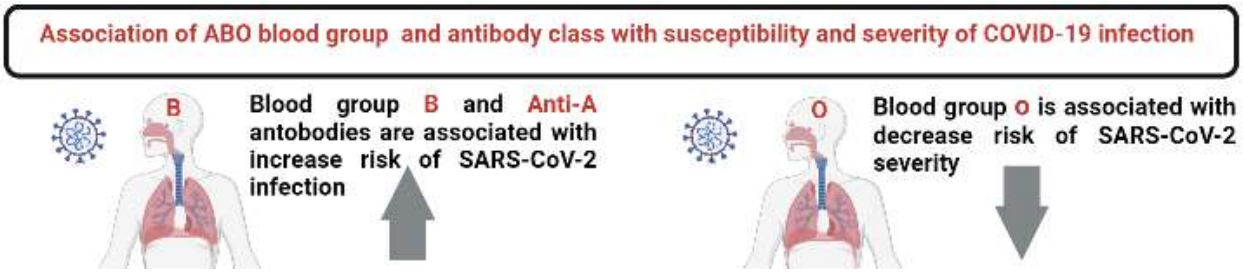
Association of ABO blood group with susceptibility, severity and breakthrough COVID-19 infections in Indian Population

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ABSTRACT



Since the COVID-19 eruption in December 2019, the investigation has been focused on its treatment and preventing the disease spread. Currently, there is no biomarker available that can predict the predisposition and severity of COVID-19 infection. In the present study, we have used the cross-sectional survey study data to decipher the association between the ABO blood group and susceptibility, severity and breakthrough COVID-19 infections. Further, we have also investigated the association between antibody class and the risk of contracting COVID-19 infection. Our results indicated that individuals with blood group B had higher susceptibility to acquire COVID-19 infection. In contrast, blood group A was found to be associated with a low risk of acquiring severe COVID-19. In addition, we did not find any correlation between ABO blood group and breakthrough COVID-19 infections. Further, we examined the association of antibodies; anti-A (blood groups B and O) and anti-B (blood groups A and O) with COVID-19 infection. The analysis of antibody classes showed that anti-A antibody associated with a high predisposition to acquire COVID-19 infection. The present study indicates that blood group B and anti-A antibodies are associated with proneness to COVID-19 infection and severity.

Keywords: ABO blood group; COVID-19; Disease susceptibility; India; SARS-CoV-2

INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a novel coronavirus has affected the unprecedented life of billions of people, especially during the second wave of COVID-19 in India.[1] Although extensive research and growing knowledge aid in understanding the nature and mechanisms of the SARS-CoV-2 virus, the emergence of new variants of the virus influences the epidemiological curve of COVID-19. These new SARS-CoV-2 variants may have a higher rate of transmission or increased risk of breakthrough infections resulting in an inflicted burden on the healthcare system.[2,3] Therefore, identifying individuals most susceptible to COVID-19 is critical in dealing with the pandemic. There is currently no biomarker that can anticipate the risk of COVID-19 infection. However, certain risk factors have been identified that affect morbidity and mortality of COVID-19 infection.[4–6]

Several studies have reported the influence of blood groups on contracting the disease. A variety of factors influence the expression of a blood group as well as the type of antibodies produced against it. According to the literature, there is a symbiotic relationship between intestinal flora and the expression of blood groups. Also, bacteria can induce antibodies against different antigens of ABO blood groups. A study by Makivuokko et al. revealed that different blood groups people inhabit different microbiomes in the intestine.[7] The bacterial colonization and dietary modifications transform sialylated glycans (present at birth) to fucosylated antigens of ABO blood groups. These symbiotic bacteria utilize fucose as their food and induce FUT2 (fucosyltransferase 2) in the colon and rectum, resulting in the

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Monkeypox: Endemic to Epidemic
A review of the current scenario of Monkeypox disease outbreak

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Abstract - The recent outbreak of Monkeypox disease in different parts of the world has drawn attention and concerns of the scientific communities, medicine world and the governments. The world has witnessed what havoc a virus can cause if it jumps from an animal to human beings. Are we moving towards the next pandemic? How safe are the use of animals in medicine and biological research? What will be the consequence of this new zoonotic disease? To avoid another pandemic, it is important that we watch the progress of this disease closely and understand the causes, consequences, treatment, and possible control before it gets out of hands. This article is a compilation of all the information about Monkeypox disease that is available in different domains, to give an overview of the current scenario of the disease.

Index Terms – Monkeypox, virus, MPV, epidemiology of MPV

I. INTRODUCTION

Monkeypox is a viral, zoonotic (transmitted to human from animals), and rare disease that is caused by infection with monkeypox virus (MPV or MPXV) with symptoms close to smallpox but not as severe as smallpox. Monkeypox was first discovered in 1958, when outbreaks of a pox-like disease occurred in monkeys used for research. About a few thousand cases occurred in Africa especially in central and western parts of the African continent [1]. The cases outside Africa were limited to a small number with a travel history of people visiting Africa or with the import of the infected animals.

In 1970, the Democratic Republic of the Congo reported the first human case of monkeypox. Since then, many cases have been reported from various central and west African countries. Most cases are reported from poorest and most marginalised communities in the world [2][3]. Incidents of MPV infections are on a rise since early May 2022. About 19 countries across the world have reported confirmed or suspected cases of monkeypox to the WHO. Since the reports are from different parts of the world, this can no longer be considered endemic to the African region [14].

The cases detected outside the endemic places in the early May 2022 has surpassed the total number detected and this rapid spread has put the scientists worldwide on high alert. There has been a sudden and unexpected occurrence of monkeypox simultaneously in many non-endemic countries, which suggests that there is a possibility of some undetected transmissions for an unknown duration of time followed by recent amplifying events [14].

Epidemiological investigations are going on, however, from the various cases that are reported, so far, no established travel links to endemic areas has been established. Based on currently available information, a unique observation has been established which highlights the possibility of the spread of the disease, mainly but not exclusively, amongst men who have sex with men (MSM) and are seeking primary care in primary clinics or sexual health clinics. A scientific clinical link has yet to be established.

II. WHAT IS MPV?

Monkeypox virus is a double stranded DNA virus which belongs to genus *Orthopox virus* belonging to the Poxviridae family. The *Orthopox virus* genus also includes variola virus responsible for smallpox and cowpox virus. Various animal species have been known to be susceptible to the monkeypox virus. The natural reservoir of monkeypox has been a question of interest from many scientists since its discovery. However, it has been detected from rodents of African region, non-hominids primates such as monkey (hence the name 'Monkeypox'). Further research is needed to know the exact reservoir/s of the virus and the route of its entry into the human population.

III. PATHOGENESIS

Pathogenesis is the progression of an infection which leads to disease. The general viral pathogenicity includes (a) implantation of virus at the portal of entry, (b) viral replication in the host cell [3], spread of viral agent to target organs causing the disease and (c) migration of virus to sites of shedding into the environment.

Factors that affect the pathogenic mechanisms are (a) accessibility of host tissue to the virus (b) host cell susceptibility to virus multiplication, and (c) virus susceptibility to host defences. Low-virulent strains of pathogenic virus strains are favoured by natural selection forces.

In case of monkeypox, infection may begin from the respiratory epithelium or the dermis. The virus further progresses and enters the lymphatic system leading to the swelling of the lymph nodes. Other organs that are susceptible to infected are mucus lining of nose and buccal cavity.

Original Article

Magnitude and associated factors of menstrual irregularity among young girls: A cross-sectional study during COVID-19 second wave in India

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Abstract

Background: Several symptoms are typically experienced after a coronavirus disease 2019 (COVID-19) infection. Worldwide, a lot of women are reporting irregularities in their menstrual cycles post-COVID-19 infection. The purpose of this study is to investigate the prevalence of menstrual pattern among young girls during the second wave of COVID-19 pandemic and to determine the risk factors related to lifestyle among young girls. **Methods:** A cross-sectional study was conducted using a self-designed questionnaire encompassing details of the menstrual pattern, features of hyperandrogenism, lifestyle, and comorbidity among young girls aged 16-24 years. **Results:** The data from 508 girls fulfilling the inclusion criteria were analyzed. The prevalence of irregular menstrual cycle was found to be 29.1%. Further analysis revealed that a significant percentage of girls with irregular menstrual cycle suffer from depression (14.9%) and are often staying stressed (40.5%) in comparison to the girls having regular menstrual cycle. Also, a total of 58 girls out of 508 were diagnosed with polycystic ovary syndrome (PCOS). Among various comorbid conditions, obesity was found in 60% of girls having PCOS followed by an eating disorder. **Conclusions:** A significant increase in irregular menstrual cycle in young girls was found during the second wave of COVID-19. The risk factors for causing the irregular menstrual cycle were found to be insomnia, stress, and depression.

Keywords: COVID-19, menstrual cycle, polycystic ovary syndrome (PCOS), reproductive health, young girls

Introduction

Regular menstruation is an indicator of women's reproductive health and well-being.[1] Any change in the pattern of the menstrual cycle in terms of regularity, frequency, duration, and intermenstrual bleeding is defined as irregular menstruation. Also, irregular menstruation is one of the major manifestations of anovulation along with decreased ovarian steroid production and secretion.[2] Many studies have shown the adverse longer effects of the irregular menstrual cycle in women leads to the risk of developing cardiovascular disease, diabetes mellitus, chronic renal failure and also infertility, premature menopause, breast, and ovarian cancer.[3,4] The collective global prevalence of irregular menstrual cycle based on age, occupation, and country of residence, varies between 5% and 35.6%.[5,6]

A variety of factors affects the pattern of the menstrual cycle, the most important is the dysregulation of the hypothalamic-pituitary-adrenal axis (HPA).[7] In addition to physiological factors, mental health conditions such as anxiety, stress, and depression also affect the menstrual cycle as shown by previous studies.[8,9] The women mostly in their reproductive years (aged 18-44 years) are more likely to be affected by endocrine disorders. In a worldwide estimate, the most common

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RESEARCH ARTICLE

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Short Communication

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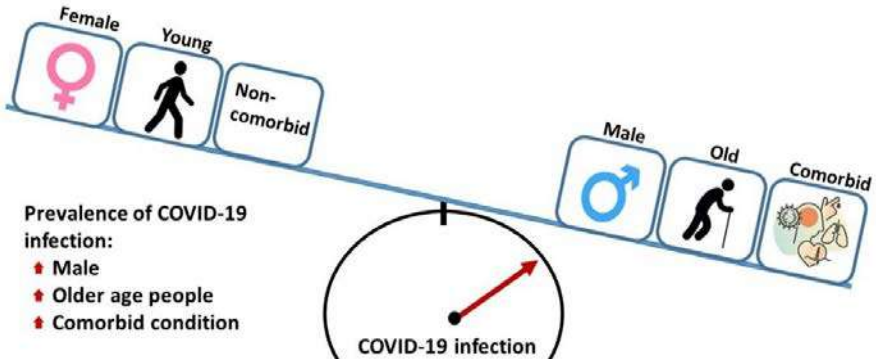
Association of Gender, Age, and Comorbidities with COVID-19 infection in India

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ABSTRACT



Due to a lack of data on various parameters with COVID-19 in the Indian population, this study was carried out to understand the relation among gender, age and comorbidities in Indian population. The data was collected using a questionnaire-based survey form that included questions on demographic characteristics, infection and any pre-underlying conditions (n=1146). The data showed that the male patients had suffered more from COVID-19 (58.6%). Also, the patients suffering from comorbidity are more likely to suffer from a severe form of COVID-19 and obesity/overweight was identified as the most prevalent (n=69) comorbid condition, followed by diabetes (n=35), thyroid (n=19) and hypertension (n=11). In severe COVID-19 cases, 85% of patients had a comorbid condition. In another study of COVID-19 hospitalized-cases, about 97% of patients were found to have an underlying medical condition. Among these, diabetes (55.9%) was identified as the most prevalent comorbidity. Males and older people are at a higher risk of developing COVID-19 infection in Indian population. The comorbid conditions also predisposed individuals to COVID-19 and aggravated the infection.

Keywords: COVID-19, comorbidity, age, gender, obesity, diabetes, hypertension

INTRODUCTION

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) belongs to a family of Coronaviridea causing coronavirus disease-19 (COVID-19), which was declared a global pandemic on 11 March 2020 by the World Health Organization (W.H.O.). As of 15 December 2021, it has affected about 270 M people worldwide, including 34.7 M cases from India.[1] Due to its heterogeneity, the virus infects people with various degrees of symptoms. In critical cases, it can also lead to mortality in patients due to lung failure, heart attack or multiple organ failure.[2] Since coronavirus has been continuously evolving, it is difficult to anticipate its impact in the affected population. The morbidity and mortality in COVID-19 infection depend on several factors. A number of reports have claimed a higher risk of COVID-19 infection in males than in females due to higher expression of ACE2 receptors in males.[3] A number of retrospective studies have shown that older people are more predisposed to COVID-19 infection, and showed a higher

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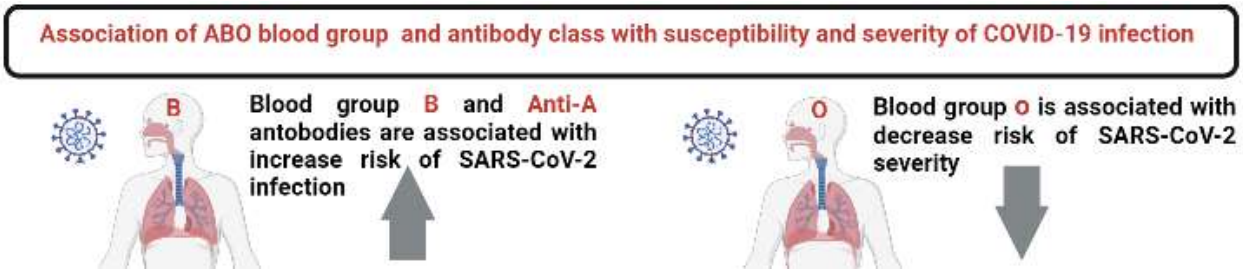
Association of ABO blood group with susceptibility, severity and breakthrough COVID-19 infections in Indian Population

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ABSTRACT



Since the COVID-19 eruption in December 2019, the investigation has been focused on its treatment and preventing the disease spread. Currently, there is no biomarker available that can predict the predisposition and severity of COVID-19 infection. In the present study, we have used the cross-sectional survey study data to decipher the association between the ABO blood group and susceptibility, severity and breakthrough COVID-19 infections. Further, we have also investigated the association between antibody class and the risk of contracting COVID-19 infection. Our results indicated that individuals with blood group B had higher susceptibility to acquire COVID-19 infection. In contrast, blood group A was found to be associated with a low risk of acquiring severe COVID-19. In addition, we did not find any correlation between ABO blood group and breakthrough COVID-19 infections. Further, we examined the association of antibodies; anti-A (blood groups B and O) and anti-B (blood groups A and O) with COVID-19 infection. The analysis of antibody classes showed that anti-A antibody associated with a high predisposition to acquire COVID-19 infection. The present study indicates that blood group B and anti-A antibodies are associated with proneness to COVID-19 infection and severity.

Keywords: ABO blood group; COVID-19; Disease susceptibility; India; SARS-CoV-2

INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a novel coronavirus has affected the unprecedented life of billions of people, especially during the second wave of COVID-19 in India.[1] Although extensive research and growing knowledge aid in understanding the nature and mechanisms of the SARS-CoV-2 virus, the emergence of new variants of the virus influences the epidemiological curve of COVID-19. These new SARS-CoV-2 variants may have a higher rate of transmission or increased risk of breakthrough infections resulting in an inflicted burden on the healthcare system.[2,3] Therefore, identifying individuals most susceptible to COVID-19 is critical in dealing with the pandemic. There is currently no biomarker that can anticipate the risk of COVID-19 infection. However, certain risk factors have been identified that affect morbidity and mortality of COVID-19 infection.[4–6]

Several studies have reported the influence of blood groups on contracting the disease. A variety of factors influence the expression of a blood group as well as the type of antibodies produced against it. According to the literature, there is a symbiotic relationship between intestinal flora and the expression of blood groups. Also, bacteria can induce antibodies against different antigens of ABO blood groups. A study by Makivuokko et al. revealed that different blood groups people inhabit different microbiomes in the intestine.[7] The bacterial colonization and dietary modifications transform sialylated glycans (present at birth) to fucosylated antigens of ABO blood groups. These symbiotic bacteria utilize fucose as their food and induce FUT2 (fucosyltransferase 2) in the colon and rectum, resulting in the

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ORIGINAL PAPER

Half metallicity and long-range magnetic order in graphene/hematene van der Waals heterostructure

R Singla[1] and M K Kashyap[1,2]*

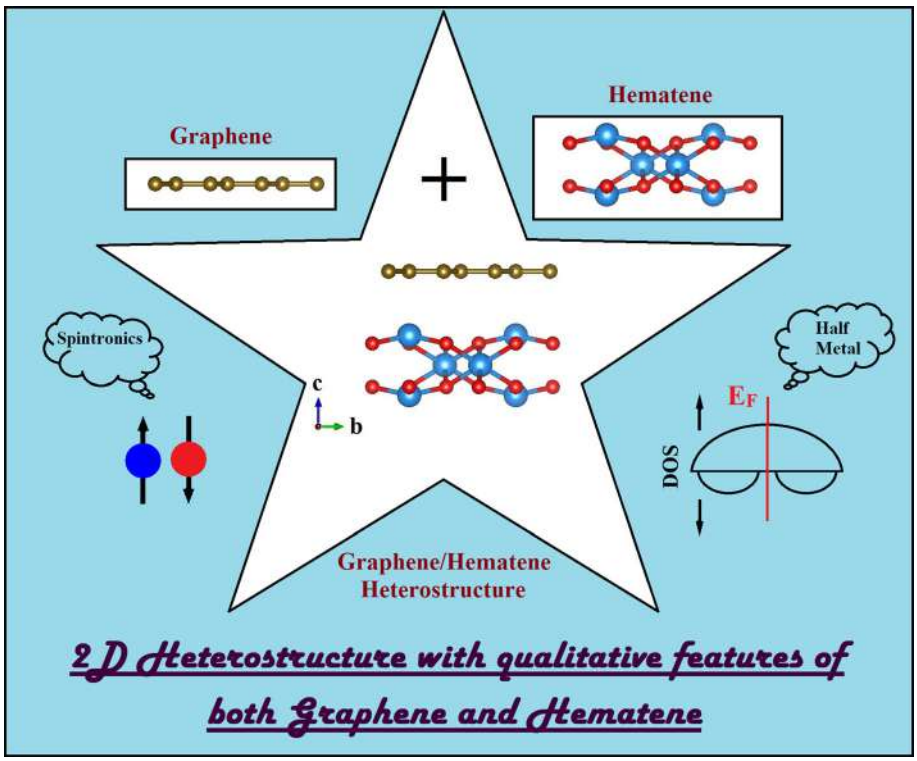
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Abstract: Graphene/hematene heterostructure is an interesting 2D van der Waals material with exciting and valuable features of both graphene and hematene. Our density functional theory calculations reveal that the resulting heterostructure preserves a long-range ferromagnetic character of pristine hematene monolayer and behaves as a half metal with 100% spin polarization unlike individual graphene and hematene monolayers which act like non-magnetic semi-metal and ferri-magnetic semiconductor, respectively. This transition to the half metal mainly arises due to charge transfer from C atoms of graphene to O atoms of hematene monolayer. These results manifest that the proposed heterostructure will attract the experimentalists highly and serve as a powerful candidate in spintronics and magnetic memory-based storage devices in near future.

Graphic abstract



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COMPUTATIONAL TREATMENT FOR THE SOLUTION OF A SET OF COUPLED DIFFERENTIAL EQUATIONS FOR ANY PHYSICAL SYSTEM USING SCILAB AND GENERATING SCILAB CODES

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ABSTRACT:

A set of coupled differential equations with initial conditions and its computational treatment as well as Scilab codes have been done. For constant E the variation of x & y with t shows the higher amplitude for y that's a dependent variable; when E is cos(ωt) then oscillatory motion has been observed at different frequencies, ω= π/6 , π/3 , π/2 and π. The direction of the E in downward and upward motion has been observed at different frequencies and many times E touches the horizontal axis for downward motion. In the study of this paper it has been found that the oscillations are much higher in case of y as compared to x. All Scilab codes have been developed successfully.

Keywords: Scilab, Coupled differential equations and Scilab codes.

INTRODUCTION:

These days there is large demand of Scilab software because it is a friendly and easily available software everywhere. No requirement of large space on hard drive to install it. In all branches of science and engineering researchers, academicians and industries employee use it. Some institutes every year provide the spoken tutorials based on this software. It also having the

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THE STUDY OF A SYSTEM OF NON-HOMOGENEOUS EQUATIONS USING MATRIX EXPONENTIAL METHOD AND ANALYSIS WITH SCILAB SOFTWARE 6.1.1

Dr. Ravindra Singh[1*], Dr. Ashok Kumar Shukla[1], Dr. Shiv Shankar Gaur[1], Rakesh Yadav[2], Krishan Kant Singh Gautam[2], Dr. Omwati Rana[3] , Polly Biswas[4]

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ABSTRACT:

The study for a system of non-homogeneous equations (coupled differential equations) with initial conditions using Matrix Exponential Method has been done through Scilab software as well as manually. We observe that both the procedures for the equations have been satisfied with the initial conditions. Eigen values and corresponding eigen vectors have been determined to get the complete solutions; and the solutions for x and y also have been found manually. The graphs are plotted with Scilab software 6.1.1. A linear relation between x & y is observed by the new outcomes when they plotted. The study of variation of x, y with t shows the curves increase linearly for limited values of t also the study between t, x+y & t, x-y shows that the curves of both are the mirror image about x-axis. There are much more applications of matrix exponential method in science, engineering and computational fields.

KEYWORDS: Scilab software, Coupled differential equations and Matrix Exponential Method.

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ORIGINAL PAPER

Static and dynamic fluorescence spectroscopic analyses of direct yellow 27—an azo dye

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Abstract: In this work, the static and dynamic fluorescence analyses of direct yellow 27 [$C_{25}H_{20}Na_2O_9S_3$] had been carried out through fluorescence spectroscopic techniques in various polar protic and polar aprotic solvents at room temperature. The prominent emission peak of the molecule observed at 355.84 nm in water, and the Stokes shift of the order of 68.84 nm ($\Delta\nu$ = 6741 cm^{-1}) came out. We found the recorded emission peak to be slightly redshifted with increase in polarity of the solvents. The excited-state lifetime measurement of the molecule in different solvents studied and determined that mono-azo direct yellow 27 possessed a lifetime of 12.18 ns in DMSO and 6.8 ns in the water at a concentration of 100 μM. The fluorescence quantum yield (Φ_f) calculated as 0.41 in water and the impact of different solvents on its value also analyzed.

Keywords: Fluorescence spectra; Azo-dye; Excited state time; Stokes shift; Quantum yield

1. Introduction

Dyes are those organic compounds that absorb in ultraviolet, visible, and infrared regions and play an important role in every part of life [1, 2]. Azo dyes, which are characterized by one or more azo moiety (–N=N–) in their structure, are the largest and most versatile class of dyes which make up over 50% of all dyes listed in the color index [3]. Because of their specific physico-chemical properties and biological activities, they have industrial and scientific applications such as in dye lasers, photonic sensors, solar cells, organic light-emitting diodes, pharmaceuticals, nonlinear optical devices, the probe of DNA protein recognition, and polarizing films [4–13]. Recently various strategies for improving the efficiency of future low-cost dye-sensitized solar cells (DSSCs) to meet the present energy demand reported in the literature by Panda et al., Muhammad Qamar et al., Saber Ghannadi et al., Ateyyah et al. and Tsai et al. [14–18]. Because of the diverse biological activities of dye-molecules and having potential applications in medicinal uses such as antitumor, antibacterial, antifungal, and antioxidant properties, a great interest has developed in dyes [19–24]. The yellow color of the dye is unaffected when exposed to sunlight or artificial light sources, thus possessing good light fastness property [25, 26]. With the vast range of applications in various fields cited above, it is necessary to study its spectral behavior in various solvents with varying concentrations. The azo dyes exhibiting large Stokes shifts are very essential for biological applications as detected in direct yellow 27 [27, 28]. Fluorescence is unique among spectroscopic techniques for investigating the structure and dynamics of matter. Time-resolved measurements are widely used in fluorescence spectroscopy, for biological, physical, and chemical research. It is more informative and reliable than steady-state measurement [29–31]. If the excitation source is rapidly turned off, the intensity from the fluorophore decays as the excited state becomes depleted of the excited fluorophore. The time course of this process is often described by,

$$F(t) = F_0 e^{-t/\tau} \quad (1)$$

where F_0 is the fluorescence intensity at the time excitation ended; τ is the excited state lifetime. Most times, the intensity decay is not described by a single exponential

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RF DESIGN, OPTIMIZATION AND MULTIPHYSICS STUDY OF A β = 1, 1.3 GHz SINGLE CELL ACCELERATING CAVITY FOR HIGH-INTENSITY COMPACT SUPERCONDUCTING ELECTRON ACCELERATOR (HICSEA)

Manisha Meena, Abhishek Pathak, Raghava Varma,
Indian Institute of Technology Bombay, Mumbai, India

Abstract

High-energy electron accelerators have been used in water purification for several years. They are very effective for the removal of complex impurities. This study aims to design a superconducting electron beam accelerator with an output energy of 1 MeV and beam power of 40 kW for wastewater treatment. A 1.3 GHz single cell elliptic cavity with β = 1 was designed and optimized for TM_{010} mode and an accelerating gradient of 15 MV/m. For the optimized cavity, the RF parameters, namely, R/Q, transit time factor and geometry factor (G) were found to be 174.93 Ω, 0.67 and 276 Ω, respectively. Multiphysics studies showed that the value of R/Q for fundamental accelerating mode was 174.93 Ω. It was much higher than that of other modes, thus, HOM coupler is not required for the system. The Lorentz force detuning coefficient after stiffening the cavity iris, and the temperature rise due to the RF surface losses were found to be 0.20 Hz/(MV/m)^2 and 0.085 K, respectively. It is also observed that there is no occurrence of multipacting for the designed accelerating gradient.

INTRODUCTION

Accelerator technology has been proven to be an efficient and sustainable resource for wastewater treatment [1]. Therefore, IIT Bombay proposed to develop a 40 kW superconducting electron accelerator system as shown in Fig. 1 in collaboration with Japanese Universities and Institutes. The proposed accelerator consists of a 1.3 GHz superconducting single cell elliptic cavity to achieve desired beam energy of 1 MeV.

This paper presents detailed RF design and multiphysics optimization studies to maximize RF efficiency, and to obtain an acceptable beam quality at the exit of cavity. The RF design and optimization studies are performed using CST Microwave Studio and Poisson Superfish.

The RF design includes optimization of peak surface electric and magnetic fields since these are the limiting criteria to obtain high accelerating gradient (E_{acc}) and low power loss for SRF cavities. The magnetic field is smoothened out by the appropriate arc at the equator, which lowers the peak surface magnetic field. As with the iris region, smooth curvature lowers the peak surface electric field and solves the issue of field emission. The RF design and optimization have been followed up with multiphysics studies in order to ensure a stable and reliable operation of the cavity. The multipacting studies includes higher order modes (HOMs) analysis, Lorentz force detuning study, multipacting study, and thermal analysis.

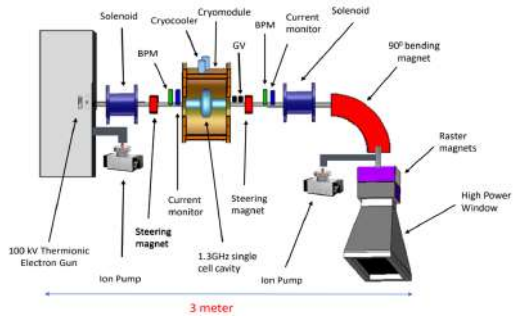


Figure 1: Prototype of the proposed electron accelerator system and its components.

RF CAVITY DESIGN AND OPTIMIZATION

The RF design and simulations are perfomed with cavity symmetry in YZ plane as shown in Fig. 2, where Z is along the cavity length and Y is along the cavity radius. The seven geometry parameters that determine the cavity design include half-cell length (L), iris radius (R_{iris}), iris ellipse radii a and b, equator ellipse radii A and B, and cavity radius (R_{eq}). The wall angle (α) can be derived from these seven parameters. The half-cell length of the cavity for TM_{010} - π mode operation is chosen as $\beta\lambda/4$ to ensure synchronization of the bunch with RF field. The iris radius is chosen to be 3.2 cm, while the cavity radius (R_{eq}) is tuned to achieve the resonant frequency of 1.3 GHz. The wall angle is chosen to be 90° because the product of geometry factor (G) and ratio of shunt impedance to quality factor (R/Q) of the cavity increases with wall angle which which in turn is inversely proportional to the power loss. However, the upper limit for α is limited by manufacturing and cleaning constraints.

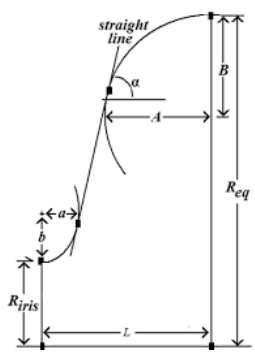


Figure 2: Schematic design and geometry parameters of the half-cell cavity [2].

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E: ISSN NO.: 2349-980X **Shrinkhla Ek Shodhparak Vaicharik Patrika**

जल-चिकित्सा-विज्ञान (Hydropathy) - एक वैकल्पिक उपचार पद्धति : वैदिक परम्परा एवम् आधुनिक परिप्रेक्ष्य Hydropathy - An Alternative Treatment Scheme : Vedic Tradition And Modern Perspectives

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कामना विमल शर्मा
सहायक प्रवक्ता,
संस्कृत विभाग,
दौलतराम महाविद्यालय
दिल्ली विश्वविद्यालय,
दिल्ली, भारत

सारांश

प्रकृति का प्रत्येक तत्त्व अपने अन्दर पुनर्नवीनीकरण (Rejuvenation) या Healing की शक्ति धारण करता है, जिसके माध्यम से वह सृष्टि में जीवन का संचार करता है। प्राकृतिक चिकित्सा पद्धति प्राकृतिक तत्त्वों की इसी जीवन-प्रदायिनी शक्ति के मूल सिद्धान्त पर आश्रित है। इस पद्धति में सूर्य, चन्द्र, जल, वायु, मिट्टी आदि संसाधनों के प्रयोग द्वारा विभिन्न रोगों का निदान किया जाता है। यद्यपि चिकित्सा की सभी विधाओं में जल का महत्त्वपूर्ण स्थान है, परन्तु प्राकृतिक जल-चिकित्सा में जल ही औषधि जल ही चिकित्सक एवं जल ही उपचार विधि है।

Every element of nature holds within itself the power of Rejuvenation or Healing, through which it transmits life in the universe. The Naturopathy system is based on the basic principle of this life-giving power of natural elements. In this method, various diseases are diagnosed by the use of resources like sun, moon, water, air, soil etc. Although water has an important place in all the methods of medicine, in natural hydrotherapy, water is the only medicine, water is the doctor and water is the healing method.

मुख्य शब्द : वेद, जल, प्राकृतिक चिकित्सा, जल चिकित्सा, औषधि।
Keywords : Veda, Water, Naturopathy, Hydropathy, Medicine

प्रस्तावना

मानव-जल संबंध

वैदिक काल में प्राकृतिक संसाधन शुद्ध थे और मानव जीवन सरल। मानव एवं प्रकृति में अपनत्व का संबंध था। वैदिक साहित्य में आपः को अम्बा कहकर उसकी वन्दना की गयी है - **अम्बयो यन्त्यध्वभिर्जामयो अध्वरीयताम्। पृञ्चतीर्मधुना पयः॥** दयानन्द सरस्वती द्वारा अपने भाषा-भाष्य में अम्बयः पद का अर्थ 'रक्षा करने वाला जल' करते हुए जल के मानव-संरक्षक रूप पर प्रकाश डाला गया है। पुनः ऋग्वेद में अन्यत्र जल को मातृतमा कहकर माता से भी श्रेष्ठ माना गया है - **ओमानामापो मानुषीरमृक्तं धत तोकाय तनयाय शंयोः। यूयं हि ष्ठा भिषजो मातृतमा विश्वस्य स्थातुर्जगतो जनित्री॥**

इस मन्त्र के व्याख्याकार आचार्य सायण एवं पं० सातवलेकर दोनों ही के मतानुसार, यहाँ मातृतमा पद का अर्थ 'मातृभ्योऽप्यधिकाः भिषजः' अर्थात् माताओं से भी अधिक अच्छा चिकित्सक है। ऋग्वेद के - **यो वः शिवतमो रसस्तस्य भाजयतेह नः। उशतीरिव मातरः।।** में जलों को कल्याणकारी माता कहा गया है।

जल सर्वलोक आधार हैं - इमे वै लोका अप्सु प्रतिष्ठितः - तथा जीव सृष्टि का प्राण भी - पानीयं प्राणिनां विश्वमेव च तन्मयम्। सम्पूर्ण विश्व ही जलमय है। जल पृथिवी पर मानवों के लिए अन्नादि ऐश्वर्यों, औषधियों तथा जीवनानुकूल परिस्थितियों को संभव करता है - **ईशानां वार्याणाम् तथा अद्भ्यो वा अन्नं जायते।** ऋग्वेद के आपः सूक्त में जल को मानव के लिए सुखदाता बताते हुए गया है - आपो हि ष्ठा मयोभुवः। मानव अभीष्ट सिद्धि, रक्षा, कल्याण, सुख, शान्ति आदि के लिए जलों से प्रार्थना करता है -

शन्नोदेवीरभिष्टय आपो भवन्तु पीतये। शंयोरभि स्रवन्तु नः॥

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वैदिक दृष्टिकोण में श्रद्धा-विमर्श

Shraddha in the Vedic Perspective

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कामना विमल शर्मा
सहायक प्रवक्ता,
संस्कृत विभाग,
दौलतराम महाविद्यालय
दिल्ली विश्वविद्यालय,
दिल्ली, भारत

सारांश

वेदोऽखिलो धर्ममूलम् और इस वैदिक धर्म के मूलाधार हैं श्रद्धा और तर्क। वेदोक्त धर्म को समझने के लिए श्रद्धापूर्ण आस्तिक्य बुद्धि अपरिहार्य है - **ऋत् सत्यं दधाति यथेच्छया सा श्रद्धा** अर्थात् जिससे मनुष्य सत्य को धारण करता है, उस इच्छा को श्रद्धा कहते हैं। वैदिक मन्त्रों और भाष्यों से श्रद्धा का सत्य से घनिष्ठ संबंध सिद्ध है परन्तु इस भारतीय आस्तिक्यबुद्धि की सत्यप्रतिबद्धता से अपरिचित पाश्चात्य विद्वान् एवं कुछ भारतीय विचारक इसे कट्टरता अथवा अन्धविश्वास का नाम देते हैं। पाश्चात्य दृष्टिकोण में, श्रद्धा अर्थात् विश्वास धर्म का विषय है और तर्क अर्थात् प्रमाणों द्वारा पुष्टिकरण विज्ञान का। जहाँ धर्म हो, वहाँ तर्क अपेक्षित नहीं और विज्ञान के क्षेत्र में श्रद्धापूर्ण दृष्टिकोण बाधक होगा। पाश्चात्य सन्दर्भ में इस तर्कविहीन श्रद्धा ने धर्म को संकीर्ण, अपरिवर्तनीय, सर्वथा अनुकरणीय, असन्दिग्ध एवं अनुत्तरदायी बना दिया। वैज्ञानिक दृष्टिकोण के दूत सुकरात, गैलेलिओ जैसे विचारकों के मतों को इसने विरोध के रूप में लिया और दबाने का प्रयास किया। वहीं से पाश्चात्य मान्यता कि श्रद्धा और तर्क परस्पर विरोधी है, ने जन्म लिया। पाश्चात्य अंधानुकरण की प्रवृत्ति ने हम भारतीयों को भी अपने श्रद्धा और तर्क समन्वित धर्म पर अविश्वास करने के लिए प्रेरित किया।

वैदिक दृष्टिकोण में श्रद्धा और तर्क परस्पर विरोधी नहीं वरन् पूरक हैं। वेदों में दोनों का ही महत्व समान रूप से प्रतिपादित है और वैदिक ऋषि श्रद्धा-मेधा के समन्वित रूप के लिए प्रार्थना करता है - **अग्ने समिधमाहार्षं बृहते जातवेदसे, स मे श्रद्धां च मेधाम च जातवेदा: प्रयच्छतु।** सच्ची श्रद्धा ही सत्य प्राप्ति अर्थात् सच्चे सुख और आनंद की प्राप्ति का एकमात्र मार्ग है। यह श्रद्धा जिज्ञासाओं को प्रेरित करके मानव को सूक्ष्म तथा बृहत सत्य की खोज में लगाती है। अध्यात्म विद्या का गौरव यह श्रद्धा मानव में अपने क्रियात्मक बुद्धि अथवा तर्क रूप में प्रस्तुत होती है। इस बुद्धि का वेदों में विज्ञानवती यथार्थ धारणावती शुद्ध बुद्धि के रूप में वर्णन किया गया है।

वेदोऽखिलो धर्ममूलम् and the foundations of this Vedic religion are Shraddha and tarka. To understand the Vedokta *Dharma*, reverent theistic intelligence is indispensable - **ऋत् सत्यं दधाति यथेच्छया सा श्रद्धा** that is, the desire by which a person imbibes truth is called *shraddha*. The close relation of faith with truth is proved from Vedic mantras and commentaries. But western scholars and some Indian thinkers, unfamiliar with the true commitment of this Indian belief, give it the name of bigotry or superstition. In the western view, Reverence is a matter of religion and logic meaning confirmation by evidence is a matter of science. Where there is religion, logic is not required and a reverent approach in the field of science will be a hindrance. This irrational belief in the western context has made religion narrow, unchanging, completely exemplary, unquestionable and unresponsive. It took the views of thinkers like Socrates, Galileo with a scientific approach as opposition and tried to suppress it. From there the Western belief that faith and logic are contradictory, took birth. The tendency of blind imitation of western also inspired us to distrust our faith and logical religion.

In the Vedic view, *Shraddha (Reverence)* and tarka (reasoning) are not contradictory but complementary. The importance of both is equally expounded in the Vedas and the Vedic sage prays for a syncretic form of **अग्ने समिधमाहार्षं बृहते जातवेदसे, स मे श्रद्धां च मेधाम च जातवेदा: प्रयच्छतु**. True reverence is the only way to attain truth, that is, to attain true happiness and bliss. This reverence inspires curiosity and engages man in the search of subtle and greater truth. Pride of Spirituality This faith is inculcated in human beings in their functional intellect or reasoning form. This intellect has been described in the Vedas as VIJnanavada Reality Dharmavati Pure Wisdom.

मुख्य शब्द: श्रद्धा, तर्क, वेद, जिज्ञासा, बुद्धि, विज्ञान।
Keywords: Faith, Logic, Vedas, Inquisition, Intelligence, Science.

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Innovation The Research Concept

भारतीय जनजातीय नृत्यः जनजातीय आर्थिक-सांस्कृतिक व्यवस्था के परिलक्षक

Indian Tribal Dances: Identifiers of Tribal Eco-Cultural System

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कामना विमल शर्मा
सहायक प्रवक्ता,
संस्कृत विभाग,
दौलतराम महाविद्यालय
दिल्ली विश्वविद्यालय,
दिल्ली, भारत

सारांश

समस्त विश्व में जनजातियां संस्कृति और परम्पराओं के संवहन का दायित्व निभाती हैं। जनजातीय विविधता भारत की अनन्यतम विशेषता है। नृत्य और संगीत भी भारतीय जनजाति संस्कृति के महत्वपूर्ण पहलू हैं। नृत्य और संगीत मुख्य रूप से देवी और देवताओं का प्रचार करने के लिए होते हैं। परन्तु इसके अतिरिक्त भी नृत्य और संगीत मानव के आरम्भिक और वर्तमान जीवन के विषय में ज्ञान के स्रोत हैं। प्रत्येक जनजाति के नृत्य और संगीत का अपना विशिष्ट स्वरूप है। भारतीय जनजाति नृत्य आज दूर के अतीत और वर्तमान के बीच निरंतरता का सूत्र प्रदान करते हैं।

The tribes In the whole world are the bearers of cultures and traditions. Tribal diversity is the uniqueness of India. Dance and music are also significant aspects of Indian tribal culture. Dance and music are primarily for promoting the deities . But apart from this, dance and music are also sources of knowledge about the early and present life of man. Each tribe has its own distinctive form of dance and music. Indian tribal dances today provide a thread of continuity between the distant past and the present.

मुख्य शब्दः जनजाति, नृत्य, संगीत, लोक, संस्कृति
Keywords: Tribal, Dance, Music, folk, Culture.

प्रस्तावना

भारत की पारंपरिक संस्कृति में, मनुष्य का पूरा जीवन नृत्य और संगीत की मधुर ध्वनि के चक्र से आवृत्त है। यह लोक परंपरा भारत की संस्कृति का एक बड़ा स्रोत रही है, जो सहजता से समृद्ध है। भारत का लोक संगीत और नृत्य देश की उदारता, माधुर्य, सौंदर्य मूल्यों और देहाती लोकाचार का प्रतिनिधित्व करते हैं। मंदिर के त्योहारों और सामुदायिक कार्यों के अवसरों पर लोक नृत्य और संगीत का आयोजन मानव मात्र के लिए मनोरंजन और आनंद के साथ ही सामाजिक प्रतिष्ठा का अवसर प्रदान करता है। नृत्य और गीत प्रकृति में मौसमी लय का उत्सव मनाते हैं। यह उत्सव के समय में आनंद की एक सहज अभिव्यक्ति है। यह हल चलाने वाले आदमी और नाविक, चरवाहे और ऊंट चालक के गीत और उनके काम की लय में सामंजस्य जोड़ते हैं।

अध्ययन का उद्देश्य -

भारतीय जनजातीय नृत्य के स्वरूप के अध्ययन के आधार पर जनजातीय आर्थिक-सांस्कृतिक व्यवस्था के विकास को समझना ही इस शोध पत्र का उद्देश्य है।

नृत्य की अवधारणाएँ और परिभाषाएँ

मार्टिन जॉन के अनुसार, "नृत्य भावनात्मक ऊर्जा का मांसपेशियों के गतिविधि के माध्यम से एक प्रकटीकरण है।" यह न केवल पुरुषों द्वारा हर अवस्था, हर सभ्यता और संस्कृति में अभ्यास किया जाता है, बल्कि कई प्रकार के जानवरों, विशेषकर पक्षियों द्वारा भी नृत्य भावनाओं के प्रदर्शन का एक प्रमुख साधन है। इसका उद्देश्य आम तौर पर व्यक्ति विशेष की अभिव्यक्ति के तर्कसंगत साधन के द्वारा अनुभूत अवधारणाओं और अनुभवों की अभिव्यक्ति कहा जा सकता है।

वर्ल्ड बुक इनसाइक्लोपीडिया (1983) में उनके लेख में, ओडम सेल्मा ने, "प्रायः संगीत के साथ लय में शरीर को हिलाने की क्रिया" के रूप में नृत्य को परिभाषित किया है। नृत्य कला और मनोरंजन का एक रूप है। एक कला के रूप में एक नृत्य एक कथा, विशिष्ट मनोदशा अथवा भावना को व्यक्त करता है। मनोरंजन के रूप में नृत्य सदैव ही आनंद, विश्राम, और साहचर्य का प्रमुख माध्यम रहा है।

नृत्य लोक संस्कृति का अनिवार्य हिस्सा रहा है। भारतीय लोक नृत्य का प्राथमिक आवेग लय है - विचार-विमर्श के समय में आनंद की एक सहज अभिव्यक्ति। ढोल की साधारण ताल से लेकर संस्कारित कला की जटिल लय तक, यह लय का प्रेम है जो नृत्य का निर्माण करता है। लोक नृत्य और किसानों के गीतों के माध्यम से पहाड़ी लोक और जनजातीय लोग अपने सरल सांप्रदायिक जीवन में खुशी और मनोरंजन लाते हैं। लोक नृत्य और नाटक जिनकी जड़ें धार्मिक और मौसमी त्योहारों में होती हैं उनकी अपनी सांस्कृतिक पृष्ठभूमि होती है और ये भारत की कलात्मक विरासत का एक महत्वपूर्ण हिस्सा हैं। भारत के कुछ लोकप्रिय लोक नृत्य गरबा, भांगड़ा, बिहू और यक्ष गान हैं।

Role of Brahmins in Societal Transformation: With Special Reference to Konkan Coast (8th to 12th Century C.E.)

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Abstract
Background : *The Konkan region was culturally vibrant land since the early historic period. Paradoxically, in the Konkan Region, the legitimation of social changes is often dependent on the manipulation of the most established element of the 'Great Tradition' as well as its carriers. By virtue of their office, Brahmins are usually the most important representative of these carriers. They are guardians of established religious doctrines and pursuits. Often they are located in very center of the society and appear to be the defenders of status quo. This function is reinforced by the resources they control, namely value commitment, influence and prestige, which are less flexible than wealth or power. From 8th to 12th Century C.E., this was the time when several changes were taking place in the society. There was a greater emphasis on regulating and enforcing the caste system due to the social and political division, feudal tendency has been well established, several vernacular languages originated due to immigration in this region. New settlements of Arabs on Konkan coast led to rise in more public interaction irrespective of the community and religion by inter-religious marriages or sharing the statement, religious preaching, share of thoughts etc. The present study would provide some clues regarding the socio-cultural life of Konkan coast.* ***Objectives :*** *The main objective of study is to explore the inscription data and literary sources, which are one of the richest historical documents in this respective period. An analytical study in the Brahmins' context would provide some clues regarding the socio-cultural life. The Konkan coastal region had been one of the most happening places from 8th to 12th century C.E. The main focus of the study will be on the transition of society, emergence of dominant social classes and its evolution into structure form, association of dynastic rulers with social and cultural changes and religious influence on the society. The study will explore the cultural ethnography, socio-cultural environment of the Konkan coast, regional history along with current status of Brahmins of Konkan coastal region.* ***Research Methodology:*** *The research technique will be descriptive, based on approaches historical nature. Because a large amount of archaeological and literary works are available regarding this period, it will provide a clear picture of Brahmins in this period. Observation of previous research, examine the secondary data, field survey on the basis of current status of Brahmins are also the part of our study. So, a descriptive and comparative research methodology will be used to explore the nature of social transformation in the society.* ***Conclusion****: Brahmins of Konkan coast in this period played an important role in societal transformation. They gained not only power, prestige and royal patronage from state but they also acted as representatives of religious traditions, thus influencing the society.*
Keywords: Brahmins, Konkan Coast, Feudal Tendency, Social-Political Division, Tradition, Cultural Ethnography, socio-cultural environment.

Introduction

The Konkan coast is coastal lowland adjoining the Arabian Sea in the North Central Part of the West Coast of India, extend throughout the Western Coast of Maharashtra, Goa and Karnataka. The region bounded with the Sahayadri Mountain called as Apranta. The Konkan region was culturally vibrant land since the early historic period because it was connected to the Western Ghat through major communication corridor. The landscape was dotted with numerous inscriptions, copperplate charters of Maurya, Satvahana, Vakatak, Rashtrokoot, Silaharas and the Kadabmbas dynasties.

This was the time when changes were found in all spheres of life such as full established feudal tendencies, a large number of grants which led to emergence influence of

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Trade in 8th to 12th C.E. with Special Reference to Konkan Region

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Introduction

The area of Konkan appears to have been agriculturally and commercially prosperous because of the catagraphic condition. The region was situated on the coast of Konkan and shared the boundary with Arabian Sea and Sahyadri ranges. It contained major rivers and their tributaries which makes estuaries. Silahara records also gives information about major ports like Sanjan, Choul, Sopara and Thana which were situated on these estuaries. These Rivers appear to have been a navigable at least in their downstream.[1] All these conditions provide agricultural and trade prosperity to this region to a considerable extent due to orographic rainfall and the existence of fertile river valley.[2]

The economic life runs through the three elements of economy viz. production, consumption and distribution. Agriculture, animal husbandry, industries and professionals are the part of production while traders and trade routes are the part of distribution. These elements of economy play an important role in the formation of economy. The Silahara inscription yields sufficient information that the period witnessed many dynamic changes in economic conditions. This paper focuses on the whole scenario.

In terms of trade as it is referred to a common economic activity where transition of the goods and services between two parties generally occurred. Here we will focus in our study about trading activities such as nature of production, commodities exchange, nature of transportation, safety security of trading community, important trade centres and city, trading group traders, merchants and peasants.

A very important point that can be noted here before coming to the topic that many Historians and Scholars have worked on the economic condition in early medieval period, putting forward the idea of decline trade and commerce due to several reason, like influence of feudalism, land grants system, production for local consumption, etc. Prof. R.S. Sarma cited in his book (Indian Feudalism 1965) decline of trading activities in those times. They also argued the decline of production for local consumption which came in practice in early medieval time due to land grants system. **B.N.S. Yadav** had pointed out that the increased productivity in agriculture and developed commercial activities would only be considered with the comparative development of the trade and commerce.[3] But after the emergence of the Arabs in western coast, trade along with inland and maritime increased and also connected with Europe and Middle East Asia. In this reference **K.N. Choudhary** stated that from the middle of 7th century A.D. to 15th century A.D there extends long line of trance continental trade going all the way from Southern China to Eastern Mediterranean Sea.

Nature of production:

I have already given brief information about the geography of Konkan region in previous chapter. The region of Konkan contains some major rivers and their tributaries, many creeks, and Arabian Sea coast also. All these things provide a suitable environment for trading activities. Here the environmental peculiarities were supported by the growth of several crops cultivation and plantation such as **wheat, paddy, oilseeds, pulses, spices (black pepper, cardamom, karanj tree) sandalwood, medicated plant, cotton, gum** etc. Valuable metals (**gold, silver, copper, iron**) also have found in this region. *I*nscriptions referred about different kinds of crops, metals, forest product, manufacture articles and several artesian name, which

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Taming the 'rude' and 'barbarous' tongues of the frontier: *Bor Saheps, Sutu Saheps* and their encounters with languages, scripts, and texts (1835–1904)

Deepak Naorem

Daulat Ram College, University of Delhi, India

This article looks at an alternative history of colonial expansion in the North-East Frontier region during the nineteenth century by exploring the crucial role of colonial officers deployed there, who were locally known as Bor/bura saheps, sutu saheps or simply saheps. Scholarship on these officials has studied their roles as diplomats, administrators and military commanders, while this study instead examines their encounters with local languages, scripts and texts as well as their linguistic projects in the former frontier state of Manipur. The region was described as a recalcitrant frontier space, inhabited by 'savages' speaking 'rude' and 'barbarous' tongues. Yet the saheps' knowledge of its languages, scripts, and local literature was vital for information-gathering as well as for their daily administrative work. This article raises questions about the ramifications of these colonial linguistic projects on the process of colonial expansion and consolidation and the concomitant establishment of language hegemony. It argues that the early linguistic projects were not only an indispensable instrument for colonial conquest but also produced rudimentary philological knowledge of the languages of the region, calcifying differences and hierarchies along linguistic lines and contributing to the methodical state-funded linguistic projects undertaken in the early twentieth century.

Keywords: North-East Frontier, political agents, script, language, British Empire, colonialism

Introduction

The concept of the North-East Frontier region emerged as a consequence of Burmese aggressions in Bengal, and the subsequent attempts of the English East India Company (EIC) authorities to contain their expansion in the area between the Burmese and Company territories. The region included vast hilly tracts scattered with a large number of hill-chiefdoms and other valley-based states such as Ahom, Cachar, Manipur and Tripura. Early European travellers had ventured into the region

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Article

(Re) reading Chivu Stone Inscriptions: Colonial Archives, National Histories and Commemorations in North-eastern India

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Deepak Naorem[1] and Mutum Kenedy Singh[2]

Abstract

There are a large number of contested spaces, objects, monuments, historical figures, events and memories in North-eastern states of India. Their commemorations often incite historical controversies, which often spill into the fragile, contested political landscape of the region. The construction of a memorial park at the site of nineteenth century stone inscriptions recently dragged these inscriptions out from historical obscurity, and hence they became another site of contested history in the region. This article historicises the creation of these contested objects and commemorations, in the local and colonial archives, and subsequent writing of *national histories* in the region. It will also look at the entanglements and intertextualities between these archives and local histories, and how they produced these contested objects and their numerous histories.

Keywords

Northeast India, national histories, commemorations, stone inscriptions, Lushai expedition

Introduction

The foundation stone of Chandrakirti Memorial park was laid by the Chief Minister of Manipur on December 19, 2017, at the site of the Chivu Stone inscriptions, located along the Indo-Myanmar border in Churachandpur district of Manipur. The park is part of a larger plan to develop the Churachandpur–Behaing road, as a trading corridor to connect Manipur with its South-East Asian neighbours under the much-celebrated Act East policy. It was meant to bolster tourism in the region and to commemorate the Meetei ruler

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PHOTOCATALYTIC PROPERTIES OF BIOLOGICALLY SYNTHESIZED UNCOATED AND CALCIUM COATED ZnO NANOPARTICLES USING CUCUMBER JUICE

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ABSTRACT

Uncoated ZnO and calcium-coated ZnO nanoparticles (Ca-ZnO) were biologically synthesized using cucumber juice as a reducing and capping agent. Cucumber belongs to *Cucurbitaceae* family, is rich in water content and possesses antioxidant activity. The chemical composition and morphology of the synthesized NPs were determined by scanning electron microscopy (SEM), energy dispersive X-ray spectrophotometer (EDS), high-resolution transmission electron microscopy (HR-TEM), X-ray diffraction (XRD)and FT-IR. The spherical as well as hexagonal-shaped ZnO nanoparticles were obtained in the size range of 4-70 nm. Coated and uncoated ZnO nanoparticles were evaluated for their photo degradability of methylene blue (MB) and rhodamine B (RB) dyes. They showed nearly 100% photodegradation of methylene blue in lesser time, however, showed minimum degradation of rhodamine B dye. Calcium coating over ZnO NPs enhanced their photocatalytic properties.

Keywords: Cucumber Juice, Methylene Blue, Rhodamine Blue, Biological Method, ZnO NPs, Photocatalysts.

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INTRODUCTION

These days world is facing two major challenges associated with "P" i.e., Population explosion and Pollution. Both Ps are in the hands of human beings. Although population explosion has been controlled to some extent by awareness campaign programs, but pollution seems to be difficult in the era of rapid industrialization. Several agricultural practices as well as industrial activities like the use of pesticides, herbicides, dyes, pharmaceuticals, etc.[1-3] are the matter of concern for the scientific world and environmentalists. These anthropogenic activities lead to water and soil pollution. Organic pollutant effluents in water, textile and pharmaceutical industries, in particular, are the biggest challenges that require attention to maintain a healthy environment. Textile industries discharge dyes and pigments loaded water into natural water resources. These organic pollutants adversely disturb the ecological balance in aquatic life due to their toxicity, complexity of structure and perseverance. However, industries have been using various physical techniques such as coagulation, ion exchange chromatography, activated carbon, reverse osmosis, and ultrafiltration for their disposal.[4-5] In this regard, the development of efficient technology for water as well as soil remediation is imperative to safeguard the environment. In recent years, several nano-based technologies have been adopted due to wide applications from solar fuel, cosmetic, medicaland photocatalytic properties. Several metal/metal oxide nanoparticles such as Ag, Au, TiO_2, CuO, ZnO, etc. have been examined for their photocatalytic properties in the decolorization of textile wastewater.[6-9] These nanoparticles have frequently been used in the treatment of wastewater as they lead tothe complete mineralization of contaminants due to redox reactions.[10-11] Nanoparticles of rare earth metals have also been gaining interest because of their good optical and catalytic properties.[12-14] Among all, Titanium oxide (TiO_2)

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Manganese complexes and manganese-based metal-organic frameworks as contrast agents in MRI and chemotherapeutics agents: Applications and prospects

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ABSTRACT

Manganese-based Metal-organic Frameworks (Mn-MOFs) represents a unique sub-class of MOFs with low toxicity, oxidative ability, and biocompatibility, which plays vital role in the application of this class of MOFs in medical field. Mn-MOFs show great potential in biomedical applications, and has been extensively studied as compared to other MOFs in transition metal series. They are important in medical applications because Mn(II) possess large electron spin number and longer electron relaxation time. They display fast water exchange rate and could be employed as a potential MRI contrast agent because of their strong targeting ability. Manganese complexes with different ligands also display prospective applications in area such as carrier for drug targeting in anti-tumor and antimicrobial therapy. In the review presented herewith, the application of Mn-based complexes and Mn-MOFs have been emphasized in the area such as imaging *viz.* MRI, multimodal imaging, antitumor activities such as chemodynamic therapy, photodynamic therapy, sonodynamic therapy and antimicrobial applications. Also, how rational designing and syntheses of targeted Mn-based complexes and Mn-MOFs can engender desired applications.

1. Introduction

Metal-Organic Frameworks (MOFs) are porous three-dimensional (3D) crystalline materials with periodic network structure formed by self-assembly of metal ions or metal clusters and organic ligands through coordinate bonds formation between both units. This kind of inorganic/organic hybrid material exhibited excellent performance, which could be credited to their high specific surface area, adjustable size and porosity with ease of surface modification. Therefore, this class of materials are widely used in catalysis, gas storage, multiphase catalysis, drug delivery, chemical sensing and other fields [1]. Likewise, coordination complexes are formed by the combination of central metal atoms (or ions, collectively referred to as central metal atoms) and molecules or ions surrounding them (called ligands / ligands) completely or partially through coordination bonds. Compared to other transition metal [2], manganese is an essential human dietary element, important in macronutrient metabolism, bone formation, and free radical defense systems. It is a critical component in dozens of proteins and enzymes [3]. It is found mostly in the bones and also is an important constituent of liver, kidneys, and brain. In human brain, the manganese bound to manganese metalloproteins, most notably glutamine synthetase in astrocytes [3].

Amongst varied class of MOFs, the manganese based organic framework (Mn-MOFs) tend to form common secondary structural units and topographic structure, so they could be better designed to realize the targeted structure, function and eventual application. Compared with other transition metal-based MOFs, Mn-MOFs have the following advantages: (1) Mn-MOFs are biocompatible, easily excreted through the

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Adoption of ICTs as an emergent business strategy during and following COVID-19 crisis: evidence from Indian MSMEs

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Abstract

Purpose – This study aims to identify how ICT appeared as an emergent business strategy and to investigate the impact of ICT adoption factors on the perceived benefits of micro, small and medium enterprises (MSMEs).
Design/methodology/approach – A total of 393 responses from Indian small and mid-size enterprises (SMEs) were collected for the final analysis. The study presents the partial least-squares structural equation modeling with the Chi-square test and descriptive analysis as a methodology based on numerous independent variables and one dependent variable.
Findings – The findings indicate that ICT adoption during and following the COVID-19 pandemic is constant in nature of the enterprise. Moreover, the results indicate that different adoption of ICT factors influence on perceived benefits of organizational performance of Indian MSMEs that lent good support except for the regulatory framework.
Research limitations/implications – The implications of the current research help Indian MSMEs to take investment decisions in various technologies that help the organization. Furthermore, managers and

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Assessing the role of creativity and motivation to measure entrepreneurial education and entrepreneurial intention

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Abstract

Purpose – The study aims to investigate the association between Entrepreneurial Education (EE) and Entrepreneurial Intention (EI) and the multiple mediation model of Creativity and Entrepreneurial Motivation (EM).

Design/methodology/approach – The study employed a sample of 300 students who have studied entrepreneurial development courses (short-term and vocational courses) from higher educational institutes located in four States of Northern India. The data were analyzed by employing the structural equation modeling (SEM) technique.

Findings – The investigation revealed that EE has a significant association with EM and EI but not with creativity. It is also seen that EM facilitates the affiliation between EE and EI, but creativity does not.

Practical implications – The investigation results help the Institution, Policymakers, Government, to include entrepreneurial activities in their programs.

Originality/value – EE primary objective is to develop skills and knowledge that can propel them into a journey of EI and entrepreneurship. Although EE and EI have studied at large, there is hardly any study that talks about motivation, creativity and practicality in their program.

Keywords Entrepreneurial intention, Entrepreneurship education, Entrepreneurial motivation, Creativity, Serial mediation

Paper type Research paper

1. Introduction

Education is a powerful tool that can change society. It has the inexhaustible capacity to bring about generational changes in societies leaving behind overwhelming marks. The Nobel Prize for economic science for 2019 is the classic indication of education's importance to societal

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VIEWPOINT ARTICLE

THE DARK SIDE OF OVERUSE OF INTERNET: A STUDY OF INDIAN COLLEGE STUDENTS

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ABSTRACT

INTRODUCTION

The extensive use of the internet and its effect on our lives can no longer be overlooked. While the internet is a result of the rapid advancement of science and technology, its impact on students depends on how they use it. The present study identifies Internet usage patterns, nature of use, and Internet Addiction (IA) among India's undergraduate and postgraduate students and its consequences on their lives.

METHODS

This empirical examination uses the Multistage Sampling Method (MSM) and cross-sectional method. The structured questionnaire distributed (N=1,200) to ungraduated college students. We included at least ten institutes of every state in India and thirty participants from each institution in this study.

RESULTS

The study revealed that overuse of the internet is statistically significant with internet addiction concerning gender but not with age and education. Overuse of the internet strongly impacts IA. The study further investigates the relationship with the consequences of overuse of the internet with age, gender and education and found that genders significantly differ with the physical and psychological problem but not with a behavioural and relationship problem; level of education has a significant difference with physical and behavioural problem but not with relationship and psychological problems.

CONCLUSION

Our investigation helps college, university or educational policymakers to frame good mental health policies or create programmes to reduce or constrain the adverse effect of overuse of the internet. The results show a compelling need to reduce the overuse of the internet (OI) by promoting psychological competence.

KEYWORDS

Internet Addiction, Overuse of Internet, Gender, Consequences, India, College and Students.

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Role Of Future Marketing-It's Trends And Challenges

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ABSTRACT

Marketing is an ever-changing field, with new trends emerging all the time. Businesses that ignore great marketing trends in favour of outdated marketing strategies remain stationary, allowing their competitors to dominate them. If this situation persists, the corresponding business is more likely to stop progressing and, in the worst-case circumstance, come to a halt. Businesses that keep track of changing market trends and adjust their marketing strategy accordingly, on the other hand, might attract more clients and achieve exponential growth in the long run.

Keywords: Trends, Future Marketing, Strategies, Digital Marketing etc.

INTRODUCTION

Future marketing trends in 2025will place a greater emphasis than ever before on interactive, engaging engagement with consumers, making advertising more accessible than ever before. Customers love checking out things from firms they want to buy from, thus using chatbots, virtual reality, films, podcasts, and social media to promote brands to enhance sales will grow increasingly popular.

The new marketing ideas for 2021 attract clients' attention since they communicate with them individually.

THE IMPACT OF FUTURE MARKETING

Few global driving factors to define scope of Digital marketing are briefed as below:

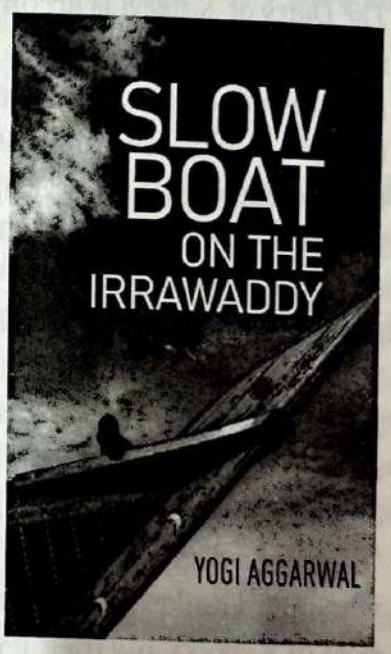
The growth of Internet users is inextricably related to digitalisation. Even by end of 2019, 63.4 percent of all Indian smartphone subscribers were using their phones to communicate, a figure that is expected to climb to 80 percent by 2025. Globally E-commerce sales B2B will surpass $12 trillion globally by the end of 2019 and are expected to expand to $ 24.3 trillion by 2025, according to 66 percent of Internet users. India, a growing country, aims to increase its GDP to $200 billion by 2026, up from $38 billion in 2017 (according to a report based on meticulous study),with an 11.1 percent CAGR.

Globally, 34% of companies spend more than half of their marketing expenditure on digital marketing. In the United States, digital alone accounts for 51% of overall advertising and marketing promotion budgets, whereas in India, it accounts for 22%.

Technological advancements from radio to television, smart phone to Alexa, machine to automated robot development scratch 360* all around the need to provide comfort with quality, customer pleasure to delight, thereby generating a trend in society for ease of

Slow Boat on the Irrawaddy by Yogi Aggarwal, Copper Coins, Ghaziabad, 2021, Pp. 200 Rs.399/-

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In May 1980 in Assam, the tribal leader who had gone underground told the author, "You're a journalist, you've talked to many people and know a lot. What is important is that you get the proper perspective. (135)" It is this perspective, original, observant, and objective, that informs Yogi Aggarwal's *Slow Boat on the Irrawaddy* and sets it apart from the expected travel writings. The book is a collection of thirty articles arranged neither chronologically nor alphabetically, spanning far and wide in both geographical and temporal locations covering Afghanistan, Burma, Cambodia, China, Iran, Nepal, Pakistan, South Africa, Bihar, Hampi, Assam, Bombay, Ayodhya. The articles, all published earlier as pieces in various distinguished publications including *Business India, The Time of India, The Indian Express, Associated News Feature (ANF)* were written between 1980 and 2014 and encompass the spatial and metaphorical journey of the veteran journalist. As the book came out in 2021, reading it is a process that runs simultaneously to an unconscious comparison with the present state of affairs in the lands discussed.

There is a certain awe that is inspired once the realization sets in that the author was present and has provided direct coverage from the places in Asia and beyond, always at the helm of the action: be it the change of government in Kabul (April 1992) or the first-ever multiracial elections in South Africa in 1994. The euphoria of Nelson Mandela's historic win, the dread and fear on the streets of Kabul during the coup in 1992, the amazement at witnessing the massive scale at Angkor Wat, the tension in the air outside the compound in Ayodhya in December 1992, the sheer awe and wonder evoked by the ruins of

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Revisiting Anita Desai's Fiction: Tracing Generational Relevance towards a Third Culture/Third Space Spectrum

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ABSTRACT

The paper attempts to trace the generational relevance of produced fiction by Anita Desai (b. 1937) towards the possibility of locating third culture subjectivity and the scope of the third space spectrum. The association ranges from the character aesthetics to strategic spatial intervention in her fiction, and the scope of extending the same to new pressures of readership pertaining to constantly mobile and restructured locales. The world around shows signs of disintegration of the individual vis-a-vis dislocation, migration, and dynamic forms of locomotion. It is, therefore, imperative that the modern Indian-English novel should seek new techniques to articulate the experienced inner and outer realities, merging textuality, spatiality, and subjectivity. Desai's preoccupation with the individual highlights their psychological motivations, identity constructs, organizational logic of family institutions, disintegration, sense of failure, the absence to offer a clear binary, and her keen awareness of the futility of existence radiates from most of her novels. The paper tries to fathom such possibilities through analyses of her major fiction into a third culture spectrum, which may serve as a major constituent to tackle her oeuvre and accommodate her major themes.

Keywords: *Third culture subjectivity, Third Space Spectrum, Spatial Theories, Indian-English Novel, Anita Desai.*

Situating Desai's Fiction in A Possible Third Culture Spectrum

Characters and locations in Desai's novels reflect multicultural experiences, crossing, adapting, and assimilating the diverse experiences of culture. In the "Introduction" to Anita Desai: Critical Perspectives, Devendra Kohli and Melanie Maria Just, bring to the fore the preponderance of the conflicts that are emotional and internal, "…at the heart of these conflicts lies her protagonist's pull between his/her cherished solitude and personal space, and the actual or remembered social and familial relationships that also provide an anchor [to her plot] "(13). These conflicts are extended through renderings of "alienation and not-belonging" to the created space, and at the same time, constructing that space with individualized experiences of memories, directing them at the vicinity of the natural landscape they acquire. The sensory mediums (of sight, symphony, and the culmination of psychotic renderings) comprehend the external geography to suit and situate the advances of internal realities of characters. To understand how the possibility of a third culture is already signaled in her works from the very beginning, Desai's insights on what inspires and empowers her as a writer is immanent. It is at

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Invoking Nationalism in Young India: Agnipath Defense Policy Reforms 2022

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INTRODUCTION

The young of India, a country with a rich cultural and linguistic history, have shown a rising propensity to invoke nationalism in recent years. To harness this feeling for the nation's security, a new programme has been proposed: the Agnipath Defense Policy Reforms of 2022. Increasing the number of troops, better weaponry and equipment, and better-armed force training are all part of this plan to improve India's military system. Underpinning this strategy is the belief that a robust military is necessary to protect and advance the nation. The Agnipath Defense Policy Reforms of 2022 also aim to enlist young people in the nation's defence. This strategy is based on the understanding that India's youth are the nation's future and that their enthusiasm and dedication to the defence of their country may be an advantage. The Agnipath Defense Policy Reforms of 2022 is an important milestone in India's attempts to modernise its military and instil national pride and solidarity in its populace, especially its young people.

A review article on "Invoking Nationalism in Young India: Agnipath Defense Policy Reforms 2022" will aim to do just that by analysing the strategy in great detail, looking at how it can affect India's security and sense of national identity. The article would thoroughly analyse the Agnipath Defense Policy Reforms 2022, dissecting its objectives, tactics, and proposed methods for putting them into action. It would also evaluate the policy's possible influence on India's young people and how well it achieves its stated goals. This review study aims to provide light on the larger implications of the Agnipath Defense Policy Reforms 2022 for India's defence and national identity. Any Indian policymaker, researcher, or academic interested in the relationship between military, nationalism, and young people in India will find this book invaluable.

NATIONALISM AND DEFENCE POLICY

The Republic of India, often known as the Land of Diversity, is a Sovereign, Socialist, Secular, Democratic country. India, the world's most populous democracy and the country with the second-largest population, is a melting pot of cultures and peoples. Individuals of many different cultures and faiths call this place home. Despite all the differences, there is still a strong sense of community among the people. Pride in one's country is what brings people together. The nation's citizens are united by their shared patriotism and love for their country.

The Constitution of India is the highest law of the land. It guarantees everyone's right to social, economic, and political justice, freedom of thought, expression, belief, faith, worship, equality of status and opportunity. It encourages fraternity among its citizens to uphold each person's inherent worth and the nation's integrity as a whole.

Chak de India is a 2007 Hindi film about a coach who is motivated to put together a championship-caliber women's hockey team, and she begins by inquiring about the players' homelands. He won't accept replies that include their home state (such "Andhra Pradesh" or "Punjab"), so they have to declare they're from India instead. "Why would the athletes tell a coach who already knew that they were Indians that they were Indian?" The reason is obvious: the coach sought to foster a sense of patriotism among the players as a unifying force. The concept of the nation-state as an entity is paramount.

Nationalism, in a broad sense, refers to a sentiment of oneness, a belief in the goodness of one's nation and its people, a willingness to celebrate and celebrate differences, and a sense of pride, love, and respect for one's

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INDO-CHINA BORDER DISPUTE: IMPACT ON ECONOMY

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INTRODUCTION

China has the second biggest economy, and India has the fifth largest economy in the world, measured by nominal GDP (Business Insider, 2020). In 2019, India's economy will be larger than that of the United Kingdom and France, while China will remain in second place, a position it attained a few years ago (Business Insider, India, 2020). Nevertheless, when considering military capability and yearly military expenditure, Global Fire Power (2020) ranks China third and India fourth behind the United States and Russia, respectively. Crucially, China and India account for over a third of the world's total population (Worldometers, 2020). In this context, China ranks top with an 18% share of the world's population (1,439,323,776), followed by India at 17.50% with a sizeable population of 1,380,004,385. (Worldometers, 2020). Both nations also have nuclear weapons.

Around 4000 kilometres of border separate the two nations (Karackattu, 2020). Notwithstanding their differences, the two nations rely on one another as a source of inexpensive agricultural goods and a supply of raw resources for commerce. They are each other's greatest trade partner. They represent each other's greatest consumer and industrial market. There's a good chance that this is why the two nations have had such stable diplomatic ties up until 2017. In 2017, however, two nations engaged in a brief skirmish in Doklam, close to a tri-junction border region called Donglang, or DonglangCaochang (meaning Donglang pasture or grazing field) in Chinese. Doklam is a disputed territory between China and India's close ally Bhutan, and on June 16 Chinese forces armed with construction trucks and road-building equipment started expanding an existing road southward in Doklam. After two days, on June 18, 2017, Indian forces crossed the border from Sikkim into Doklam with guns and two bulldozers to halt the Chinese troops from building the road. On August 28th, India and China said that all soldiers would be withdrawn from the Doklam standoff area. Los Angeles Times (2017, p. Despite this, in April 2020, during the COVID-19 pandemic, a long-standing border conflict between India and China in the Himalayas exploded into violence, killing at least 23 and wounded numerous more members of India's military (Pangong Lake: India and China complete pull-back of forces, 2021). It's likely that the same number of people died or were injured on the Chinese side, but official reports on their losses have not yet been made public. Despite senior officials' assurances that the matter would be handled with the greatest care and collaboration, the fatal conflict has degenerated into an all-out media and civil blame war between the two nations. The analysis concludes that the governments of these nations would prioritise economic interests above maintaining the costly and destructive trade war that has been going on between the United States and China since 2020 (Hosain& Hossain, 2019; Hosain& Hossain, 2019). This research has also investigated the economic effects of the Indo-Chinese border conflict.

Indo-China Relations

China and India were neighbours for two hundred years and shared a close culture. But, following World War II, a new order emerged and new nations were formed worldwide, reshaping the pattern of state ties. Henry Kissinger is renowned for his adage in international relations: "World has no permanent friends or enemies, only advantages." In an international setting, states pursue their agendas. This adage guides the conduct of international relations, with governments negotiating with one another based on their self-interest. One may observe the finest application of the adage in the diplomatic ties between India and China. Notwithstanding tensions over territorial claims and regional rivalry, strong economic links bind India and China.

Although India and China generally have cordial diplomatic ties, there is a chasm between them on account of ideological divergence, hegemonic struggle, strategic collaboration with other blocs, and, most notably, their boundary dispute on the Tibet side. Notwithstanding their differences, China and India have strong economic ties because of the BCIM-EC agreement inked in 2013 as part of China's

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STRENGTHENING WELFARE STATE IN INDIA: NATIONAL NUTRITION MISSION

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INTRODUCTION

Extreme poverty has become the leading cause of chronic and persistent hunger in developing nations. Undernourishment, especially among children and women, is a persistent issue in low-income areas. When people do not get enough of one or more vital nutrients, their physical and mental development and health suffer. Unhealthy eating habits are linked to deficiencies in socially significant nutrients such as those needed for normal growth, development, and freedom of choice in physical exercise and employment. Malnutrition lowers efficiency and production on the job. Worldwide, it's the leading cause of mortality and sickness, responsible for 12 percent of all deaths and 16 percent of disability-adjusted life years. Malnutrition, as everyone knows, arises from a combination of unfavourable conditions. These factors all contribute to the perpetuation of chronic malnutrition, which undermines our capacity to fully realise the potential of our human resources, generation after generation.

In many third-world nations, child malnutrition is a serious public health issue. It is a tremendous drag on the potential for growth in these nations, on top of causing immense human misery on a physical and mental level. Why? Malnourished childrenburden their parents more and become less physically and mentally capable adults. A child's human rights are also violated when they are hungry. It stands to reason that other developing nations would benefit from studying the root causes of child malnutrition and the government's efforts to control and eliminate it in growing economies like India.

India is one of the South Asian nations with the most rapid economic, educational, and technical development. India has failed to tackle malnutrition, which hurts the country's socioeconomic development, despite the country's economic prosperity. India is home to overa third of the world's

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WOMEN'S EMPOWERMENT AND COMMUNITY DEVELOPMENT

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1. INTRODUCTION

One of the most discussed topics of the 21st century is the advancement of women's rights. Women in today's society work hard to gain parity with males in the workplace and compete fiercely in domains including the economy, politics, and social work. It is an irrefutable reality that sometimes women are considerably superior to males when it comes to some challenges, and numerous studies reveal that women throughout the globe are now standing equally with men in many views. Women's empowerment in developing nations is ahead of the curve in many respects, including social status, cultural norms, and educational attainment. Women's empowerment contributes to a nation's economic, social, and political growth (Narayanan &Selvanathan,).

While women make up half to two-thirds of the rural labour force, the subject of women's participation in community development has been largely ignored until recently. Many governmental and community-based organisationsmust pay greater attention to this sizable cluster of rural towns (FAO, 1986). Women's contributions to rural development were consistently underappreciated, even by those who should have known better (Mgbada, 2010). In modern-day Nigeria, community growth has become one of the most pressing challenges due to its disruptive effect on infrastructure. Stakeholders in Nigeria have voiced serious concerns about the state of women's empowerment efforts there. The government's failure to include women in its many rural development programmes over the years is seen as a key obstacle to the success of the rural transformation programme (Mgbada, 2010). Even though rural women have less say over the productive resources they need to support their families (Umeh, et al. 2016). One definition of empowerment is the enhancement of decision-making skills. Elevating a woman's moral, ethical, governmental, and economic standing is what is meant by the term "female empowerment" (Mgbada, 2010). The development of one's resources and abilities is the essence of this. The goals of the 2030 Agenda can only be realised if women are given equal economic and professional opportunities.

Sustainable development, particularly in lowering poverty rates, is indicated by and requires gender parity. Even though gender has a significant role in the longevity of poverty and the success of poverty reduction efforts, anti-poverty policy still does not treat gender equally as a vital aspect of female empowerment (Alamu and Olowo, 2008). Sixty to eighty percent of the rural workforce consists of women, and women also grow sixty percent to seventy percent of the world's food crops (Ejenma, et al, 2021). Notwithstanding these facts, males rather than women control most farm management choices, and women are often undervalued or neglected in economic matters (Mgbada, 2010).

WiN (2019) pointed out that women are unsung heroes since they are involved in many spheres of society and are an untapped economic powerhouse in subsistence agriculture. Male children are prioritised in this culture because they are expected to serve as breadwinners and protectors. According to a 2010 study conducted in Ekong, girls are disadvantaged and lack access to educational opportunities (British council, 2012). The potential or accomplishments of a female are more highly prized than the girl herself. What women have brought to the business world, either as independent entrepreneurs or, more typically, as employees of family-run businesses. To wit: (Afolabi, 2008). Community development is a social movement to improve the quality of life in an area via collective effort. Through recruiting and organising self-help and co-assistance from government or volunteer organisations, it fosters economic and social improvement for the whole community via its activities, participation, and operation (Mgbada, 2010).

The number of males who became empowered is thought to be roughly double that of all empowered people (Mabel, 2008). Empowering people means enhancing their skills and talents so that they may work

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GOOD GOVERNANCE: INITIATIVES AND CHALLENGES

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INTRODUCTION

In contrast to good governance, governance is often used interchangeably with government or the act or process of ruling. International organisations and academics have embraced more inclusive definitions of the term. No one definition of "governance" exists to serve as a "convenient method for organising the literature," as Keefer (2009) points out. For example, Weiss (2000) includes seven definitions from seven organisations. The OECD (2009) also compiles seventeen more definitions as shown below. The United Nations Development Programme (UNDP, 1997) defines governance as "the exercise of economic, political, and administrative authority to manage a country's affairs at all levels," which "comprises mechanisms, processes, and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations, and mediate their differences," among other things. It is "the mechanism by which public institutions conduct public affairs and manage public resources," according to the International Monetary Fund (IMF, 2007). That which "encompasses the role of public authorities in establishing the environment in which economic operators function and in determining the distribution of benefits as well as the nature of the relationship between the ruler and the ruled" is, according to the Organization for Economic Cooperation and Development (OECD), "the use of political authority and exercise of control in a society about the management of its resources for social and economic development" (OECD, 1995).

So, what exactly is good leadership? The wide range of interpretations of what constitutes excellent governance and what constitutes high-quality governance, in general, is striking. The United Nations, the Multilateral Development Banks, the European Union, the International Monetary Fund, and the Organization for Economic Cooperation and Development are only some of the important multilateral entities represented in Table 1. These descriptions are taken from either the most recent major public statement on the subject (such as the entry under "Governance" on the UN's website) or the organization's current policy on (good) governance (such as the IMF's Good Governance: The IMF's Role, published in 1997). Except for the European Bank for Reconstruction

WORLD SOCIAL FORUM AND THE GLOBAL JUSTICE MOVEMENT

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Throughout the 20th century one of the most important developments that came to be witnessed was the ever growing concentration of power in the hands of transnational and global institutions upon whom the influence of nation- state and its territorial controls have significantly went down. The same status quoism has in a way crept into democratic theory and practice which have mostly remained nation-state centred. Although there were some examples of cosmopolitan democratic thinking and transnational democratic practice throughout the century, but they were mostly restricted to smaller spaces without much influence. An example of a reasonably moderate attempt to democratise global power relations, specifically vis-a-vis the North- South divide, was the 1970s project of the New International Economic Order (NIEO). It did not, however, lead to any significant redistribution of power at the global scale and had its own set of shortcomings. One of them being an over emphasis upon state- centric solutions where the state as a unit of analysis got undue importance, even though the problems were of a more wider scale and global level. Deviating from that sort of an approach the 21st century movements are more prone to ask for wider influence for the civil society groups that are confronting corporate clout as well as growing tentacles of the state all across the world. Thus counter events have also been planned across the world in response and opposition to civil society gatherings of the elite sections like World Economic Forum. Whose first informal business gathering in Davos took place in January 1971 under the name of the European Management Forum and since 1982 the Davos meeting has focused on bringing world economic leaders to its annual meetings, and in 1987 it got its present name, the World Economic Forum. In January 1999, after several years of preparation, various organisations started preparing a counter-event in Switzerland under the banners of 'another Davos' and 'anti-Davos'. Apart from the World Forum of Alternatives, the groups included the French journal Le Monde Diplomatique and Association for the Taxation of Financial Transactions for the Aid of Citizens (ATTAc), founded in France in June 1998. In the first anti-Davos event, organised simultaneously with the WEF 2000, various groups ranging from the World Women's March to the Brazilian Landless Rural Workers first had a seminar in Zurich and then marched to Davos to hold a press conference .[1]

In Brazil the concrete initiative for a worldwide civil society event emerged in early 2000. The first formulations of the idea are generally attributed to Oded Grajew, the then co-ordinator of Brazilian Entrepreneur's Association for Citizenship (Associagao Brasileira de Empresarios pela Cidadania (CIVES), a progressive entrepreneurial organisation. In February 2000 Bernard Cassen, chair of ATTAC and director of Le Monde Diplomatique, met Grajew and Francisco Whitaker in Paris to discuss the possibility of organising such a forum. Their discussion produced three central ideas for the forum. First of all, it should be held in the South, and more concretely in the Brazilian city of Porto Alegre. Second, the name should be World Social Forum (WSF), changing only one key word from the adversary's name. And third, it should be organised over the same dates as the WEF, partially because this symbolism was considered attractive for the media.[2]

Soon after it was clear that ATTAC, Le Monde Diplomatique and other organisations influential within transnational activist networks would support the initiative, eight Brazilian city society organisations decided to form the Organizing Committee of the forum. In March 2000 they formally secured the support of the municipal government of Porto Alegre and the state government of Rio

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ANTI-NUCLEAR ACTIVISM IN INDIA: RESPONSES & THEIR CHARACTER

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While looking into the different aspects of National Security & Non-State Actors in India a lot of research has gone into addressing the problem of the non-state actors which are considered extremist in nature. They may include cross border terrorist organizations, ultra-left formations, secessionist organizations that are considered to be a direct threat to India's sovereignty, unity & integrity. Non-state actors have become a key factor in contemporary security scenario. The given research paper has tried to investigate and discuss about some of the less talked of & less highlighted non-state actors like the various International NGO's, Indian Citizen's groups, Scientist's organizations & other grassroots organizations that have previously worked against some of the nuclear plant sites along the length and breadth of India. Three anti nuclear movements situated in Koodankulam (TN), Jaitapur (Maharashtra) & Fatehabad (Haryana) have been taken as case studies to investigate the chief causes behind these agitations? What were the chief concerns like that relating to harmful radiations from the plant? What have been the consequences of international developments regarding anti-nuclearization movements upon these agitations?

How much has the 'political opportunity structure'[1] existing in India directed the path of social mobilization taken by the various national nuclear protest movements? What has been the elite public opinion on the weapons policy of India? How has the mainstream media handled the given issue?

HISTORICAL EVOLUTION

In the formative years after independence, one of the major tasks of the Indian state was to usher in a new era of development. For the ruling elite, development was primarily understood to be something that results from increase in wealth, which in turn would lead to the alleviation of poverty. Hence, it was felt that large-scale industrialization with the production of capital goods at a mass scale was necessary in order to fuel the rapid capitalist development of the economy. However, the question regarding energy that could facilitate the process of industrialization loomed large over policy makers. At this juncture nuclear energy was projected as an alternative in the context of scarce energy sources.

Scientists like Homi J. Bhabha stressed on the use of nuclear technology in solving the energy problems of India. Adding to this, the rationale for nuclear energy was presented at two levels- one as a source of development and two, as a program that could put India in competition with the West, and place India as a hegemonic state-actor among the Third World. Now this kind of rhetoric was very similar in texture to the one that preceded pro-nuclear narrative in the west, such as the one foisted upon the US during the 1950s and 1960s by a triumvirate of government, military and industry officials. For e.g. in 1953, President Eisenhower re-packaged nuclear bombs

'सलाम' एक नरकीय प्रथा



विजय कुमार

ओमप्रकाश वाल्मीकि की 'सलाम' कहानी भारतीय समाज का आईना है। जिसमें दलित का नरकीय जीवन व्याप्त है। समाज की प्रथा, परंपरा, रूढ़ियाँ और मिथक दलितों के विरोध में खड़ी है। जिसमें दलित समाज आज भी पिस रहा है। गाँव की प्रथा में दलितों का शोषण किस-किस रूप में होता है उसको यह कहानी यथार्थ रूप में सामने रख देती है। 'डॉ.अंबेडकर ने गाँव को भारतीय गाँव की अवधारणा का शत्रु माना था। उनके अनुसार हिंदुओं की ब्राह्मणवादी और पूंजीवादी व्यवस्था का जन्म भारतीय गाँव में ही होता है। डॉ. अंबेडकर का कहना है कि भारतीय गाँव हिन्दू व्यवस्था के कारखाने है। उसमें ब्राह्मणवाद, सामंतवाद और पूंजीवाद की साक्षात अवस्थाएँ देखी जा सकती हैं। उसमें स्वतन्त्रता, समता और बंधुत्व के लिए कोई स्थान नहीं है।'[1] 'सलाम' कहानी समाज में जाति के दंश के साथ-साथ गांधी, मार्क्स, तथा आधुनिकता पर भी प्रश्न खड़ा करती है। गांधी ने जहां गाँव को वास्तविक हिंदुस्तान की संज्ञा दी थी। वहीं, मार्क्स का मानना था कि पूंजी से जाति-व्यवस्था खत्म हो जाएगी। लेकिन 'सलाम' कहानी का चायवाला जब कमाल उपाध्याय को चाय नहीं देता और कहता है ''यो पैसे सहर में जाके दिखाणा। दो पैसे हो गए जेब में तो सारी दुनिया को सिर पे ठाये घूमो....ये सहर नहीं गाँव है...यहाँ चूहड़े-चमारों को मेरी दुकान में तो चाय ना मिलती....कहीं और जाके पियो।'[2] यह पंक्ति गाँव में जाति की विद्रूपताओं और विषमताओं को आईना दिखती है। इस गाँव को ही गांधी आदर्शवादी गाँव मानते थे जहां एक समाज को नरक सा जीवन जीना पड़ता था। साथ ही, पैसे से के कारण भी जो जाति का भेद है वह भी नहीं खत्म हो पाता है। सामाजिक भेदभाव का जो अलगाव मौजूद है वह पैसे में नहीं बल्कि मानसिकता में व्याप्त है। मैनेजर पाण्डेय मार्क्सवाद की आलोचना करते हुए कहते हैं कि ''वर्ग की धारणा का आधार आर्थिक है, जबकि वर्ण या जाति का संबंध आर्थिक के साथ-साथ सामाजिक स्थिति से भी है।'[3] मार्क्सवाद ने भारतीय समाज की संरचना का आधार वर्ग को बनाया था, जबकि अंबेडकर ने वर्ण को। अंबेडकर ने वर्ण को आधार बनाकर ही कहा था कि ''जातिप्रथा केवल श्रम का विभाजन नहीं है, यह श्रमिकों का विभाजन भी है।''[4]

ओमप्रकाश वाल्मीकि ने अपनी कहानियों में गाँव की नरकीय प्रथा को रेखांकित किया है। समाज में कई ऐसी ही प्रथाएँ है जो दलित समाज के विरोध में खड़ी है । देवेन्द्र चौबे लिखते है 'सलाम' कहानी में ओमप्रकाश वाल्मीकि जिस संस्कृति का विरोध करते है, यह वही संस्कृति है जिसे सामंतवाद और ब्राह्मणवाद ने 'दलित समाज' को प्रताड़ित और अपमानित करने के लिए सदियों से बनाये रखी है।''[5] ऐसी ही एक प्रथा 'सलाम' करने की है। 'सलाम' किसी व्यक्ति के लिए अभिवादन की प्रथा है तो दलितों के लिए यह प्रथा उनके आत्मसम्मान और गरिमा को खत्म करने की है। जिसको हजारों सालों से दलितों को भोगना पड़ा है। ''जुम्मन की घरवाली जिन परिवारों में कम करती थी, उनमें अधिकदार रांघड़ थे। गाँव-देहात के नियम-कायदे के हिसाब से हरीश को 'सलाम' के लिए विदाई से पहले रांघड़ों के दरवाजे पर जाना था। यह एक रस्म थी। जिसे न जाने कितनी सदियों से निभाया जा रहा था।'[6] गाँव की अपनी परंपरा और प्रथा रही है जिसमें दलितों को सबसे ज्यादा पिसना पड़ता है। आज भी दलितों की पुरानी पीढ़ी इन परम्पराओं में जीने को अपना कर्म मानती है। ''बाप-दादों की रीत है, एक दिन में तो न छोड़ी जावे है। वे बड़े लोग हैं। 'सलाम' पे तो जाणा ही पड़ेगा।'[7] लेकिन आज नई पीढ़ी इस नरकीय प्रथा को खत्म करने के लिए प्रतिबद्ध है। ऐसे ही हरीश नई पीढ़ी का युवा है जो शिक्षा के कारण इस घृणित प्रथा को खत्म करना चाहता है। वह 'सलाम' की प्रथा को आत्मसम्मान तोड़ने की साजिश मानता है। हरीश कहता है ''आप चाहे जो समझें...मैं इस रिवाज को आत्मविश्वास तोड़ने की साजिश मानता हूँ। यह 'सलाम' की प्रथा बंद होनी चाहिए।'[8]

यह कहानी दलित द्वारा गैर-दलित के संवेदना के विस्तार की कहानी है। कहानी की शुरुआत शादी की चहल-पहल के साथ शुरू होती है। जिसमें हरीश के साथ कमाल उपाध्याय मौजूद है। कमाल उपाध्याय गैर-दलित है जो मित्र की शादी में हरीश के गाँव आया है। कमाल उपाध्याय जब सुबह चाय के लिए दुकान पर जाता है तो चायवाला उसको दलित समझकर चाय नहीं देता है। कमाल उपाध्याय जब अपने ही समाज द्वारा उपेक्षित होता है तब वह दलित जीवन की हीनता को समझ जाता है। ''रामपाल को देखते ही चायवाला और बिफर पड़ा, 'चूहड़ा है। खुद कू बामन बतारा है। जुम्मन चूहड़े की बाराती है। इब तुम लोग ही फैसला करो। जो यो बामन है तो चूहड़ों की बारात में क्या मूत पीणे आया है।'[9]

श्यौराज सिंह 'बेचैन' ने लिखा है कि ''जाति जानने कि जिज्ञासा हिन्दू समाज में भगवान को जानने कि जिज्ञासा से भी बड़ी है।''[10] भारतीय समाज में जाति मनुष्य की पहचान से जुड़ी हुई है। यह जातिगत पहचान ही मनुष्य के उच्च-नीच का अहसास कदम-कदम पर करती रहती है और कभी-कभी यह हिंसक रूप भी ले लेती है। इस कहानी में हम कमाल उपाध्याय और चायवाले के संवाद में देख सकते है ''चायवाला भभक पड़ा, 'मेरी जात से तुझे क्या लेणा देणा। इब चूहड़े चमार भी जात पूछने लगे...कलजुग आ गया है कलजुग।''

'हाँ, कलजुग आ गया है, सिर्फ तुम्हारे लिए, तुम अपनी जात नहीं बताना चाहते हो तो सुना-मेरा नाम कमल उपाध्याय है। उपाध्याय का मतलब तो जानते ही होगे, या समझाऊँ... उपाध्याय यानी ब्राह्मण।' कमल ने आँखें तरेरकर कहा।

'चूहड़ों की बातरा में बामन?' चायवाला कर्कशता के साथ हँसा। 'सहर में चूतिया बणाना...मैं तो आदमी कू देखते ही पिछाण (पहचान) लूँ...कि किस जति की है?' चायवाले ने शेखी बघारी।'[11]

अतः ओमप्रकाश वाल्मीकि की 'सलाम' कहानी जहां गाँव में व्याप्त दलित के शोषण, अपमान, हीनताबोध को दिखती है। वही, हरीश के माध्यम से पुरानी रूढ़ियों, मान्यताओं का नकार भी करती है। समाज में जो भेदभाव की जड़े है उसको भी यह कहानी रेखांकित करती है और समाज को समानता और प्रेम का विकल्प

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PHOTOCATALYTIC PROPERTIES OF BIOLOGICALLY SYNTHESIZED UNCOATED AND CALCIUM COATED ZnO NANOPARTICLES USING CUCUMBER JUICE

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ABSTRACT

Uncoated ZnO and calcium-coated ZnO nanoparticles (Ca-ZnO) were biologically synthesized using cucumber juice as a reducing and capping agent. Cucumber belongs to *Cucurbitaceae* family, is rich in water content and possesses antioxidant activity. The chemical composition and morphology of the synthesized NPs were determined by scanning electron microscopy (SEM), energy dispersive X-ray spectrophotometer (EDS), high-resolution transmission electron microscopy (HR-TEM), X-ray diffraction (XRD)and FT-IR. The spherical as well as hexagonal-shaped ZnO nanoparticles were obtained in the size range of 4-70 nm. Coated and uncoated ZnO nanoparticles were evaluated for their photo degradability of methylene blue (MB) and rhodamine B (RB) dyes. They showed nearly 100% photodegradation of methylene blue in lesser time, however, showed minimum degradation of rhodamine B dye. Calcium coating over ZnO NPs enhanced their photocatalytic properties.

Keywords: Cucumber Juice, Methylene Blue, Rhodamine Blue, Biological Method, ZnO NPs, Photocatalysts.

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INTRODUCTION

These days world is facing two major challenges associated with "P" i.e., Population explosion and Pollution. Both Ps are in the hands of human beings. Although population explosion has been controlled to some extent by awareness campaign programs, but pollution seems to be difficult in the era of rapid industrialization. Several agricultural practices as well as industrial activities like the use of pesticides, herbicides, dyes, pharmaceuticals, etc.[1-3] are the matter of concern for the scientific world and environmentalists. These anthropogenic activities lead to water and soil pollution. Organic pollutant effluents in water, textile and pharmaceutical industries, in particular, are the biggest challenges that require attention to maintain a healthy environment. Textile industries discharge dyes and pigments loaded water into natural water resources. These organic pollutants adversely disturb the ecological balance in aquatic life due to their toxicity, complexity of structure and perseverance. However, industries have been using various physical techniques such as coagulation, ion exchange chromatography, activated carbon, reverse osmosis, and ultrafiltration for their disposal.[4-5] In this regard, the development of efficient technology for water as well as soil remediation is imperative to safeguard the environment. In recent years, several nano-based technologies have been adopted due to wide applications from solar fuel, cosmetic, medicaland photocatalytic properties. Several metal/metal oxide nanoparticles such as Ag, Au, TiO_2, CuO, ZnO, etc. have been examined for their photocatalytic properties in the decolorization of textile wastewater.[6-9] These nanoparticles have frequently been used in the treatment of wastewater as they lead tothe complete mineralization of contaminants due to redox reactions.[10-11] Nanoparticles of rare earth metals have also been gaining interest because of their good optical and catalytic properties.[12-14] Among all, Titanium oxide (TiO_2)

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ARTICLE

Antioxidant Activity of 2-Bromo-3-hydroxy-2-nitropropylcinnamate against Alcohol Induced Oxidative Damage

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ABSTRACT

The present study demonstrated the antioxidant activity of 2-bromo-3-hydroxy-2-nitropropylcinnamate *versus* alcohol induced oxidative damage in albino wistar rats. In this study, 30 % alcohol exposed rats were found to be more prone to peroxidative risk as they are calculated by species of thiobarbituric acid. It was observed that after the rats induction with 30% alcohol, concentration of lipid peroxidation has been obtained expressively ($p \leq 0.001$) high in a liver and serum, beside with concomitant substantial ($p \leq 0.001$) reduced in enzymatic and non-enzymatic antioxidants levels like catalase (CAT), superoxide dismutase (SOD), glutathione reductase (GR), glutathione peroxidase (GPx), vitamin E (tocopherol), reduced glutathione (GSH), glutathione-*s*-transferase (GST), vitamin C (ascorbic acid), β-carotene as well as ceruloplasmin in serum along with liver, only 30% alcohol was treated. If rats obtained 2-bromo-3-hydroxy-2-nitropropylcinnamate at the dose level of 20 mg/kg bw/day, PO, for 30 days, the peroxidative damage has been marginal in serum along with liver, alongside efficiently encouraging the potential of antioxidant in the rats treated by alcohol. This study revealed that in liver the raised peroxidative risk is probably allied with alcohol induction pathology that can be decreased by increasing the antioxidant potential by free radical scavenging activity, therefore promising as artificial antioxidants for 2-bromo-3-hydroxy-2-nitropropylcinnamate.

KEYWORDS

Lipid peroxidation, 2-Bromo-3-hydroxy-2-nitropropylcinnamate, Antioxidant activity.

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INTRODUCTION

Antioxidants are the compounds which inhibits the oxidation. Any chemical reaction producing the free radicals, thereby leads to chain reaction which might harm the organism cells and is termed as oxidation. Thiols or ascorbic acids (vitamin C) terminates these chain reactions and acts as antioxidants. For balancing the oxidative stress, animals and plants maintains complex system of the overlapping antioxidants, like glutathione and enzyme such as superoxide mutase and catalase, produced internally or the dietry antioxidant vitamin E and vitamin C [1].

The antioxidants are commonly having two different groups of substrates in use; the industrial chemicals products for oxidation prevention, as well as the natural compounds

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SYNTHESIS OF FLUORESCENT CONJUGATED POLYACRYLIC ACID

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ABSTRACT

We report the synthesis of fluorescent polyacrylester using two steps. First step involved the synthesis of polyacryl chloride which was then esterified in the second step. The characterization of prepared compound included FT-IR, NMR and optical studies (UV – Visible and Fluorescence spectroscopy).

Keywords : Synthesis, UV–Visible, Fluorescence Spectroscopy, FT-IR, Fluorescent, Oxalylchloride.

INTRODUCTION

The rapid development of biological science has fuelled growing demands to analyze biomolecules such as polypeptides, proteins, and nucleic acids during the past decades, resulting in the development of various biological analytical system like biosensors. Various nonradioactive labelling techniques based on enzyme-catalysed reactions, bio/chemiluminescence, and fluorescence, for example, has emerged, amongst which fluorescent labelling is the most widely used[1-2].Fluorescence is a luminescence phenomenon that occurs in fluorophores. It is a process by which a fluorophoreabsorbs light of a particular wavelength and then re-emits a quantum of light with an energy corresponding to the energy difference between the excited state and the ground state[3-4]Fluorescent labels represent one of the most widely developing fields in biology and medicine, with enormous applications. All fluorescence parameters such as fluorescence intensity, emission spectrum, excitation spectrum, and fluorescence lifetime can be used to encode what is happening in the close neighbourhood of the monitoring molecule. Organic dyes are amongst the earliest types of classical fluorescent labels used in biology. Despite their inherent drawbacks such as having a short Stokes shift, poor photochemical stability, susceptibility to photo bleaching and decomposition under repeated excitation, organic dyes are still popular due to their low cost, availability, and ease of usage.

In recent years polymer nanoparticles have been widely investigated as a carrier for drug delivery. For non-invasive drug administration particulate delivery systems offer the advantage of providing a prolonged residence time on mucosal membranes and the possibility to reach greater mucosal surface areas leading to a comparatively higher drug uptake. Although the efficacy of such systems has already been demonstrated in various clinical trials, it is believed that the full potential of non-invasive nanoparticulatedeliverysystems has by far not been reached. Nanoparticulatedelivery systems for non-invasive administration are based onvarious polymers such as polyacrylester, PLGA or chitosan. Among these polymers polyacrylic acid offers the advantage of high muco-adhesive properties because ofthe formation of non-covalent bonds such as hydrogen bonds, ionic interactions and van der Waals forces or physical interpenetration effects of polymer chains and mucus.

Material and Methods:

Polyacrylic acid, oxalylchloride,iodine, DMAP and rose Bengal were purchased from Alfa Aesar and solvents like THF, DMF,DCM, Chloroform and sodiumbicarbonate were purchased from Spectrochem and purified by distillation before use.

Synthesis of florescent and conjugated polyacrylester: Polyacrylic acid 1g ,0.02mmoL,) was dissolved in DCM(10mL) in a round bottom flask and to this oxalylchloride(1mL) was added drop wise at a temperature of 0-5 °C. The reaction mixture was stirred at room temperature for next half an hour. The reaction was stopped after 45 minutes when white precipitate of polyacrylchloride was formed observed by TLC[5]. After the product was formed in-situ, was esterified by the

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ABSTRACT

Uncoated ZnO and calcium-coated ZnO nanoparticles (Ca-ZnO) were biologically synthesized using cucumber juice as a reducing and capping agent. Cucumber belongs to *Cucurbitaceae* family, is rich in water content and possesses antioxidant activity. The chemical composition and morphology of the synthesized NPs were determined by scanning electron microscopy (SEM), energy dispersive X-ray spectrophotometer (EDS), high-resolution transmission electron microscopy (HR-TEM), X-ray diffraction (XRD)and FT-IR. The spherical as well as hexagonal-shaped ZnO nanoparticles were obtained in the size range of 4-70 nm. Coated and uncoated ZnO nanoparticles were evaluated for their photo degradability of methylene blue (MB) and rhodamine B (RB) dyes. They showed nearly 100% photodegradation of methylene blue in lesser time, however, showed minimum degradation of rhodamine B dye. Calcium coating over ZnO NPs enhanced their photocatalytic properties.

Keywords: Cucumber Juice, Methylene Blue, Rhodamine Blue, Biological Method, ZnO NPs, Photocatalysts.

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This manuscript is focusing **SDG-6:** Clean Water and Sanitation

INTRODUCTION

These days world is facing two major challenges associated with "P" i.e., Population explosion and Pollution. Both Ps are in the hands of human beings. Although population explosion has been controlled to some extent by awareness campaign programs, but pollution seems to be difficult in the era of rapid industrialization. Several agricultural practices as well as industrial activities like the use of pesticides, herbicides, dyes, pharmaceuticals, etc.[1-3] are the matter of concern for the scientific world and environmentalists. These anthropogenic activities lead to water and soil pollution. Organic pollutant effluents in water, textile and pharmaceutical industries, in particular, are the biggest challenges that require attention to maintain a healthy environment. Textile industries discharge dyes and pigments loaded water into natural water resources. These organic pollutants adversely disturb the ecological balance in aquatic life due to their toxicity, complexity of structure and perseverance. However, industries have been using various physical techniques such as coagulation, ion exchange chromatography, activated carbon, reverse osmosis, and ultrafiltration for their disposal.[4-5] In this regard, the development of efficient technology for water as well as soil remediation is imperative to safeguard the environment. In recent years, several nano-based technologies have been adopted due to wide applications from solar fuel, cosmetic, medicaland photocatalytic properties. Several metal/metal oxide nanoparticles such as Ag, Au, TiO_2, CuO, ZnO, etc. have been examined for their photocatalytic properties in the decolorization of textile wastewater.[6-9] These nanoparticles have frequently been used in the treatment of wastewater as they lead tothe complete mineralization of contaminants due to redox reactions.[10-11] Nanoparticles of rare earth metals have also been gaining interest because of their good optical and catalytic properties.[12-14] Among all, Titanium oxide (TiO_2)

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ENVIRONMENTAL BIOTECHNOLOGY

16S rRNA metagenomic profiling of red amaranth grown organically with different composts and soils

Pooja Sharma[1] · Sophayo Mahongnao[1] · Arif Ahamad[2] · Radhika Gupta[1] · Anita Goel[1] · Narendra Kumar[1] · Sarita Nanda[1]

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Abstract

In recent years organic food is gaining popularity as it is believed to promote better human health and improve soil sustainability, but there are apprehensions about pathogens in organic produces. This study was designed to understand the effect of different composts and soils on the status of the microbiome present in organically grown leafy vegetables. 16S rRNA metagenomic profiling of the leaves was done, and data were analyzed. It was found that by adding composts, the OTU of the microbiome in the organic produce was higher than in the conventional produce. The beneficial genera identified across the samples included plant growth promoters (*Achromobacter*, *Paenibacillus*, *Pseudomonas*, *Sphingobacterium*) and probiotics (*Lactobacillus*), which were higher in the organic produce. Some pathogenic genera, viz., plant pathogenic bacteria (*Cellvibrio*, *Georgenia*) and human pathogenic bacteria (*Corynebacterium*, *Acinetobacter*, *Streptococcus*, *Streptomyces*) were also found but with relatively low counts in the organic produce. Thus, the present study highlights that organic produce has lesser pathogen contamination than the conventional produce.

Key points

- *16S rRNA metagenomics profiling done for organic red amaranth cultivar*
- *Microbial richness varied with respect to the soil and compost type used*
- *The ratio of beneficial to pathogenic genera improves with the addition of compost*

Keywords Microbiome · 16S rRNA Metagenomics · Organic · Composts · Pathogens

Introduction

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Analysing the Relationship between FDI Inflows, Inequality, Political, Human Capital and Environment Factors in India

Pooja Sharma[1], Priya Bhalla[2], Sunita Gupta[3]

Abstract

Economic growth and development of an economy depend heavily on Foreign Direct Investment (FDI). India is a leading destination for Foreign Direct Investment. Several factors are responsible for determining the potential to attract foreign investment. The primary purpose of the study is to investigate the relationship between FDI, political factors, socioeconomic factors mainly human capital, and inequality. To achieve this objective, the Principal Component Analysis (PCA) technique is deployed to analyze the political and human capital factors from 2000 to 2020. To construct a political index, political participation, labour laws government effectiveness, regulatory law, rule of law, political stability, and control of corruption are the selected indicators. All these reflect a conducive environment for foreign investors. To analyze the human capital, indicators such as infant mortality rate, immunization status, life expectancy at birth, and other socio-economic indicators such as gross enrolment ratio and number of beds are deployed to construct the Human Capital Index. Further, to examine the relationship between FDI and factors such as inequality, environment as well as political and human capital, the Granger causality test is performed. The results reveal that inequality, political factors, and human capital granger cause FDI, while FDI influences carbon emission. A policy framework is recommended in the study that will enhance political conditions and human capital which will significantly contribute to attracting further FDI. As per the findings, FDI is responsible for environmental degradation therefore, those investments or technologies that guarantee less emissions and reduce environmental degradation should be promoted in FDI.

Keywords: *Foreign Direct Investment, Principal Component Analysis, Political Factors, Human Capital, Inequality, Environment*

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Lessons From Shark Tank India: An Entrepreneur Can Learn

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Sunita Gupta *

Abstract
Shark Tank India, the famous reality show has not only served as a platform where the contestants/entrepreneurs pitch their ideas to 7 self-made investors called Sharks and raised funding but it also served as a great motivator and live Business School to learn practical lessons be it perseverance, problem solving attitude, Follow your passion, know your numbers, scalability etc. Based on season 1 of the show, the present paper is a maiden attempt to explore the lessons a budding entrepreneur can learn from Shark Tank India.

Keywords
Shark Tank India, Budding Entrepreneur, Entrepreneurship Traits, Motivation, Pitching, Start ups, Live business School, fund raising.

INTRODUCTION

According to the Oxford Dictionary entrepreneurship is "the activity of setting up a business or businesses, taking on financial risks in the hope of profit". In OECD working papers, Ahmad & Seymour (2008), studied various definitions given by various economists over 2 decades including given by Schumpeter (1934) and Peter F. Drucker (2005), and others and gave definitions of 'Entrepreneurship' as "the phenomenon associated with entrepreneurial activity" and 'Entrepreneurial Activity' as 'the enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets." In short, we can say that entrepreneurship is the activity of value generation by setting up a business of new product, process or market.

Undoubtedly, entrepreneurship is the backbone for a nation's economic development. Entrepreneurship is not merely the fact that one person starts doing business, but it is a source of employment to many and to catalyze creative thinking and curate out-of-the-box solutions to the real problems felt at grass root level. Mishra, Puri & Gupta (2021) attempted to explore the perception of Indian college students in context of the reasons for the choice of being an entrepreneur and the deterrents faced by them in achieving their entrepreneurial aspirations. Whether at students' level or otherwise, modern world involves a lot of problems and entrepreneurship can be a solution that will help the masses stand on their own. Understanding the importance of it, the Govt. of India has been encouraging entrepreneurship by providing incentives and through its various schemes like Start Up India, Stand Up India etc. but unfortunately, it has not reached the required level as yet. Because of unique & inherent challenges, which any entrepreneurial activity has, there is no particular organization or institution which could focus properly on the practical aspects of entrepreneurship. A reality TV show produced by Sony, Shark Tank India (STI), has filled this gap and is a godsend to budding and eager entrepreneurs. The show features seven potential investors, stalwart entrepreneurs in their respective fields, dubbed "sharks," wherein Indian budding entrepreneurs pitch and present their business plans for their product to them in order to persuade them to invest money in their business. The show is not only a platform wherein participating entrepreneurs raised funding but is a big learning ground to the viewers of the show. This is the first time ever in the history of Indian television where something like this is launched in India which is based on intelligence and innovation and is serving as a live business school. After the huge success of its mother show 'Shark Tank' in America, its Indian counterpart 'Shark Tank India' has been produced and telecast. Being an audio-visual medium, it has reached every nook & corner inspiring the entire population to be truly an entrepreneur.

STI has not only served as a motivator but a live business school imparting lessons in various fields be it idea, communication, presentation, finance, packaging, marketing, executing,

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JOURNAL OF NATURAL REMEDIES
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SHORT COMMUNICATION

Assessment of Anxiolytic Activity of Brahmi (*Bacopa monnieri*) in Zebrafish Model System

Padmshree Mudgal[1*], Radhika Gupta[1], Adita Joshi[2], Chandhana Prakash[1], Kajal Gupta[1], Ritika Sachdeva[1] and Niharika Joshi[1]

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[2]Sansriti Foundation, Delhi - 110016, India

Abstract

The increasing prevalence of anxiety and stress-related disorders has made it a leading contributor to the global health burden. The present treatment options have severe side effects and show remission on discontinuation of the medication. Hence, there is an urgent need to explore safer alternative treatments for long-term usage with minimum toxicity. The medicinal plant *Brahmi* (*Bacopa monnieri*) has been used in Indian traditional medicine as a neural tonic for centuries. The present study aimed to study the toxicity and anxiolytic activity of *Brahmi* using the zebrafish model system. The toxicity assays determined the minimum effective concentration of *Brahmi* to be 0.01%. In addition, behavioral assays such as thigmotaxis and scototaxis and endocrine assays such as the measurement of cortisol levels in stressed zebrafish larvae were performed. Zebrafish embryos exposed to 0.2% *Brahmi* up to seven days post fertilization (dpf) did not show any developmental toxicity. Behavioral and endocrine assays were performed on 5dpf zebrafish larvae treated with 0.01% *Brahmi* extract. Our studies show that *Brahmi* significantly reduced thigmotaxis (wall hugging) and scototaxis behavior in zebrafish larvae exposed to osmotic stress as compared to untreated stressed larvae. Stress activates the hypothalamic-pituitary-interrenal axis and stimulates the release of cortisol in zebrafish larvae. Whole body cortisol assay has shown that *Brahmi* significantly reduced the stress-induced release of cortisol in zebrafish larvae. Our studies report that *Brahmi* mitigates the stress response in zebrafish larvae and has minimum toxicity. This suggests that *Brahmi* may be a safe option for long term management of stress.

Keywords: Cortisol, HPI Axis, Scototaxis, Stress, Thigmotaxis

1. Introduction

Anxiety disorders and depression are becoming leading contributors to the global health burden. COVID-19 pandemic has further exacerbated the scale and burden of mental health problems with an increase of 25% globally with women and young people being hit the worst[1,2]. Anxiety disorders are comorbid and are often diagnosed together with depression, mood disorders, bipolar disorders, and substance abuse[3], which can lead to significant impairment of general well-being and impact normal day-to-day functioning. The first line of drugs for these disorders is selective serotonin-norepinephrine reuptake inhibitors. Other treatment options include tricyclic antidepressants, mixed antidepressants (e.g., mirtazapine), antipsychotics, antihistamines (e.g., hydroxyzine), alpha- and beta-adrenergic medications (e.g., propranolol, clonidine), and GABAergic medications (benzodiazepines, pregabalin, and gabapentin)[4,5]. Most of these drugs are addictive, have severe side effects such as sedation, a decrease in cognitive ability, and hence are not recommended for long-term use[6]. A high relapse rate is observed in patients when treatment is stopped. An increased risk for suicidal ideation (not suicides) in children and adolescents has been reported in cases treated with antidepressants such as escitalopram, citalopram, paroxetine, sertraline, mirtazapine, and venlafaxine[7]. Popular anxiolytic drugs like Alprazolam have also been

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Article

Digital Screen Time as a Characteristic of Academic Performance among School-Going Children

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Sage

Urvashi Gupta[1], Nilupher Feroz[1], Kshetrimayum Surmala Devi[1], Meenal Dhall[1], Neeru Dhamija[2] and Anita Garg Mangla[2]

Abstract

Today's times are witnessing the younger ones getting totally immersed in screen-driven operations from a very tender age. This study assesses the role of screen-time exposure at regulating the academic performance of students at school, in association with age and gender. Students in the age group of 10–15 years were considered under the present study. Non-probability convenient, purposive sampling technique had been used for this cross-sectional investigation. Ethical clearance was taken from the institutional ethical committee. Informed, written consent was received from all participants. Those who volunteered for this study, as permitted by their parents, filled a standardised questionnaire, and their academic performance in the last attended semester was also recorded. Data gathered were analysed using SPSS 20.0. The study hints that watching television for 1 hour and/or more every day, specifically, tends to interfere with the general competency at school (tracked with aggregate scores). The students, primarily using computer and other related screens for less than 1 hour or even not at all on a daily basis were linked to higher composite academic scores. Hence, only an optimal media-screen usage is acceptable, noted to have been giving up at-par academic scores without impairing the scholastic performance of students.

Keywords

Screen-exposure time, Delhi, adolescents, academic performance, television, computer

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ENVIRONMENTAL BIOTECHNOLOGY

16S rRNA metagenomic profiling of red amaranth grown organically with different composts and soils

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cancers

MDPI

Article

Histidine Enhances the Anticancer Effect of Gemcitabine against Pancreatic Cancer via Disruption of Amino Acid Homeostasis and Oxidant—Antioxidant Balance

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Simple Summary: Amino acid metabolism is aberrantly altered in pancreatic cancer (PC). Evidence suggests that circulating histidine (His) levels are low in PC. However, the role of His in modulating the progression of PC remains unknown. We determined the role of His in altering the therapeutic effectiveness of gemcitabine (Gem) against PC. We provide evidence that the expression of histidine ammonia lyase (HAL), an enzyme involved in His catabolism, is greatly increased in mouse and human pancreatic tumors. We show that combining His with Gem led to enhanced cytotoxic effects against aggressive PC cell lines. Our metabolomics analysis revealed that His treatment results in the depletion of amino acids supporting glutathione production. His depletes cellular glutathione and increased hydrogen peroxide production, indicating that His potentiates the cytotoxic effects of Gem by promoting oxidative stress. A combination of His and Gem was effective in attenuating pancreatic tumor growth and improving the survival of mice exhibiting xenograft tumors. Our findings suggest that His supplementation is an effective nutritional approach to enhance the efficacy of chemotherapeutic drugs.

Abstract: Due to the severe toxicity posed by chemotherapeutic drugs, adjuvant nutritional intervention has gained increased attention in the treatment of pancreatic cancer (PC). Amino acid (AA) metabolism is aberrantly regulated in PC and circulating histidine (His) levels are low in PC patients. We hypothesized that His uptake and/or metabolism is dysregulated in PC and that combining His with gemcitabine (Gem), a drug used in the treatment of PC, will enhance the anti-cancer effects of Gem. We performed in vitro and in vivo studies to determine the anticancer effect of the combination of His and Gem against lethal PC. We demonstrate that circulating His levels are low in both human subjects and genetically engineered mice exhibiting pancreatic tumors. Interestingly, the expression of histidine ammonia lyase, an enzyme involved in His catabolism, is higher in PC compared to normal subjects. His + Gem exerts a more potent cytotoxic effect in PC cells compared to individual treatments. His treatment results in a profound increase in His accumulation, accompanied by a depletion of a number of AAs, promoting cancer cell survival and/or glutathione (GSH) synthesis. His but not Gem increases hydrogen peroxide and depletes cellular GSH. Supplementation with GSH protects cells against His + Gem-induced cytotoxicity. Further, our in vivo studies demonstrate that His + Gem potently reduced tumor mass and improved mouse survival. Taken together, our data suggest that PC cells exhibit an aberrant His uptake/accumulation which, in turn, leads to oxidative stress and depletion of AA pool, thereby enhancing the anticancer effect of Gem.

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Differential Immunometabolism and Tissue Responses to Delta and Omicron SARS-CoV-2 Variants in Golden Syrian Hamster Models

Rajesh Rajaiah[a], Kabita Pandey[a, b], Anoop Ambikan[c], Narendra Kumar [a,1], Reema Guda [a], Luis J Montaner[d], Samuel M. Cohen[b], Ujjwal Neogi[c,] and Siddappa Byrareddy [a,b,e,f*]

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ENVIRONMENTAL BIOTECHNOLOGY

16S rRNA metagenomic profiling of red amaranth grown organically with different composts and soils

Pooja Sharma[1] · Sophayo Mahongnao[1] · Arif Ahamad[2] · Radhika Gupta[1] · Anita Goel[1] · Narendra Kumar[1] · Sarita Nanda[1]

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Abstract

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- *Microbial richness varied with respect to the soil and compost type used*
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Keywords Microbiome · 16S rRNA Metagenomics · Organic · Composts · Pathogens

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Article

Digital Screen Time as a Characteristic of Academic Performance among School-Going Children

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Sage

Urvashi Gupta[1], Nilupher Feroz[1], Kshetrimayum Surmala Devi[1], Meenal Dhall[1], Neeru Dhamija[2] and Anita Garg Mangla[2]

Abstract

Today's times are witnessing the younger ones getting totally immersed in screen-driven operations from a very tender age. This study assesses the role of screen-time exposure at regulating the academic performance of students at school, in association with age and gender. Students in the age group of 10–15 years were considered under the present study. Non-probability convenient, purposive sampling technique had been used for this cross-sectional investigation. Ethical clearance was taken from the institutional ethical committee. Informed, written consent was received from all participants. Those who volunteered for this study, as permitted by their parents, filled a standardised questionnaire, and their academic performance in the last attended semester was also recorded. Data gathered were analysed using SPSS 20.0. The study hints that watching television for 1 hour and/or more every day, specifically, tends to interfere with the general competency at school (tracked with aggregate scores). The students, primarily using computer and other related screens for less than 1 hour or even not at all on a daily basis were linked to higher composite academic scores. Hence, only an optimal media-screen usage is acceptable, noted to have been giving up at-par academic scores without impairing the scholastic performance of students.

Keywords

Screen-exposure time, Delhi, adolescents, academic performance, television, computer

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Transient analysis of an unreliable system with working vacation and threshold recovery

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Abstract. The study focuses on the analysis of the F-policy queuing system with a single working vacation. The server is unreliable and can experience breakdowns while serving customers. The repair process follows the concept of threshold recovery for the server failed. Transient analysis of the system is performed to investigate the effect of changes in the system parameters using the numerical approach based on the fourth-order Runge - Kutta method. The cost function is designed to analyze the system's cost.

1 Introduction

In modern engineering systems, such as telecommunications, transportation, or software applications, success is ensured through careful planning. Managers of queueing systems are concerned about having control over the system. Queuing models with breakdowns are practical in computer and communication systems. A system reliability study was conducted by Chen and Wang [1] using M operating units, S warm standby units, and a single repair server with N -policy. The failure times of operating units and standby units are assumed to follow exponential distributions. It has been examined by Ezeagu et al. [2] that an unreliable system with finite capacity can be recovered. Unreliable multi-repairmen were studied by Ke et al. There are two failure modes for machines and servers under steady-state conditions, as documented in Sharma[30]. A negative exponential distribution is assumed for machine failure and service time, as well as server breakdown and repair time. Despite

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Keywords: Start-up time, Threshold recovery, Runge - Kutta (R-K) method, Cost analysis.

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THE EUROPEAN PHYSICAL JOURNAL PLUS

Regular Article

Analysis of Lie invariance, analytical solutions, conservation laws, and a variety of wave profiles for the (2+1)-dimensional Riemann wave model arising from ocean tsunamis and seismic sea waves

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Abstract Nonlinear phenomena are common in nonlinear sciences and physical engineering, such as ocean engineering and marine physics, as well as fluid dynamics. Nonlinear partial differential equations (PDEs) are the most suitable model to describe the nonlinear behavior of wave phenomena. In this work, the Lie symmetry method and the generalized exponential rational function (GERF) technique are applied to investigate the (2+1)-dimensional Riemann wave (RW) model, which has essential physical properties in oceanography and marine engineering. The RW model is fully integrable and has numerous applications in ocean tsunami and tidal wave propagation. Adapting the Lie group method, the infinitesimals, commutator table, adjoint table, and similarity invariants are constructed for the RW model. Thereafter, an optimal system is constructed using the adjoint table. Performing the symmetry reductions, the (2+1)-dimensional RW model is converted into a system of ordinary differential equations (ODEs) using the symmetry variables. Under some parametric constraints, this obtained system of ODEs is solved to determine the closed-form solutions for the RW model. As a result, we obtained some new types of exact solutions for the RW model. Further, using the GERF technique, some more interesting closed-form solutions are obtained. We have also plotted 3-dimensional (3D) graphics to demonstrate the dynamics of the obtained solutions, which show the elastic behavior of solitary waves, and dark-bright multi-soliton profiles of the waves. The conservation laws for the RW model are also deduced using the Noether operators. These conservation laws are helpful to investigate the internal properties, existence, and uniqueness analysis of the solutions to the system of differential equations.

1 Introduction

The study of nonlinear wave equations (NLWEs) has been developing steadily with remarkable advancement over the last three decades. These equations have become more significant in modeling the various physical phenomenon in our surroundings, which frequently occur in the fields of ocean engineering, mathematical physics, etc. These equations have some significant properties which can describe the incidents of nonlinear waves such as convection, dispersion, diffusion, dissipation, etc. Due to the accessibility of the typical computational frameworks, the study of obtaining the exact analytic solutions [1–7] of these NLWEs has emerged wisely nowadays to disclose the various features. Various techniques have been developed over the years for determining the solutions and investigating the dynamics of relevant NLWEs [8–23].

Sophus Lie [24] introduced the Lie group technique for the first time in 1880. Following that, several more researchers used the Lie symmetry approach to study nonlinear PDEs in order to gain a much better understanding of the physical phenomena involved, such as [25–29]. Bira et al. [30] investigated the compressible model of two-phase flows using the invariance analysis. Most recently, Sachin et al. [31] obtained the closed-form solutions for a system of BKK equations and exhibited the soliton nature of the obtained solutions by capturing the 3-dimensional (3D) profiles. The primary objective of this Lie group approach is to find infinitesimal generators that leave the partial differential equation (PDE) invariant. This procedure provides a dependable structure for solving nonlinear differential equations.

Radha and Laksmana [32] proposed the (2+1)-dimensional generalized breaking soliton equation in the following form:

$$u_t + \alpha u_{xxx} + \beta u_{xxy} + \gamma u u_x + \lambda u u_y + \mu u_x \partial_x^{-1} u_y = 0. \tag{1}$$

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THE EUROPEAN PHYSICAL JOURNAL PLUS

Regular Article

Lie group analysis with the optimal system, generalized invariant solutions, and an enormous variety of different wave profiles for the higher-dimensional modified dispersive water wave system of equations

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Abstract In this work, the method of the Lie group of invariance is used to explore a (2+1)-dimensional modified dispersive water wave (mDWW) system of equations. This system is used to describe dispersive, nonlinear, long gravity waves traveling in two horizontal directions on shallow water. Calculating infinitesimal generators through symbolic computation is accomplished. Employing infinitesimal generators, the vector fields are obtained, and corresponding to the vector fields, the commutator table and the adjoint table are constructed. Furthermore, based on the adjoint table, the one-dimensional optimal system of subalgebras is obtained. With the aid of the optimal system, similarity reductions are performed for different cases. Through similarity reductions, the considered system of nonlinear partial differential equations (PDEs) is converted to a system of ordinary differential equations (ODEs) using Lie symmetry analysis, resulting in closed-form group-invariant solutions. The graphs consist of the periodic solitons. Dromions and peakon excitations are revealed in the graphical representations of the solutions. Using these graphs, mathematicians and physicists can follow complicated physical phenomena more efficiently. The mDWW system is fully integrated and has numerous applications in tidal waves and ocean tsunamis.

1 Introduction

Since most physical phenomena are nonlinear in nature and can be modeled in the form of nonlinear PDEs, exact analytical solutions, different forms of solitons, and traveling wave solutions of nonlinear PDEs may very well characterize a variety of physical phenomena directly implicated in our surroundings. These nonlinear PDEs have various physical applications in a variety of scientific fields, especially in ocean engineering, applied mathematics, quantum mechanics, natural sciences, nonlinear optics, fluid dynamics, hydrodynamics, plasma physics, optical fibers, etc. [1–13]. With the help of the exact solutions, people may provide a better insight about the physical aspects related to the problems. Therefore, finding the explicit form of solutions of nonlinear PDEs is an important and crucial task in solving the nonlinear problems. So many techniques are developed by the researchers in literature to find the exact solutions of these nonlinear PDEs such as extended transformed rational function method [14], Inverse scattering method [15], Darboux transformations, [16], Backlund transformations [17], Jacobi elliptic function method [18, 19], multiple exp-function method [20], generalized unified method [21], and Lie symmetry technique [22–28]. Symmetry is a powerful and effective mathematical approach to conceptualize the nature's laws. The method of Lie group of invariance [29, 30] is one of the most significant and systematic techniques for obtaining the analytic group-invariant solutions of these nonlinear PDEs arising in the different fields of mathematical physics. For more details of the Lie symmetry method, one can go through with the papers [31–39]. The primary objective of this Lie group approach is to find infinitesimal generators that leave the partial differential equation (PDE) invariant. This procedure provides a dependable structure for solving nonlinear differential equations.

In this article, we investigate the enormous variety of invariant solutions to the following system of (2+1)-dimensional modified dispersive water wave (mDWW) equations [40]:

$$u_{yt} + u_{xxy} - 2v_{xx} - 2(uu_y)_x = 0,$$

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Resonant Curve Due to Perturbations of Geo-Synchronous Satellite Including Effect of Earth's Equatorial Ellipticity

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Abstract

In this paper, we have investigated resonant curve due to frequencies − angular rate of rotation of the Earth and the rate of change of Earth's equatorial ellipticity parameter. Perturbation equations are used to convert the non-linear equations of motion of geo-synchronous satellite to the linear form. With the help of graphs, we have shown the effect of Earth's equatorial ellipticity parameter on oscillatory amplitude and variation in orbital radius of satellite. By defining different perturbations, we have also drawn resonant curve due to frequencies steady-state orbital angular rate of satellite and the rate of change of Earth's equatorial ellipticity parameter. we have analyzed the undamped and unforced phase portrait and phase space by using the method of Poincare section. Finally, we have obtained energy integral and motion of the mean longitude for the geo-synchronous satellite in the set of axis rotating with Earth.

Keywords: Earth's equatorial ellipticity; Geo-synchronous satellite; Perturbations; Resonance

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Understanding the Relationship between Values and Self-Conscious Emotions: Implications for Emotional Well-being

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The present study aimed to understand how values are integrated within the self, and how values and self-conscious emotions affect the emotional well-being of an individual. This study reveals how young people incorporate changes into their existing value system and undergo various kinds of self-conscious emotions such as shame and guilt that influence their Emotional Well-being (EWB). Quantitative data was collected from 145 participants- 125 females and 20 males, between the ages of 18 to 25 years and of Indian nationality, using an online questionnaire containing three scales. The scales used included Positive and Negative Affect Schedule, PANAS (Watson, Clark, and Tellegen, 1988); Test of Self Conscious Affect, TOSCA (Tangney, Wagner and Gramzow, 1989); and Portrait Values Questionnaire, PVQ (Schwartz et al., 2001). Through analysis of the data, correlations between Schwartz's values, Self Conscious Emotions (Shame and Guilt) and Emotional Well-being (Positive Affect and Negative Affect) were calculated. Results showed that self-focused values are not positively related to EWB and social values are negatively related to EWB. It was found that people with guilt and shame had poorer Emotional Well-being. Guilt-proneness proved to have a positive correlation with self-focused values while Shame-proneness did not have negative correlations with social-focused values. It is implicated to develop intervention to enhance EWB by enhancing values that will help to reduce the feelings of shame and guilt.

Keywords: Values, Shame, Guilt, Emotional Well-being.

Values deeply influence our psyche. Being brought up in Indian culture where the roots of our development are based on traditional value systems, it becomes very intriguing to understand if values influence the experience of self-conscious emotions which are also deeply embedded in our socio-cultural norms. Indian culture lays a lot of emphasis on value systems which guide an individual's behavioral pursuits as they grow up. In the period of emerging adulthood, young adults undergo a significant process of change in their well-being, behaviors and interpersonal relationships which are inherently guided by their values and emotions (Jekielek & Brown, 2005; Khosla & Chopra, 2018; Melendro et al., 2020). Any arising conflict between the values and their desires causes feelings of shame and guilt which can form a vicious circle influencing the mood.

Review of literature reveals the association between values and emotional well-being (Bobowik et al., 2011; Joshanloo & Ghaedi, 2009; Sagiv & Schwartz, 2000), and self-conscious emotions of guilt and shame (Haka, 2015; Silfver et al., 2008). Studies also show the relationship between self-conscious emotions of guilt and shame and emotional well-being (Lundberg et al., 2009; McDonnell, 2017; Orth et al., 2010). This study aims to explore if values are influenced by the experience of self-conscious emotions, particularly guilt and shame due to the social significance of these two self-conscious emotions, and how these associations further influence emotional wellbeing.

Understanding Shame and Guilt

Shame and guilt are self-conscious emotions that critically involve self-relevant thoughts, feelings, intentions, and behaviors (Tangney & Fischer, 1995) evoked by self-reflection and self-evaluation which may be consciously experienced or transpiring beyond awareness. Shame involves a non-moral negative self-

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Bio-genic synthesis of calcium coated zinc oxide nanoparticles from *beetroot extract* and their photo-degradation study on methylene blue and rhodamine B

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ARTICLE INFO

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ABSTRACT

The advent of nanotechnology has helped in several invention in science & technology. Contamination of surface water, ground and soil by various industrial dyes causes several ecological problems. Zinc oxide nanoparticles as photocatalysts and semiconductor materials show unique physical properties at the nanoscale and can be used to solve these problems to some extent. In this paper, we synthesized ZnO NPs and calcium-coated ZnO nanoparticles using extract of beetroot and then, for industrial point of view, we studied the photocatalytic degradation of methylene blue and rhodamine B using sun as a natural light source (sunlight). We have synthesized calcium-coated ZnO nanocomposites with 20–50 nm particle size. Synthesized nanomaterials were characterized by using the different physio-chemical techniques such as - FT-IR, XRD, TEM, SEM, EDX and UV-spectrophotometer do their photocatalytic degradation.

1. Introduction

The latest advancements in the nano-science field have gathered significant focus from different sectors since they could be used for diagnosing, detecting, purifying industrial waste (Sharma et al., 2017), catalysis (Gangadoo et al., 2017), therapeutics (Venkatasubbu et al., 2016), food technology (Menon et al., 2018)and role in energy utilization or production. The contamination of water resources, including groundwater and reservoirs, as a consequence of increased industrialization and population growth, has made water treatment one of today's most concerning challenges. As a result, it's critical to clean and recycle industrial and municipal wastewater. Due to their outstanding benefit as adsorbents and for use in filtering, nanoparticles have attracted much attention in the last decades to treat wastewater (Iravani, 2011). Photocatalysts play a very important role in pollutant treatment (Nayak and Sahu, 2022). The keyword "photocatalysis" first appeared in the scientific literature in 1911 (Bruner and Kozak, 1911).

Photocatalyst" is derived from two words "photo," which means light, & "catalyst" which is chemical agent that fastens the chemical reactions by absorbing light or photons. Since they have a potential in reducing environmental pollution, improvements have been made to the photocatalytic activity or reaction rates (Abdeltif et al., 2020a). This field has a lengthy history, and several useful catalysts have already found a market. Because pollutants should be adsorbable on catalyst surfaces, materials with a wide surface area and strong interactions have been considered for the general removal of pollutants. Under Visible Light illumination, photogenerated holes and electrons play crucial roles, as depicted in Fig. 1 In the CB, the electrons travel to the catalyst's surface and react with oxygen to form active: O_2^- radicals, and holes in VB react to the OH/H_2O-absorbed species to form OH free radicals. The h+ , O^{2-}, and OH free radical species consequently have an vital role in the degradation of pollutants. Over 16,000 scientific papers, including the terms "photocatalyst" or "photocatalysis", have been published in the previous 10 years, and the number of publications is rising each year (Rueda-Marquez et al., 2020).

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Bio-genic synthesis of calcium coated zinc oxide nanoparticles from *beetroot extract* and their photo-degradation study on methylene blue and rhodamine B

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ARTICLE INFO

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ABSTRACT

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1. Introduction

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ORIGINAL RESEARCH ARTICLE

Photodegradation of Methylene blue and Rhodamine B using potato starch mediated zinc oxide nanoparticles and its calcium nanocomposites: Greener approach

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ABSTRACT

Zinc oxide is considered an effective photocatalyst for degradation of several organic contaminants found in wastewater. This work reports the biological synthesis of zinc oxide nanoparticles and its calcium nanocomposites to study the photocatalytic deterioration of two dyes, viz. Rhodamine B and Methylene blue, under natural sunlight. Nanoparticles were synthesized using zinc acetate and starch extracted from potato at pH 7–8. Potato starch acts as both a capping agent and a reducing agent. They were characterized spectroscopically via XRD, SEM, HR-TEM, EDAX and FT-IR techniques. Bean/spherical shaped ZnO NPs were obtained in the size range of 29–49 nm whereas calcium coating on ZnO decreased the particle size, i.e., 25–35 nm. Their photocatalytic ability to degrade Rhodamine B and Methylene blue was studied under natural sunlight and monitored using UV-Vis spectrophotometer. Synthesized ZnO nanoparticles and its calcium coated ZnO nanocomposites showed promising results in degradation of these dyes. Methylene blue was completely degraded in an hour at 8 mg of the sample. Although degradation of Rhodamine dye was slow, synthesized samples were effective catalysts as compared to the ones reported in the literature.

Keywords: ZnO NPs; Ca-ZnO Nanocomposites; Potato Starch; Methylene Blue; Rhodamine B

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1. Introduction

World appears as an aesthetic place due to the colours in the surrounding. These are either natural or man-made. The key component that renders colours around us is dyes. Dyes are primarily responsible for the colour of fabrics and drugs. Dyeing process requires a massive amount of water for processing and activation of colour. There are several industries like tanneries, food processing, cosmetics, textile, and pharmaceuticals that discharge toxic contaminants[1,2]. Textile industries are mainly responsible for water pollution as they discharge unwanted effluents and release that in nearby water bodies. Moreover, in some cases, wastewater is directly used for irrigation purposes that is dangerous to edible crops as well as to soil. Rapid industrialization has led to the tremendous production of dye loaded wastewater in the past few

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IN VITRO SPORE GERMINATION AND DEVELOPMENT OF SPOROPHYTE OF *THELYPTERIS DENTATA* (FORSSK.) E. ST. JOHN.

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ABSTRACT

Thelypteris is monophyletic and it requires more investigation to delimit the boundary of the genera. This paper illustrates the gametophyte development pattern of *Thelypteris dentata* by light microscopy and scanning electron microscopy, including spore germination, and reproductive behavior. Spores show germination within a week on Parker's and Thompson medium and the percentage of spore germination is 32.00 ± 10.69. Spore germination is *Vittaria*type which led to the formation of a uniseriate germ filament in 10 days. Prothallial development is *Drynaria* type. An asymmetrical spathulate stage appears in 30 days. Mature gametophytes are laminar spathulate-cordiform having marginal and surface, glandular hairs developed in 50 days. Gametophytes show dimorphism. The male gametophytes are spathulate with a narrow apical notch and undulating margins. Antheridia develop near the lower part of the gametophyte in 70 days and archegonia in 84 days below the apical notch. Sporophyte production in isolated populations is 32% and 44 % in the composite population. A mixed mating system is favored andthe speciesis a good colonizer in occupying disturbed habitats.

Key Words : Homosporous, Prothallus, dimorphism, mixed mating type.

INTRODUCTION

Thelypteridaceae with more than 1000 species and 20 genera is regarded as one of the largest families of ferns with the most diversity in morphology and ecology (Fawcett and Smith, 2021). It shows pantropical distribution but a few species are found in temperate regions. Thelypteridaceae has been subdivided into natural groups variously treated as genera, subgenera, or sections (Smith and Cranfill 2002; Smith 2006). Schuettpelz and Pryer (2008) revised thelypteroid ferns in one Thelypteridaceae including five genera as *Cyclosorus*, *Thelypteris*, *Macrothelypteris*, *Phegopteris*, and *Pseudophegopteris.* Fraser-Jenkins *et al.* (2016; 2017) revised the group and treated all the genera in *Thelypteris.* Recent molecular phylogenetic analysis suggests that this family is monophyletic and comprises two major clades: the phegopteroids, having the genus Macrothelypteris, and the thelypteroids (He & Zhang 2012, Almeida *et al.* 2016). *Thelypteris dentata* syn. *Christella dentata* (Forssk.) Brownsey, also known as the soft/maiden fern, is a terrestrial fern, that usually grows in the scrub to the dense forest, swampy areas, near streams and rivulets, or occasionally in dry places and exhibits great diversity in their habit and morphology. The plant is characterized by its soft and hairy pinnately compound leaves with oblong secondary pinnae and its short-creeping rhizomes, which are unique features useful for species identification.

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Pseudomonas sp.: A promising biocontrol agent against selected phytopathogens

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Abstract: The biological control of plant pathogenic microorganisms by *Pseudomonas* sp. is attracting increasing attention in the agricultural world, since the indiscriminate use of toxic chemicals constitutes a potential threat to both human and animal health, as well as the environment. A total of 27 bacterial strains were isolated from the rizhospheric soil of the tomato (*Solanum lycopersicum*) plant, and their antagonistic activities against a few of the selected pathogenic bacteria and fungi were evaluated using dual-culture assays, biochemical tests for the production of Hydrogen Cyanide (HCN), Indole Acetic Acid (IAA), Iron Chelating Agent (siderophore), and phosphate solubilisation. Furthermore, the separated antagonists were examined for the generation of hydrolytic enzymes such as protease, amylase, ß-1, 3 glucanase, cellulose, chitinase, and pectinase. In all 27 strains isolated, the highest antagonistic activity was shown by only two bacterial strains *Pseudomonas* (VK1and VK2), against *Klebsiella pneumoniae, Salmonella typhi*, *Xanthomonas campestris*, *Bacillus sp*., *Alternaria alternata*, *Aspergillus niger*, *A. flavus* and *Fusarium sp.* Both the strains were identified as *Pseudomonas sp.* on the basis of morphological, physiological and biochemical characterization. Comparatively, strain VK1 was more effective against above pathogens than VK2 strain which was confirmed by dual culture assay. Both the strains of *Pseudomonas sp.* further were characterized fortheir antagonistic traits likeproduction of HCN, IAA, siderophore, insoluble phosphate solubilising ability and hydrolytic enzymes properties.Similarly, VK1 strain showed positive test for all above biochemical tests, while VK2 strain was not able to produce IAA and showed negative test for phosphate solubilizing activities. So, VK1 strain of *Pseudomonas* was able to produce all above hydrolytic enzymes and found to be efficient antagonistic PGPRs. These findings indicated that isolated *Pseudomonas* sp. has a promising natural, eco-friendly, bio-safe and cost-effective approach to cope against both phytopathogenic bacteria and fungi.

Key words: *Pseudomonas* • Biocontrol • Phytopathogen • Siderophore • IAA • HCN • Phosphate solubilisation • Dual culture

Introduction

Extensive use of hazardous chemicals as fungicide, pesticide and fertilizers causes irreparable loss of our environment. To overcome such type of irreparable harm to our environment, it is necessary to adopt alternatives of chemical agents like, pesticides, herbicides, fungicides etc, for eliminating the phytopathogenic microbes. In the present scenario, it is also mandatory to use eco-friendly methods in the management of agricultural practices. Indiscriminate use of chemicals has deteriorated the environment and destroyed the ecological balance.The biological solution forcontrolling different phytopathogens is the use of biocontrol plant growth-promoting rhizobacteria (PGPR), which is capable of suppressing or preventing the plant disease causing organismlike *Azospirillum, Azotobacter, Pseudomonads, Bacillus, Streptomyces, Enterobacter, Clostridium, Burkholderia* (Devi 2022, Tapia 2020).

Biological control is the practice or process by which plant pathogens are controlled by means of another beneficial microorganisms which are termed as antagonists. It involves the use of an organism or organisms to inhibit the pathogen and reduce disease (Cook and Baker, 1983). The increased interest in bio-control is due to its eco-friendly effect, however some of the antagonists also been found to show direct growth promoting effect on infected plants (Glick et.al 1995). *Pseudomonas* bacteria are

Three Years of Covid-19 – A Review on India's Journey through Different Variants and Waves

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***Abstract*: SARS COV-2 virus hit the world in Nov 2019 and created a global havoc like never before! More than three years have passed since it was reported for the first time, but the world is still struggling to come out of its impact. Along these three years, the virus underwent various mutations that changed its virulence, symptoms and infectivity. The different variants impacted in different ways. Countries planned and executed many strategies to deal with the variants, some worked, and some did not. India had an outstanding performance in dealing with the spread of Covid-19 disease. Considering the population and the socio-economic conditions of India, the pandemic was handled well than many developed countries of the world. India acted proactively by controlling the spread and minimising the death toll, developing indigenous vaccines and running an effective vaccination drive across the country. This article reviews the spread of different strains of Covid-19 in India and its impact during the past three years.**

***Index Terms* - COVID-19, SARS-CoV-2, Variant of concern, variant of interest, CIDRAP, vaccine hesitancy, Covid waves**

I. INTRODUCTION

All viruses change or mutate over time, including SARS-CoV-2, the virus responsible for the spread of COVID-19. Most of the alterations are either ineffective or have insignificant impact on the viral properties [1]. However, some mutations have larger effects and changes the properties of the virus significantly. Such mutations may increase or decrease the infectivity of the virus, alter the degree of disease severity of the pathogenicity of the associated disease, or the efficacy of vaccines, diagnostic and treatment regimes, or other public health and social measures. Such significant mutations which results in a viral strain very different from the original one in its properties, are known as "variants"[2].

To identify variant strains of a virus are genetically mapped for the identification of the specific sites of mutations and to study the changes. On the basis of their virulence, infectivity and spread in the community, these variants are designated as 'variants of interest' and 'variants of concern'. However, not all variants fall under these categories.

Variant of Interest and Variant of Concern

According to the WHO, a variant becomes the variant of interest (VOI) having specific gene markers which can be linked with changes in receptor binding properties of the virus, decreased neutralization potential of antibodies used against the previous stains or reduced efficacy of diagnosis and treatment regime, or increase in the transmissibility or virulence [2][3].

The variant of interest becomes a 'variant of concern' (VOC), if it is known to spread more easily, cause more severe disease, rapidly escape the body's immune response, change clinical symptoms, or decreases effectiveness management tools– such as diagnosis, treatments, preventive measure and vaccination. This results in a rapid increase in positive cases globally, posing a threat to the uninfected population, thereby disrupting the public health system at a greater extent. Managing such variants and their spread becomes a concern at global level [4].

II. NOMENCLATURE OF SARS COV-2 VARIANTS AND THEIR BIOLOGICAL CHARACTERISTICS

Alpha variant: According to the Johns Hopkins studies, the alpha variant of COV-2, was the first reported strain to cause COVID-19. It was first isolated from Southern England in early 2020. Studies suggested that the infected patients infected with α-variant had greater risk of CCU admission as compared to the parent (non-alpha) strain. Mortality risk was observed within 28 days of infection if infections could not be controlled in such patients. Isolation and a treatment regime of 21 days, was recommended by WHO for infections with these strains [3].

Beta variant: The β-variant was first detected on 18th December 2020 in Nelson Mandela Bay which is in the eastern province of South Africa. This strain has a unique property to re-infect individuals who have either recovered from the parent strain or the alpha strain of the virus. The variant was also thought to be evading diagnostic tools and had reduced response to some vaccines. The Centre for Infectious Disease Research and Policy (CIDRAP) stated that the strain had a greater viral load than its pervious strain [4].

Gamma variant: The initial cases of the γ- variant were reported from the U.S. in January, 2021. As per the reports of Centre for Disease Control (CDC), γ- variant infections were detected in a group of travelers from Brazil, during a routine screening process at an Airport in Japan [4].. According to the Global Virus Network (GVN), the variant exhibited pronounced transmissibility. Three mutations namely N501Y, K417N and E484K were detected in this strain. These mutations were present in the "receptor building domain of spike protein" in the viral coat. This increased the affinity of viral protein to the human receptor, Gamma (P.1) – GVN.

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Microbial Factories for Sustainable Biofuel Production and Climate Change

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Abstract

Climate change is accelerating due to release of major green-house gases like carbon dioxide, nitrous oxide, methane, chlorofluorocarbons emitted during combustion of fossil fuels. These gases works as blanket on Earth and trap the sun's heat and leads to global warming and responsible for many health issues. According to the Energy Information Administration, GHG emission may increase around 127% higher, which will further increase the global temperature range from 1.7-2.4 0 C by 2040. The sustainable and environment friendly biofuel are in the prime demand to mitigate the climate change and fulfil the never-ending requirement of energy sources. Biofuels are the liquid or gaseous fuels such as bioethanol, bio-methanol, biodiesel, biohydrogen which is ecologically beneficial renewable source. The first and second generation biofuels are derived from renewable sources like, Zea mays, Saccharum officinarum, Jatropha curcas greatly used for the production of ethanol (CH 3 CH 2 OH) and biodiesel which is quit costly and required large land area. Several novel microbes like Saccharomyces cerevisiae, Clostridium thermocellum, Zymomonas mobilis are reported for the production of robust microbial based next generation biofuel which can be the best substitute of fossil based and previous generation fuel. Most of the newly manufactured vehicles can use gasoline-ethanol blends containing up to 15%. In U.S more than 3,500 fuelling stations are available and offer E-85 fuel. India has accelerated its efforts to reach a major goal of E-20 by ESY 2025 to support global ethanol

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Development of pollen dyads in *Polypleurum munnarense* Nagendran & Arekal (Podostemaceae): Insights into the plant's reproductive strategy

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ABSTRACT

Riverweeds (Podostemaceae) are one of a kind among angiosperms owing to their deviant ecological, morphological and embryological features. Podostemaceae is well-known for rare occurrences of pollen grains as dyads. However, little is known about the development of pollen in a dyad. This paper highlights the key developmental events of dyad pollen in one of the endemic taxa of riverweeds (*Polypleurum munnarense*) through anatomical and ultrastructural studies. The study shows that the pollen in the species are acalymate, tricolpate and are connected through cytomictic channels. These channels are open during the initial stages of development. By mitosis I stage, the channels are completely obliterated due to deposition of the orbicular material. Pollen wall possesses a multi-layered microechinate exine consisting of a continuous tectum except in the colpus region, granular infratectum and a foot-layer. The dyads disperse at bi-celled stage and their wall retracts from the colpus regions, showing harmomegathic movements, that are aided by the granular infratectum of the exine. X-ray spectral analysis revealed the presence of signaling molecules in granular microechinate orbicules and pollenkitt, indicating their possible involvement in pollen development. Most of the features of pollen development recorded in the study seem to be adaptive in countering rapid temperature fluctuations that the plant experiences in its partially submerged habitat during flowering, and thus help it in its reproductive endeavours.

1. Introduction

The evolutionary success of angiosperms is frequently linked to variability in various structural and functional attributes of flowers and the ubiquitous role they play in perpetuation through sexual reproduction. Separate sites of male and female gametophyte development, double-fertilization and embryo development in the vicinity of endosperm are the defining features of the reproductive process in flowering plants. An interesting deviation from this norm amongst angiosperms is exhibited by riverweed plants (Podostemaceae) in which the seeds are the product of a single fertilization event; the usual endosperm is lacking. There are nearly 300 species and 54 genera in the family worldwide. Palynological features form a strong basis for delimiting the three subfamilies namely, Tristichoideae, Weddellinoideae and Podostemoideae. Pollen in the former two are invariably produced as monads while that in the latter they may be either monads or dyads. Also, the pollen in Tristichoideae are pantoporate types while that in Weddellinoideae are tricolporate and in Podostemoideae, they are usually tricolpate and rarely tetracolpate/pentacolpate type (Koi et al., 2012). Besides Podostemaceae (subfamily Podostemoideae), pollen dyads have been so far reported only in Scheuchzeriaceae (Volkova et al., 2016).

Despite the unusual reproductive features and large size of the family Podostemaceae, only a few studies have explored the developmental aspects of male gametophyte. In Podostemaceae, pollen developmental studies have been largely carried out to resolve taxonomic/systematic issues either through scanning electron (SEM) or bright-field microscopy. For example, in taxa such as *Marathrum rubrum, Podostemum ceratophyllum*, the details are confined to general morphology of pollen (Lobreau-Callen et al., 1998). Morphometric details have been collected through SEM in genera such as *Apinagia, Marathrum, Oserya* and *Tristicha* (O'Neill et al., 1997; Passarelli et al., 2002; Halbritter et al., 2018). Marinho et al. (2014; 2018) have used palynological features to delimit two genera namely, *Podostemum* and *Mourera*. Microsporogenesis has been investigated through bright-field study in *Apinagia* (Jäger-Zürn et al., 2005) and *Polypleurum wallichii* (Lalruatsanga, 2014). Although SEM studies of exine (sporoderm) pattern provide crucial supportive

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Screening and characterization of bioflocculant isolated from thermotolerant *Bacillus* sp. ISTVK1 and its application in wastewater treatment

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ABSTRACT

Bioflocculants are extracellular polymeric substances (EPS) that are produced by several microorganisms including bacteria. They find application in wastewater treatment wherein they are employed as flocculating agents for removal of suspended particles during the secondary clarification process. In this study, EPS produced by a previously studied thermotolerant strain *Bacillus* sp. ISTVK1 was analyzed for its flocculation property. The bacteria was cultured in basal and mineral media and the EPS extracted from the two types of cultures were analyzed for their structure, composition, and flocculation efficiency (%), which was tested on kaolin in terms of parameters like duration, pH, temperature and salts. Both types of EPS showed highest flocculating activity on 6th day, at pH 6, and temperature 32.7 °C and with salt $AlCl_3$. When tested on real wastewater, physico-chemical analysis showed reduction in organics in samples treated with EPS and EPS+$AlCl_3$. Aromatic contaminants like Diisobutyl benzene-1,2-dicarboxylate (Retention Time (R.T.) 22.55) and 2-Phenyl-n,n-bis(1-phenylethyl)-1,1-cyclobutanedicarboxamid (R.T. 44.21) were not detected in the bioflocculant treated samples. The study highlighted the applicability of bacterial EPS as a cost-effective bioflocculant for real wastewater.

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1. Introduction

Wastewater flocculation involves the removal of suspended solids, colloids, and cell debris by the use of flocculants including inorganic, organic, and natural (bioflocculants). Inorganic and organic flocculants are most commonly used in wastewater treatment plants as flocculating agents during secondary clarification, owing to their higher flocculating efficiency and cost-effectiveness. However, due to their toxic and carcinogenic effects, they adversely affect the environment and human health (Kurniawan et al., 2022; Pu et al., 2020). In recent times, bioflocculants have gained much wider attention due to their non-toxic, eco-friendly, and lack of secondary pollution (Bakar et al., 2021).

Bioflocculants are extracellular polymeric substances (EPS) produced by several microorganisms including archaea, bacteria, and eukaryotic microbes. Bioflocculants are made up of carbohydrates, proteins, lipids, and nucleic acids (Pu et al.,

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The Significance of Sacrifice in Hinduism

Dr. Monica Prabhakar

Abstract

One distinctive feature of the ancient Vedic period and the Epic Period in comparison to the later ages is the significance attached to sacrifice. In the Vedic times, men composed mantras in admiration of the various manifestations of nature. They deified the various spectacles of nature, and worshipped them giving the designation of Indra or Varuna, or Agni or the Marutas. This worship took the form of sacrifice. Oblationsof different kinds were made to these deities. Gradually with time and unfortunate invasions into the culture of India the Vedic ritualistic tradition got lost. In the name of Hinduism infinite divisions creeped into the social fabric of India. As a result, Vedic ceremonialsand sacrifices got replaced by insignificant, improper and unscientific practices. The purpose of my paper is to go back in time and understand the significance and importance of sacrifice in the culturally vibrant Hindu Society.

Introduction

From the beginning of the world till today Man has always been afflicted with his unquenchable desires, his greed and his acquisitiveness.The materialistic attitude is the cause of *Dukkha* that has penetrated into him and like a rudderless ship he wanders not knowing the purpose of his life. All he needs is the correct vision to see the path of peace and happiness. And this he can attain by realizing that he is a dependent rational animal. His existence and survival are part of the social fabric and environment to which he belongs.

The Ṛg Veda (X,117) statesHe who nourishes neither the god nor a friend, he who eats alone, accrues sin.This miserly man can never find happiness. His selfish accumulation is indeed his death. He gets swallowed by his own hunger. However, the respite comes when he turns his attention from matter to divinity. And it comes about through the practice of *dāna* or sacrifice. *Dāna* means giving up what is held dear for the sake of the divine who remains present in all, all the time. The Bhagavadgītā also says "The good people who eat what is left from sacrifice are released from all sins but those wicked people who prepare food for their own sake – verily they eat sin"(III.13)

'Not' Again: Negative Facts[1] Revived to Sustain Russell's Principle of Analysis

Monica Prabhakar

Abstract

Russell's principle of analysis (PAn) may be depicted as: (a) The understanding of a truthbearer is exhausted by the understanding of the components of the truthbearers; (b) each component of a truthbearer is a symbol which corresponds to a component of the truthmaker which it signifies; and (c) we must have acquaintance with the truthmaker as well as with every component of the truthmaker. PAn is derived from Russell's correspondence theory of truth and two versions of his principle of acquaintance (1912 and 1918). PAn is a pillar of analytic philosophy. I argue that an ontology admitting only positive facts violates PAn in its explanation of false affirmative and true negation propositions. Hence, the existence of negative facts is required to sustain a pillar of analytic philosophy. The denial of the existence of negative facts leads to a paradox: If negative facts do not exist, then all negation propositions are false; and if they are all false, then all affirmative propositions are true. Although the paradox can be avoided by accepting Russell's revised version of the correspondence theory, nonetheless it is an added reason to accept the existence of negative facts.

Keywords: Negative Facts, Principle of Analysis, Truthbearers, Truthmakers

1. Introduction

There are three ontological alternatives: (a) negative facts are independent realities (NFI); (b) negative facts are derived from positive facts (NFD); and (c) negative facts have no independent reality (NFN).

For NFI 'independent realities' means the mind independence of negative facts. For Russell[2] negative facts are irreducible atomic facts (Hausman 1974, 79). For NFD negative facts subsist but can be explained away through positive facts. For NFN: 'Granting that there are no negative facts, then, in so far as a negative proposition is asserted of fact at all, the term of reference must be the world of positive facts' (Demos 1917, 189).

There are four types of elementary propositions[3]: type 1 - true affirmative, type 2 - false affirmative, type 3 - true negation and type 4 - false negation[4]. Type 1 and type 4 can be explained solely by positive facts. The explanations of type 2 and type 3 seem to require negative facts. Russell thereby embraced NFI. His contemporary Demos embraced NFN and most since then embraced either NFD or NFN and a select few accepted NFI. However, NFD and NFN deny Russell's principle of analysis (PAn) which states that every proposition, whether true or false, correspond to a fact, and each component of the proposition must designate a component of the fact. PAn is a pillar of analytic philosophy. In opposition to Hegelian holism, it asserts that we can and do indeed have knowledge and understanding of an atomic proposition

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Introduction

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A Re-Assessment of Orthodox and Liberal Scholarship on the Philosophical Position of Gauḍapāda

V. Sujata Raju

Abstract

This paper evaluates a historical review of contemporary Indian scholarship on the seminal text *Gauḍapādakārikā*, focusing on the two contrasting views offered by the orthodox traditionalist and the non-orthodox liberalists. The traditional/orthodox interpretation of the *Gauḍapādakārikā* is represented by Swami Satchidanandendra Saraswati, R. D. Karmarkar, T.M.P. Mahadevan and Sarvapalli Radhakrishnan. All these scholars have accepted a traditional understanding of the text. A traditionalist position believes that all the seminal ideas of the *Gauḍapādakārikā* are derived directly from the *Upaniṣads*. Further, all the four *prakaraṇas* of the *Gauḍapādakārikā* are seen to be closely interrelated to form one homogeneous treatise by a single author. The scholars namely, S. N. Dasgupta, Bhattacharya, and T.R.V. Murti hold the contrary view that the text *Gauḍapādakārikā* is not primarily inspired by the *Upaniṣadic* tradition. For these scholars, even though with some hesitation they may accord the status of the text as Vedāntic, but they could not deny the text *Gauḍapādakārikā* being deeply influenced by the *Mahāyāna* Buddhist schools namely by the doctrines of non-origination/ emptiness and the dialectic method of *Yogācāra-Vijñānavāda*.

Keywords: *Gauḍapādakārikā, Māṇḍūkyakārikā, Upaniṣad, Mahāyāna Buddhism, Yogācāra-Vijñānavāda.*

Introduction

Gauḍapāda, like most of the classical Indian scholars is well known solely through his work. His philosophy is his biography.[1] Tradition regards Gauḍapāda as Śaṁkara's (Advaitin) preceptor's preceptor (*Paramaguru*). Gauḍapāda's seminal text *Māṇḍūkyakārikā* occupies a high and important place in the history of *Advaita* philosophy. As the inspirer and predecessor of Śaṁkara, Gauḍapāda is famous for his dialectical skill and philosophical wisdom. The *Māṇḍūkya Upaniṣad,* a principal philosophical treatise constitutes the base text for Gauḍapāda's rigorous, uncompromising *Advaita* Philosophy. *Upaniṣad- Brahmayogin,* a commentator on the hundred and eight *Upaniṣads* characterizes the *Māṇḍūkya Upaniṣad* as the quintessence of the entire *Vedānta* philosophy (*Sarva-Vedāntasāriṣṭa).* The excellence of the *Māṇḍūkya Upaniṣad* lies in its direct and experiential approach to the realization of non-dual Self.

The paper evaluates the historical debate between the traditionalists and liberalists views on the *Gauḍapādakārikā*. I have used the terms 'orthodox'/'traditional' to denote those who subscribe to the ancient *Upaniṣadic* views and 'non-orthodox' and 'liberal' to those who accept Buddhist views. This usage is out of sheer convenience for the examination of divergent views. Both the positions are studied to arrive at a conclusion while taking into account the following options: (1) there was a tremendous influence of Buddhism on *Gauḍapāda,* (2) *Gauḍapāda* himself was a Buddhist who wrote the text to interpret *Mahāyāna* Buddhism (3) the core teaching is based on the *Upaniṣads* like *Bṛhadāraṇyaka* and *Chāndogya* (4) the author

The Study of Consciousness in Indian Philosophical Thought

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Abstract

The paper attempts to examine the crucial issues that revolve around the nature of Consciousness. They are as follows: What is Consciousness? How is it different from internal organs namely the mind, intellect, ego and memory? How does Consciousness manifests itself? In 'disputational terms', is it self-illumined *(svaprakāśa*) or has a dependent illumination (*paraprakāśa*)? Does Consciousness possess intentionality or not? In other words: is it *saviṣayaka* or *nirviṣayaka*? Questions regarding the form, structure and content of Consciousness raised by scholars in India are as follows: Is Consciousness with form (*sākāra*) or without form (*nirākāra*)? Does Consciousness have a locus (*āśraya*) or being all pervasive it is free from space and time cognates (*nirāśraya*)? To discuss these issues, I will consider the views of Cārvāka, Nyāya, Sāṃkhya and Advaita Vedānta schools of classical Indian Philosophy.

Keywords: Consciousness, Self, Materialists, Nyāya-Vaiśeṣika, Sāṃkhya, Advaita Vedānta.

Introduction

Consciousness is central to human existence because all objective phenomena are believed to exist as manifestations of Consciousness. The very idea of being familiar with Consciousness provides a testimony to its existence. What Augustine said about time is well applicable to Consciousness. According to him when one was not talking about it, one knew what it was, but when asked about it one no longer knows it.[i] One misses out on understanding Consciousness when one tries to hold it, cognize it and objectify it. It appears ethereal and almost deceptive

Mainstream, VOL LVIII No 36, New Delhi, August 22, 2020
Racism: An Entrenched System | Suranjita Ray

The death of George Floyd, a 46-year-old African American, in Minneapolis on 25 May 2020 spurred the #BlackLivesMatter (BLM) movement back into action. The video clip of a white police man crushing the neck of a black man under his knees and choking him till he breathed his last, shocked the world. Social media was flooded with voices against police brutality, violence and barbarism inflicted on black communities by the state and its vigilantes. In solidarity with the movement, which contests the systemic prejudice, discrimination, and racism that targets the black community, millions took to the streets demanding justice for George Floyd and those killed by police.

Structurally rooted and intergenerationally transmitted atrocities against particular communities have brought black people across social and economic sections together to express their collective experiences of harassment and assault. They demand a future that values human rights, dignity and equality for the black community. Several such struggles by ordinary black people against police brutality and killings of unarmed African Americans such as those in Ferguson in 2013 and the march from Freedom Plaza down to Pennsylvania Avenue to Washington D.C. with the slogan 'I Can't Breathe' in 2014 are reminiscent of the fact that anti-black racism not only survives but also its perpetrators have not been held guilty.

While it is hard to delineate the narratives of racial oppression as a category of everyday life and a form of stigmatised existence, such incidents elucidate that racism is not an archaic phenomenon. Racism persists despite a series of civil rights laws and policy reforms that aim at eliminating centuries old and deeply entrenched systems of racial inequality and injustice. We find resurgence of ethnic cleansing, genocide, and racial bias which grievously questions the commitment to democratic values.

Everyday Racism

Race plays an important role in demarcating boundaries between communities creating binaries that divide the social and cultural space in society. It is not race but racism that endorses the idea of a racial hierarchy and opposes racial parity. Racists have their prejudices against the black community and rationalise discrimination, humiliation, subjugation and control. While segregationists argue to exclude black people as inherently inferior, assimilationists express their willingness to include black people in white society on the condition that they change their culture and behaviour (see also Sanneh, 2019).

The forms of racism are multiple, historically specific, situationally variable, complex and often contradictory. While verbal racism is experiencing verbal remarks that are obnoxious and offensive, behavioural racism is based on racist sentiments, discrimination, assault and denial of identity and dignity. Everyday racism is a collective prejudice which sustains hierarchy defined by skin colour and bodily features (see also Bhargava, 2020: 6). Colour consciousness is built into the cultural and social reality which stigmatises black people as inferior and sustains exclusionary practices and layered oppression.

Racism is complex, multi-layered and is not a constant and monolithic attitude. While the historical context is specific to the forms of racism, it is important to understand that even when obvious forms of racial oppression become less visible, subtle forms of everyday experiences of discriminations, marginalisation, subjugation, control, oppression and exclusion of the

Mainstream, VOL LVIII No 6, New Delhi, January 25, 2020 - Republic Day Special

The Making of a Hindu Nation

Suranjita Ray

Thousands of men and women across the country have poured into the streets to protest against the Citizenship Amendment Act (CAA) 2019. Despite assurances by the government that no Indian Muslim will lose citizenship, the new citizenship law is widely opposed by the large majority of people. We see increasing anxiety, insecurity and helplessness amongst the latter. Widespread fear and anger amongst the ordinary people, particularly the Muslims, was usual, but what the government had not foreseen was that the protests would cut across faiths, religion, ethnicity, language, age, gender, profession, ideology and region. Raising their voices against the discriminatory and divisive nature of the Act, the protesters decided to stand united to protect the Constitution and its values. As more and more people from several backgrounds have come together against the Act, the government's usual strategy to blame the Opposition parties, 'anti-nationals' and 'urban Naxals' for instigating the protesters has become less convincing.

The student-led protests, the largest ever since the Emergency, have become a historic movement demanding the right to peaceful protest and dissent in a democratic country. The police brutality against protests by students in Jamia Millia Islamia and Aligarh Muslim University led to nationwide mobilisation of students in solidarity to condemn the police violence and oppose the CAA. The fact-finding team which interacted with faculty members, students and other members of the administra-tion in Aligarh Muslim University stated that use of stun grenades, rubber bullets, teargas shells and lathicharge injured several students protesting peacefully. Alongside, religious slurs were used against the students. It is not just that the University administration and State authorities had failed in their duties to protect the campus and the residents against brutality by the police, but the latter were invited with weapons to the campus. The police had also barged into the campus of Jamia Millia Islamia and launched multiple rounds of teargas shells, stormed the library destroying furniture, beating up students and seriously injuring them and hurling communal slurs. Was there a need for the police to attack so brutally students protesting peacefully and even students who had little to do with the protest? On the other hand, no arrests have been made by the police who have been standing around when the masked goons armed with sticks and rods escaped from the JNU campus after vandalism and assaulting the students and teachers on January 5, 2020. These are uneasy questions bothering not just the students but also most common people of this country. The imposition of Section 144, clampdown of internet, blocking of social media, and police excesses across States to block/repress the protests on the pretext of preventing disorder reveal the power of a Police State. The measures taken by the police in the aftermath of the protests, particularly in the BJP-ruled States such as Uttar Pradesh and Karnataka, was to frighten the local people. Most of the 19 people who died during the protests were attacked by the police. Thousands of people were arrested and detained. The local people stated that it was 'the high-handedness of the police that led to the violence...the police was pursuing a vendetta against the protesters'. However, the brutality of the police failed to deter the people in large numbers from protesting. People across the country overcame their fears and helplessness to stand united against the discriminatory and divisive intent of the law. This reflects the strength of a democratic, secular and republican society, where people across diversities united against the authoritarian and divisive strategies of the state which is bent upon discriminating,

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Mainstream, VOL LIX No 27, New Delhi, June 19, 2021

Pandemic: Lessons to Learn | Suranjita Ray

Ever since Covid-19 hit India, it was apprehended that given its density of population and poor health care system, it would remain a challenging task for the state and its people to overcome the pandemic. This fear came true in the second surge in 2021 which saw the collapse of the health system every day despite all efforts by frontline workers. Though a second wave was expected, the thousands of deaths which left the nation grieving were not.Etched into our memories are experiences of large number of people struggling for space in hospitals, emergency wards, intensive care units, crematoriums and graveyards, and the sights of bodies floating in Ganga and buried in the shallow graves. The experiences elucidate the state's failure to secure not only right to life but also dignity in death.

It is difficult to express the pain, suffering, despair and grief of families who experienced these horrors. Several homes have been shattered. Hundreds of children across the country are orphaned as they lost their parents. Many of us have lost near and dear ones in our immediate circles. The loss of 'saviors of life' in this battle has left us helpless. Yet the hope to rewrite the pandemic as a passing phase which India battled to sustain itself is the only hope that will take us through this catastrophic health crisis. The need of the hour is to learn lessons from the present crisis to prevent such devastating experiences in future.

The Prime Minister in his speech to the World Economic Forum in January this year stated that India should inspire other countries as it defeated Covid-19in a big way. Huge gatherings in religious ceremonies and election campaigns through rallies and roadshows violated the norms, guidelines and protocols of Covid appropriate behaviour. No serious measures were takenby the government to prevent the spread of the virus in spite of the early warnings of a second wave. The spread of the infection was alarming. Though the government claimed that they were working on a 'war footing' to tackle the spread of the virus, most of the deaths in the second wave were due to denial of the basic health care services. The official estimates of deaths are much less than the actual deaths that occurred due to Covid-19.

In fact, thousands of deaths could have been prevented had the strategies been worked out to secure hospital facilities and oxygen supplies. We saw a complete breakdown of the health care system. The situation was worse as there was hoarding and profiteering though black marketing of oxygen cylinders and lifesaving drugs when people were gasping for breath due to shortage of oxygen and unavailability of oxygen beds in hospitals. It exposed the lack of foresight and failure of preparedness of the state. The everyday experiences of people at the ground level show that poor health infrastructure is a major reason which deprived several Covid patients of adequate treatment. Testimonies of people reveal several systemic flaws in the health care system.

To confront the pandemic, an in-depth understanding of the severity of the flaws and challenges in the health care system is important. The government needs to acknowledge the flaws and correct its course of action. Immediate measuresto strengthen public health system should be at centerstage of the policy agenda. It is therefore important to upgrade the health infrastructure especially by increasing the number of hospitals and hospital beds, sources of oxygen supplies, manufacturing and accessibility of Covid-19 vaccines and drugs, and huge vaccination drive in order to immunise 1.3 billion people.

Purposive behaviour is a necessary part of policy definition. Policies that secure the life of people cannot be chance occurrences and do not, by and large, just happen. It cannot be the choice of the government but is its responsibility. This responsibility is not just moral but also political as the government that is elected by the people has to secure the fundamental rights of its citizens, the most important being 'the right to life'.

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Original Research Article

Analysing the Role of Renewables in Energy Security by Deploying Renewable Energy Security Index

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ABSTRACT

Renewable energy is not only critical in achieving the energy transition in Norway but also ensures energy security. The role of renewable energy deployment in ensuring energy security in the case of Norway from 2000−2017 has been evaluated in the paper. The trade-off between energy efficiency and the deployment of renewable energy has been evaluated. Based on the concept of "four A of energy security", Availability, Accessibility, Affordability, and Acceptability, a Renewable Energy Security Index is computed by deploying Principal Component Analysis. Accessibility, Availability, and Affordability of renewable energy significantly improve energy security in Norway. Research and Development play a critical role, while environmental concerns do not contribute significantly to Norway's energy transition. Energy efficiency and renewable energy deployment are positively related in the case of Norway. Policies that enhance energy efficiency and renewable energy deployment must be adopted, along with more investment in Research and Development and renewable energy, to ensure the sustainability of renewable energy adoption in Norway.

KEYWORDS

Accessibility, Affordability, Energy efficiency, Four A of energy security, Principal component analysis.

INTRODUCTION

Climate change emerging as the biggest global challenge, Norway has ratified to Kyoto Protocol under the United Nations Convention on Climate Change. "Under the protocol, Norway must limit greenhouse gas emissions growth to 1% above 1990 levels by 2008-2012" [1]. The first nationally determined contribution to the Paris Agreement of Norway includes a commitment to reduce greenhouse gas emissions by at least 40% compared to 1990 levels by 2030. It signifies the role of renewable energy in achieving the energy transition in Norway and ensuring the necessary energy security due to deploying renewable energy sources. Norway is the world's third-largest exporter of natural gas, covering around 2% of the global demand [2]. The renewable energy potential in Norway and strategies for its development have been discussed by emphasising wind energy and biomass energy [3].

Assuming that the exported energy is used to replace electricity generated by coal, the environmental effects of the development in Norway are found to be acceptable. The long-term

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पूर्वोत्तर की आदिवासी कहानियों में भाव-वैविध्य

– डॉ. ज्योति शर्मा

भारत के सभी राज्य कश्मीर से कन्याकुमारी तक अपनी सामाजिक और सांस्कृतिक विशिष्टता रखते हैं। इनमें पूर्वोत्तर राज्यों में रहने वाला आदिवासी समाज भी अपनी सभ्यता, संस्कृति, स्वतंत्र अस्तित्व के कारण भारतीय वसुधरा को आलोकित कर रहा है।

पूर्वोत्तर की आदिवासी कहानियों में स्त्री अस्मिता,प्रेम, महिलाओं को पूर्ण अस्तित्व के साथ स्वीकारना, विस्थापन की पीड़ा, प्रादेशिक संकट,भाषा एवं पहचान का संकट, स्वायत्तता जैसे संवेदनशील भावों को अभिव्यक्त किया गया है। शेरदुकपेन, मधुराम खोरो, एच. इबोमचा, ख्यालकुंगी, एच इबोमचा, स्नेहमय राय चौधुरी, एन. टी. लेपचा आदि लेखकों ने अपनी आदिवासी कहानियों में उनकी संवेदना, भाव बोध और परिवेश का सफलतापूर्वक दृश्यांकन किया है।

शेरदुकपेन कृत 'आईना' कहानी में दर्शाया गया है जब भोले-भाले आदिवासियों के सम्मुख आईना पहुंचता है तो उनके लिए कौतूहल एवं जिज्ञासा का विषय बन जाता है–"गाओन बुराह(गांव बूढ़ा) उसको बगल में आ गया और तुरन्त बिल्कुल गाओन बुराह (गांव-बूढ़ा) की तरह का एक आदमी उस अनोखी वस्तु में प्रकट हो गया।उसके उपरान्त मास्टर बाबू ने दर्पण का पीछे का भाग उनकी तरफ घुमा दिया और तुरन्त दोनों आदमी और औरत उसमें से गायब हो गये।इन व्यक्तियों को अचानक गायब हुआ देखकर उनके रोंगटे खड़े हो गये।"[1]

रमाकांत बसुमति की 'वापसी' कहानी असम के युवाओं पर शहरीकरण के प्रभाव के कारण एक ओर उनके शहर की ओर पलायन तो दूसरी ओर उनकी जातीय अस्मिता, सभ्यता और संस्कृति को बचाए रखने की कहानी है–"बरसात आते ही गांव के सारे रास्ते कीचड़ से भर जाते हैं। शहर उसके मुकाबले कितना है–चिकना और साफ सुथरा।"[2] अतीत्वार पूर्व दीप्ति में स्मरण करता है कि वह और उसके दोस्त अपनी "भाषा की समस्या"[3], "सृष्टि का विकास"[4], और "जाति के नेतृत्व"[5] आदि विषयों पर वार्तालाप किया करते थे। लेकिन जब वह रोशनी में नहाए, भौतिक सुख सुविधाओं से परिपूर्ण गांव में वापसी करता है तो सदैव गांव में रहने का निर्णय करता है। युवाओं को उनकी जातीय अस्मिता का आभास कराकर उनका अपनी संस्कृति के प्रति लगाव उत्पन्न कर एवं गांव को साधन संपन्न बनाकर युवाओं को गांव वापसी कराई जा सकती है।

सेमसोन सिंह हांसे की "अमावस की रात" कहानी में नई और पुरानी पीढ़ी के द्वंद्व को दिखाया गया है–"गांव में नौजवानों की कमी नहीं पर उनमें पुरानी पीढ़ी वाली बात नहीं,जब वृद्ध

• एसोसिएट प्रोफेसर हिन्दी विभाग, दौलतराम महाविद्यालय, दिल्ली विश्व विद्यालय

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समकालीन भारतीय समाज में स्त्रियों के प्रति बढ़ती हिंसा

– डॉ. ज्योति शर्मा
एसोसिएट प्रोफेसर, हिन्दी विभाग
दौलतराम महाविद्यालय दिल्ली विश्वविद्यालय

भारतीय सभ्यता एवं संस्कृति विश्व की प्राचीन संस्कृतियों में से एक है। जिसने अपनी मूल्य आधारित सिद्धांत एवं वैचारिकता के चिह्न विश्व पटल पर अंकित किए हैं। भारतीय समाज पितृसत्तात्मक समाज रहा है। जहाँ पुरुषों को स्त्रियों से अधिक महत्त्व दिया जाता रहा है। यद्यपि हमारे प्राचीन धर्मग्रंथों में नारी को देवी मानकर उपासना की जाती रही है –

यत्र नार्यस्तु पूज्यंते रमन्ते तत्र देवता:
यत्रैतास्तु न पूज्यंते सर्वास्तत्राफला: क्रिया:।।[1]

तथापि स्त्री को देवी की संज्ञा से संबोधित करने के उपरान्त भी उसकी स्थिति कुछ अच्छी न थी। कन्या भ्रूण हत्या, कन्या उपेक्षा, बाल विवाह, सती प्रथा, विधवाओं की दयनीय स्थिति जैसी कुप्रथाओं का ग्रहण नारी रूपी चंद्रमा को हमेशा ग्रसित करता रहा है। संतोष सिंह लिखते हैं-

"यों तो प्रत्येक युग में भिन्न-भिन्न कारणों से भारतीय स्त्री ने व्यक्ति परिवार तथा समाज के हिंसात्मक व्यवहार को झेला है, भुगता है किंतु आज स्थिति थोड़ी-सी भिन्न है। ऐसा प्रतीत होता है मानो हिंसात्मक आचरण एक सामाजिक व्यवहार बन चुका है। यह हिंसात्मक व्यवहार कैसा भी हो सकता है-व्यक्ति का व्यक्ति के प्रति, समूह का समूह के प्रति, शक्तिशाली का कमजोर के प्रति, धनवान का निर्धन के प्रति, एक वर्ग विशेष का दूसरे वर्ग विशेष के प्रति और पुरुष का नारी के प्रति। इस पूरे चक्रव्यूह में सर्वाधिक दयनीय स्थिति उन कन्याओं की है जो अपने ही लोगों के मध्य सुरक्षा कवच रूपी आचरण के पीछे अत्यंत ही असुरक्षित जीवन जीने को बाध्य है।"[2]

आज की नारी पराये क्या अपने लोगों के मध्य ही सुरक्षित नहीं है। खून के रिश्ते ही उसकी मान-मर्यादा को तार-तार किए जा रहे हैं। एक पिता जो जन्मदाता है। एक भाई जिसे उसने रक्षा सूत्र बांधा है और उस भाई ने हमेशा उसकी रक्षा करने का वचन दिया था। सभी उसे देह मान उसका शोषण कर रहे हैं। इस कुकृत्य में अपराध में चाचा, मौसा, मामा,पड़ोसी आदि सभी सम्मिलित हैं। बलात्कार,सामूहिक बलात्कार, जैसी पाशविक घटनाएँ आम हो गई हैं। इस प्रकार के अपराध और अपराधियों की कालई खुल न जाए।

स्त्रियों की हत्या आज एक आम बात हो गई है। देश के विभिन्न क्षेत्रों में स्त्री के प्रति बढ़ते यौन अपराध, बलात्कार की घटनाएं उनकी समाज में दयनीय दशा की करुण कहानी कह रही हैं।



डॉ. ज्योति शर्मा

प्रेमचन्द के उपन्यासों में स्त्री अस्मिता

शोध सारांश :

प्रेमचन्द मानवतावादी, युग प्रवर्तक साहित्यकार एवं भारतीय जनमानस के हृदय में विराजे उदात्त, महान उपन्यासकार एवं कथाकार हैं। इन्होंने भारतीय लोकमानस को भारतीय संस्कृति की अस्मिता कहकर उसे प्रतिष्ठा प्रदान कर सदैव अपनी लेखनी के केन्द्र में रखा। प्रेमचंद ने सदैव यथार्थ को अभिव्यक्त करते हुए आदर्श के दामन को थामे रखा। प्रेमचन्द के उपन्यासों में समाज में स्त्रियों के प्रति किए गए अन्याय, उनके जीवन-संघर्षों, बेमेल विवाह, दहेज प्रथा जैसी कुरीतियों को अभिव्यक्त कर उन्हें अन्याय के खिलाफ उठ खड़ा होने एवं स्वयं की स्थिति में सुधार के लिए प्रेरित किया गया है। स्त्री की स्वाधीनता और सम्मान की कामना, अपने प्रति हुए अन्याय के प्रति उसका रोष एवं प्रतिरोध प्रेमचंद के उपन्यासों में स्त्री पात्रों का प्रमुख स्वर है, जो पाठकों को उनके स्त्री पात्रों के प्रति संवेदनशील ही नहीं बनाता, वरन् उनसे प्रेरणा भी पाता है।

बीज शब्द

नारी, स्त्री, अस्मिता, विवाह, सशक्त, स्वतंत्रता, स्वावलम्बन, मानवीय, संवेदनशील, परिपूर्ण, न्याय, अन्याय आदि।

प्रस्तावना

प्रेमचंद जब साहित्य सृजन कर रहे थे तब सम्पूर्ण राष्ट्र परतंत्रता की बेड़ियों में जकड़ा हुआ, राजनीतिक रूप से अंग्रेजों के विरुद्ध स्वतंत्रता प्राप्ति के लिए संघर्षरत हो आन्दोलन कर रहा था। आर्थिक रूप से देश की खेती और किसान की स्थिति अत्यंत दयनीय थी और पराधीनता के उस दौर में औद्योगिक रूप से भारत अत्यंत निम्न स्थिति में होगा, यह कहना अक्षरशः सत्य है। समाज जाति और धर्म के विविध भेदों-उपभेदों में बंटा हुआ था। शोषक और शोषित, धनी एवं निर्धन के बीच शोषण की, अत्याचार की एक परिपाटी चलायमान थी। ऐसे में स्त्री की पीड़ा, उसके प्रति किए जाने वाले दोयम दर्जे वाले व्यवहार, अनमेल विवाह, बहुविवाह, दहेज प्रथा और वेश्यावृत्ति की ओर उन्मुख करने वाली बुराईयों को महसूस कर उसे लेखनीबद्ध कर अभिव्यक्त करने का महान कार्य प्रेमचंद ने किया। क्योंकि इनका उद्देश्य समाज सुधार भी था। इन्होंने अपने स्त्री पात्रों को केवल माँ, पत्नी, बेटी, प्रेमिका के रूप में ही नहीं दिखाया अपितु उन्हें प्रगतिशील चेतना से ओतप्रोत कर समाज की अन्य स्त्रियों की दशा एवं दिशा में परिवर्तन लाने वाली स्त्री की प्रगतिशील चेतना से ओतप्रोत दिखाया है।

भारतीय स्त्री को प्राचीन काल से देवी की संज्ञा से विभूषित किया जाता है। परन्तु उसके उपरान्त उसे स्वयं के अस्तित्व के लिए प्राचीनकाल से संघर्षरत होना पड़ा है।

'अस्मिता' शब्द संस्कृत के 'अस्मि' शब्द से निर्मित है जिसका अभिप्राय-हूँ अर्थात् अपने होने का आभास देना - अस्तित्व की चेतना से संपन्न होना है। वैदिक युग से लेकर आधुनिक युग तक बदलते युग-बोध में केवल शब्द मात्र से स्त्री वंदनीय रही है जहाँ अधिकार देने की बात आई वहाँ पितृसत्ता सामाजिक ढांचे ने स्त्री को उसके

शोध-पत्र

हिन्दी कहानी में अभिव्यक्त दलित विमर्श



डॉ. ज्योति शर्मा

शोध सारांश :

कथा साहित्य विशेषकर कहानी में समाज के यथार्थ को सफलतापूर्वक अभिव्यक्त किया गया है। समाज में दलितों के साथ किए गए व्यवहार को यथार्थ एवं सत्य रूप में दर्शाया गया है साथ ही उनके संघर्ष और विद्रोह का भी चित्रांकन है। किस प्रकार दलित वर्ग अमानवीयता की पीड़ा को वहन करके भी आत्मनिर्भरता के, समानता के लक्ष्य तलाश रहा है इन कहानियों का मुख्य विषय है।

बीज शब्द- दलित, छुआछूत, अस्पृश्यता, शोषित, दलित-विमर्श, संघर्ष, समानता, सशक्त, प्रताड़ित, उपेक्षित आदि।

प्रस्तावना

जो किसी के घर में कहे पर अभिव्यक्त कर बताए वह कहानी है। दलित समाज में संबंधित कहानियों में उनकी यातना, पीड़ा, दमन, अन्याय, विषमता, अमानवीय व्यवहार को लेखनीबद्ध किया गया है तथा उन्हें शिक्षा, उनके अधिकारों के प्रति जागरूक तथा आर्थिक रूप से आत्मनिर्भर होने, सशक्त बनने के लिए प्रेरित किया गया है।

प्राचीनकाल से भारतीय समाज वर्णव्यवस्था में विभाजित रहा है- ब्राह्मण, क्षत्रिय, वैश्य तथा शूद्र। कालान्तर में शूद्रों को अछूत अथवा दलित कहकर सम्बोधित किया जाने लगा। दलित जो दबाया गया हो, कुचला गया हो। दलित शब्द की व्युत्पत्ति संस्कृत धातु दल् से हुई है जिसका अर्थ फटना, खण्डित आदि है।[1] दलित शब्द उन जातियों के लिए प्रयुक्त होता है जिन्हें अछूत, हरिजन, अस्पृश्य, बहिष्कृत आदि अभिधानों से अभिहित किया जाता था। वर्तमान में भारतीय संविधान में उन्हें अनुसूचित जाति के अंतर्गत सम्मिलित किया गया है। हिन्दी साहित्य में भी उन्हें दलित कहकर सम्बोधित किया जाता है। एक ऐसा वर्ग जो सदियों तक अपने से उच्च वर्ग की सेवा सुश्रुषा में पूर्ण मनोयोग से लगा रहा, जिससे उसे पशुओं से निम्न दर्जा दिया गया पर जो अपने परिश्रम से अमीरों के खेत खलिहानों, महलों को समृद्ध कराता जिसे प्रतिउत्तर में थोड़े से सम्मान की, अपने भूखे परिवार को दो जून की रोटी की दरकार थी, परन्तु यह सभ्य और उच्च कहलाने वाला समाज इतना से इतना कृपण एवं निष्ठुर था, उसकी मेहनत के बदले में उसे प्रताड़ित और तिरस्कृत करता रहा है। विभिन्न साहित्यकार जैसे राजेन्द्र यादव वंचित तो रामविलास शर्मा सर्वहारा वर्ग की संज्ञा देते है। परन्तु आज दलित समाज सदियों की गुलामी से जाग उठा है। वह स्वयं की अस्मिता, स्वाभिमान के साथ अपने जैसे असंख्य भाई-बहनों के गौरव को अक्षुण्ण बनाने के लिए दृढ़ संकल्पित है, जिससे उनकी आने वाली पीढ़ियां सम्मान, स्वाभिमान एवं गौरव के साथ अपना जीवन व्यतीत कर सकें। समाज में परिवर्तन हो रहा है, लेकिन जब तक पूर्ण ईमानदारी के साथ दलित अथवा वंचित समाज के उत्थान के लिए प्रयास नहीं किए जाएंगे, तब तक उन्हें उनका वांछित हक मिलना संभव नहीं है। पर विश्वास के साथ सत्य एवं सहनशीलता के धरातल पर अगर उनकी स्थिति तथा सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक सुधारने का कार्य किया जाएगा तो एक दिन अवश्य उनको सम्मानित सामाजिक समानता का अधिकार एवं स्थान प्राप्त होगा। इसके लिए

Three Years of Covid-19 – A Review on India's Journey through Different Variants and Waves

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***Abstract*: SARS COV-2 virus hit the world in Nov 2019 and created a global havoc like never before! More than three years have passed since it was reported for the first time, but the world is still struggling to come out of its impact. Along these three years, the virus underwent various mutations that changed its virulence, symptoms and infectivity. The different variants impacted in different ways. Countries planned and executed many strategies to deal with the variants, some worked, and some did not. India had an outstanding performance in dealing with the spread of Covid-19 disease. Considering the population and the socio-economic conditions of India, the pandemic was handled well than many developed countries of the world. India acted proactively by controlling the spread and minimising the death toll, developing indigenous vaccines and running an effective vaccination drive across the country. This article reviews the spread of different strains of Covid-19 in India and its impact during the past three years.**

***Index Terms* - COVID-19, SARS-CoV-2, Variant of concern, variant of interest, CIDRAP, vaccine hesitancy, Covid waves**

I. INTRODUCTION

All viruses change or mutate over time, including SARS-CoV-2, the virus responsible for the spread of COVID-19. Most of the alterations are either ineffective or have insignificant impact on the viral properties [1]. However, some mutations have larger effects and changes the properties of the virus significantly. Such mutations may increase or decrease the infectivity of the virus, alter the degree of disease severity of the pathogenicity of the associated disease, or the efficacy of vaccines, diagnostic and treatment regimes, or other public health and social measures. Such significant mutations which results in a viral strain very different from the original one in its properties, are known as "variants"[2].

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Variant of Interest and Variant of Concern

According to the WHO, a variant becomes the variant of interest (VOI) having specific gene markers which can be linked with changes in receptor binding properties of the virus, decreased neutralization potential of antibodies used against the previous stains or reduced efficacy of diagnosis and treatment regime, or increase in the transmissibility or virulence [2][3].

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II. NOMENCLATURE OF SARS COV-2 VARIANTS AND THEIR BIOLOGICAL CHARACTERISTICS

Alpha variant: According to the Johns Hopkins studies, the alpha variant of COV-2, was the first reported strain to cause COVID-19. It was first isolated from Southern England in early 2020. Studies suggested that the infected patients infected with α-variant had greater risk of CCU admission as compared to the parent (non-alpha) strain. Mortality risk was observed within 28 days of infection if infections could not be controlled in such patients. Isolation and a treatment regime of 21 days, was recommended by WHO for infections with these strains [3].

Beta variant: The β-variant was first detected on 18th December 2020 in Nelson Mandela Bay which is in the eastern province of South Africa. This strain has a unique property to re-infect individuals who have either recovered from the parent strain or the alpha strain of the virus. The variant was also thought to be evading diagnostic tools and had reduced response to some vaccines. The Centre for Infectious Disease Research and Policy (CIDRAP) stated that the strain had a greater viral load than its pervious strain [4].

Gamma variant: The initial cases of the γ- variant were reported from the U.S. in January, 2021. As per the reports of Centre for Disease Control (CDC), γ- variant infections were detected in a group of travelers from Brazil, during a routine screening process at an Airport in Japan [4].. According to the Global Virus Network (GVN), the variant exhibited pronounced transmissibility. Three mutations namely N501Y, K417N and E484K were detected in this strain. These mutations were present in the "receptor building domain of spike protein" in the viral coat. This increased the affinity of viral protein to the human receptor, Gamma (P.1) – GVN.

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Expression of angiogenic factors in the placenta of heme oxygenase-1 deficient mouse embryo

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ABSTRACT

Heme oxygenase 1 (Hmox1), the inducible form of heme degrading enzymes Hmoxs, is important for establishment and maintenance of pregnancy. A growing body of evidence suggests an association between Hmox1 and angiogenesis, including placental angiogenesis. In this study, we examined the expression of two angiogenic factors in the placentas of Hmox1 deficient mouse embryos, whose expression was found to be related to that of Hmox1. Relative protein levels and localization of Hmoxs and two angiogenic factors [Vegf and Prolactin along with their receptors, and Cd31/Pecam1] were compared in the placentas of Hmox1 wildtype and knockout mouse embryos using western blotting and immunohistochemistry along with histological analysis. The results revealed tissue disorganisation, reduced area of labyrinth and smaller nuclear size of trophoblast giant cell in the placentas of knockout embryos. The levels of Hmox2, prolactin, and Cd31/Pecam1 were found to be altered in knockout placentas, whereas Vegf and its receptors seem to be unaltered in our samples. Overall, our findings imply that Hmox2 is unlikely to compensate for Hmox1 deficiency in knockout placentas, and altered levels of prolactin and Cd31/Pecam1 hint towards impaired angiogenesis in these placentas. Further investigation would be needed to understand the molecular mechanism of defective angiogenesis in the placentas of Hmox1 knockout mouse embryos.

1. Introduction

Placenta is a transient organ that connects the developing embryo to the uterine wall during pregnancy, and the survival of the embryo is critically dependent on it. Placental angiogenesis is important for the successful development of viable, healthy offspring, and there is accumulating evidence that suggests an association between heme oxygenase 1 (Hmox1) deficiency and poor angiogenesis. Hmox1 is the inducible form of the Hmoxs, the enzymes that play a key role in the regulation of heme homeostasis by catalyzing the breakdown of heme to equimolar amounts of biliverdin, carbon monoxide, and ferrous iron [1]. The first association of Hmox1 with angiogenesis was shown by Abraham's group, in which they demonstrated that overexpression of the Hmox1 gene in endothelial cells caused a significant increase in angiogenesis [2]. Another study investigated the role of Hmox1 in vascular endothelial growth factor (Vegf) dependent angiogenesis in-vitro and in-vivo [3]. They reported inhibition of Vegf-induced endothelial cell proliferation by blocking Hmox1 using antagonists. Their in-vivo experiments illustrated the role of Hmox1 during chronic inflammation, in which two models were used; a murine Matrigel model of angiogenesis by adding Vegf and a lipopolysaccharide induced model of inflammatory angiogenesis. In the first model, it was observed that blocking Hmox1 by an antagonist promoted leukocyte infiltration that enhanced Vegf induced angiogenesis. In the second model, induction of Hmox1 with an agonist significantly inhibited leukocyte invasion and subsequent inflammation-related angiogenesis. The authors proposed that Hmox1

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II. NOMENCLATURE OF SARS COV-2 VARIANTS AND THEIR BIOLOGICAL CHARACTERISTICS

Alpha variant: According to the Johns Hopkins studies, the alpha variant of COV-2, was the first reported strain to cause COVID-19. It was first isolated from Southern England in early 2020. Studies suggested that the infected patients infected with α-variant had greater risk of CCU admission as compared to the parent (non-alpha) strain. Mortality risk was observed within 28 days of infection if infections could not be controlled in such patients. Isolation and a treatment regime of 21 days, was recommended by WHO for infections with these strains [3].

Beta variant: The β-variant was first detected on 18th December 2020 in Nelson Mandela Bay which is in the eastern province of South Africa. This strain has a unique property to re-infect individuals who have either recovered from the parent strain or the alpha strain of the virus. The variant was also thought to be evading diagnostic tools and had reduced response to some vaccines. The Centre for Infectious Disease Research and Policy (CIDRAP) stated that the strain had a greater viral load than its pervious strain [4].

Gamma variant: The initial cases of the γ- variant were reported from the U.S. in January, 2021. As per the reports of Centre for Disease Control (CDC), γ- variant infections were detected in a group of travelers from Brazil, during a routine screening process at an Airport in Japan [4].. According to the Global Virus Network (GVN), the variant exhibited pronounced transmissibility. Three mutations namely N501Y, K417N and E484K were detected in this strain. These mutations were present in the "receptor building domain of spike protein" in the viral coat. This increased the affinity of viral protein to the human receptor, Gamma (P.1) – GVN.

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Signature of magnetism in 2D-chromia: 2D analog of the natural α-Cr_2O_3 mineral and its heterostructure with graphene†

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The family of intrinsic 2D magnetic materials is consistently expanding day by day due to their numerous applications and easy availability. The latest member of the family is 2D-chromia – the 2D analog of the bulk chromia mineral (α-Cr_2O_3). In the present work, we have thoroughly explained and investigated its structural, electronic and magnetic properties. Our first-principles calculations show that it exhibits a ferromagnetic ground state with an appreciable magnetic moment. The large value of the magnetocrystalline anisotropy energy (MAE) leads to its stability against thermal fluctuations. We also show that due to the large radius of the Cr atom, exchange interactions dominate over Cr–O–Cr antiferromagnetic superexchange interactions that result in the existence of strong magnetic ordering in contrast to bulk chromia. However, the presence of a large band gap limits its application to a great extent. We have resolved this existing ambiguity by making its suitable van der Waals (vdW) heterostructure with the graphene. Our results indicate that the resulting materials may pave the way for spintronic applications and open up a new path for research in other 2D oxides of transition metals.

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1 Introduction

The latest progress in the development of two-dimensional (2D) magnets has opened up boundless opportunities for the fabrication of new devices with numerous applications, such as data storage, spintronics, magneto-optics, quantum computation and sensors.[1–3] These 2D magnetic materials can be broadly classified into two categories: (i) extrinsic (*e.g.*, graphene, transition metal dichalcogenide monolayers, *etc.*) and (ii) intrinsic (*e.g.*, CrI_3 monolayers, hematene, *etc.*). The former includes all those 2D materials that are non-magnetic in their pristine form but become magnetic upon (i) the introduction of defects (*e.g.*, *via* doping with a suitable transition metal atom, creating vacancies, attaching an adatom, substitution, or forming nanoribbons), (ii) the addition of interface effects (*i.e.*, a 2D crystal in the proximity of a magnetic substrate) or (iii) the inclusion of intercalation effects (*i.e.*, a magnetic species is inserted in between the 2D layers).[4–14] However, only localized magnetic moments can be induced through these methods, and extending this order up to a long range remains a big hurdle to overcome. In addition, if by any means the order is extended, then controlling or switching of the spin states is a significant hindrance to the process of device fabrication for these extrinsic 2D materials. Keeping this in mind, researchers nowadays rely mainly on the latter category, which includes all those 2D materials in which long-range magnetic order exists. Moreover, these intrinsic 2D magnets not only overcome the existing problem of the Mermin–Wegner theorem through MAE but also have the reliability of tuning their magnetic properties using various techniques.[15] Recent advancements in these materials have boosted the intense interest of researchers to explore the use of 2D magnets in nanoscale devices. The starting members of intrinsic 2D ferromagnetic materials were monolayers of CrI_3 and $Cr_2Ge_2Te_6$.[16] It has been observed that both of these are ferromagnets, which have out-of-plane spin orientations and magnetic ordering, are highly sensitive to the number of layers. In addition, the nature of the magnetic coupling can be easily tuned by applying strain or an electric field. Although they have emerged as exciting intrinsic

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Effect Of Magnetic Field On Radially Polarized Laser Induced Electron Acceleration In Vacuum

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Abstract. Mathematical treatment of electron acceleration induced by radially polarized laser pulse in vacuum is presented. Effect of external magnetic field in electron energy is studied. The role of azimuthal magnetic field is found to be important which retain the electron energy only when the acceleration takes place. All the equations are solved by fourth order Runga-Kutta (RK-4) method. It is observed that the electron energy gain increases with the propagation distance in the presence of magnetic field of 5 MG. It is also observed that on increasing the laser intensity, the energy gain increases. For electron trajectory in x-z plane, the behavior of it is similar to a sinusoidal wave but not identical.

INTRUDUCTION

The advent of ultrashort lasers has made it possible to generate intensity in exa-watt (EW) range [1]. One of the prime applications of these ultrahigh intensities is laser induced electron acceleration. Highly energetic electron beams in a very short distance can be achieved using ultrashort and ultraintense laser pulses. Recently, vacuum based laser acceleration (VLA) attracted special attention due to high energy gain, acceleration gradient and their simplicity [2-3]. VLA is relatively simpler technique in which laser directly accelerate electrons in vacuum [4]. Using VLA one can avoid the issues like laser induced plasma instabilities, requirement of uniform plasma and electron-plasma interaction [1]. In the present work, the laser induced electron acceleration in vacuum in the presence of magnetic field is theoretically studied. Radially polarized laser beam has been used for the present analysis. Using radially-polarized (RP) laser beam, the electron can be accelerated with electric field being in longitudinal direction. In VLA, due to electron acceleration in transverse direction, they are found to be defocussed from optic axes during acceleration [5]. Wen et al used RP laser pulse propagating in a parabolic micro channel of plasma to demonstrate the electron acceleration. They took help of 3D particle-in-cell based simulation for their study [5]. Kaur et al has used relativistic single particle coding to study electron acceleration by RP laser pulse under preformed plasma ion channel [6]. They have shown that axial electric field is greater than the radial field that is highly desirable for electron acceleration. Varin et al has presented an overview on recent developments and challenges of ultrashort, RP laser pulse driven

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Environment Management – The Vedic Tradition

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ABSTRACT

The present paper attempts to explore the Vedic tradition of environment management based upon the harmony and co-existence of man and nature that presents an ideal solution to the burning question of environment degradation due to man's negligence. The Vedas present a simplified and sustainable lifestyle in which man treats nature as his God and his family. Dharma, samskaras, rituals, all were the ways to implement that system that urges man to dedicate himself to the service of the nature without requiring any laws or fear of punishment to direct him towards it. The various Vedic deities described in the scriptures e.g. rivers, air, earth, etc. are the personified forces of the nature which have greater impact on man's life. Deitification is a way to ensure conservation of these natural resources. The Vedic environment conservation plan – directly as well as indirectly encourages, involves and urges mankind to contribute selflessly for the greater cause of environment protection and conservation. The same Vedic philosophy of environment management can work in the present day scenario of the impending environmental dangers. The need is to mobilize people and the government to work together whole-heartedly for the cause of environment conservation.

KEYWORDS: Vedas, Environment, Dharma, Samskaras

शोध-पत्र



डॉ. सुशीला कुमारी

आत्म-साक्षात्कार स्वरूप एवं उपयोगिता

सारांश

भारतीय ज्ञान परम्परा अद्वितीय ज्ञान-विज्ञान और प्रज्ञा का प्रतीक है, उसी ज्ञान परम्परा के अविछिन्न अंश उपनिषदों में बताया गया है कि मानव जीवन का चरम लक्ष्य आत्मा का साक्षात्कार करना है। इसी अनुभव के लिए उपनिषद् तीन साधनों का उपदेश देते हैं - श्रवण, मनन तथा निदिध्यासन। आत्मतत्त्व का श्रवण श्रुति-वाक्यों के द्वारा करना चाहिए, मनन तार्किक युक्तियों से करना चाहिए तथा योगप्रतिपादित उपायों के द्वारा उसका निदिध्यासन करना चाहिए। अब प्रश्न है कि आत्मतत्त्व का ही साक्षात्कार क्यूँ? इसका कारण यह है कि जगत् के समस्त पदार्थों में प्रियतम वस्तु यही 'आत्मा' है। किसी स्थान से प्रिय वस्तुओं की गणना की जाये तो, पर्यवसान आत्मा में ही होता है। अत: आत्मा के सच्चे स्वरूप का ज्ञान हमें उन्हीं ग्रन्थों से करना चाहिए जिनमें आत्मनिष्ठ ब्रह्मेव पुरुषों के साक्षात् किये गये अनुभव का संकलन है। ये संकलन वेद हैं। श्रवण से ही हमारे कर्तव्य की समाप्ति नहीं होती। मनन की भी आवश्यकता रहती है। युक्तियों के सहारे वेदविहित तथ्यों के स्वरूप को ठीक ढंग से समझना 'मनन' है। योग के मार्ग से उस निश्चित तत्त्व का लगातार चिन्तन करते रहना 'निदिध्यासन' है। इन उपायों से आत्मा का दर्शन मिलता है और मानव जीवन का यही चरम लक्ष्य है।

मुख्य शब्द

आत्म-साक्षात्कार, श्रवण, मनन, निदिध्यासन, उपक्रम-उपसंहार, अपूर्वता इत्यादि।

भूमिका

विश्व के लगभग सभी विद्वान एक स्वर में उपनिषदों के आध्यात्मिक ज्ञान को सबसे ऊँचा मानते हैं। अशांत व संतप्त हृदयों को शान्ति प्रदान करने के लिए उपनिषदों का बहुत महत्व है। जिस प्रकार पथिक दोपहर की गर्मी से घबराकर थकावट अनुभव करता है और वृक्षों की घनी छाया की तलाश करता है, उसी प्रकार पीड़ित मनुष्य जीवन की समस्याओं और बाधाओं के समाधान के लिए उपनिषद् रूपी सरोवर में डुबकी लगाकर अपने चित्त को शान्त कर सकता है। इसी सन्दर्भ में बृहदारण्यक उपनिषद् में याज्ञवल्क्य ने मैत्रेयी को जो आध्यात्मिक उपदेश दिया वह भारतीय धर्म तथा दर्शन के इतिहास में सदा अमर रहेगा। उन्होंने कहा कि ''अरे मैत्रेयि! पति की कामना के लिए पति प्रिय नहीं होता, अपितु अपनी कामना के लिए (आत्मा के लिए) पति प्रिय होता है।'' – अर्थात् शरीरस्थ जीवात्मा की शरीरानुसार कामनाएँ होती हैं, जिसके कारण वह किसी वस्तु की कामना करती है; उस वस्तु के लिए अथवा उस वस्तु से किसी सम्बन्ध के कारण वह वस्तु प्रिय नहीं लगती। इसी प्रकार आगे याज्ञवल्क्य पत्नी, पुत्र, धन, ब्रह्म = ज्ञान, क्षत्र = बल, लोक = राज्य/राजनैतिक शक्ति, देव = विद्वान्, भूत = सृष्ट जगत् और अन्ततोगत्वा सभी पदार्थों में इसी प्रकार की स्वार्थता बताते हैं। तात्पर्य है कि जगत् के समस्त पदार्थों में प्रियतम वस्तु यही 'आत्मा' है। फिर जो वे कहते हैं, वह जैसे उपनिषद् का सार है – आत्मा वा अरे दृष्टव्य: श्रोतव्यो मन्तव्यो निदिध्यासितव्यो मैत्रेय्यात्मनो वा अरे दर्शनेन श्रवणेन मत्या विज्ञानेनेदं सर्वं विदितम्।। बृहदा. 2।4।5।।

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संस्कृत-साहित्य में राम

डॉ. सुशीला कुमारी*

सारांश- भारतीय संस्कृति शाश्वत जीवन की एक प्रायोगिक पद्धति है जो सत्य और सनातन तथा अमर जीवन का आनंदमय मार्ग प्रशस्त करती है। इस संस्कृति की नींव सत्य, तप दया, दान एवं धर्ममूलक अर्थ, काम तथा मोक्ष एवं वर्णाश्रम की सुदृढ़ आधारशिला पर व्यवस्थित है। संस्कृति का मूर्तिमान रूप कोई सांस्कृतिक, पुरुषसन्त या महापुरुष होता है। पुनः जीवन जीने की कला महापुरुषों के जीवन से सिखाने के लिए हमारी संस्कृति में कला, संगीत और साहित्य के माध्यम से अनेक उदात्त गुणों की आधारभाव अवतारणा की है। महाजनो येन गतः स पन्थः भारतीयों का मूल मंत्र है। जिन महापुरुषों का जीवन जन-जन के जीवन को प्रतिक्षण, अनुप्राणित करता है, उनमें मर्यादा पुरुषोत्तम श्रीराम अद्वितीय है।

श्री राम ने सामाजिक, राजनीतिक और पारिवारिक सभी क्षेत्रों में आदर्श को ही प्रस्तुत किया है। आदर्श पुत्र, आदर्श भाई, आदर्श पति, आदर्श मित्र और आदर्श राजा के रूप में राम का चरित्र आदर्शवादिता को प्रस्तुत करता है अतः राम के जीवन पर विभिन्न आधारित विभिन्न भारतीय साहित्य वर्तमान में भी प्रासंगिक बना हुआ है। रामकथा पर आधारित साहित्यिक ग्रंथों में प्रमुखतः रामायण, प्रतिमानाटक, उत्तररामचरितम्,रघुवंश,रामायण-मंजरी,बालरामायण इत्यादि हैं।

मुख्यशब्द- राम, आदर्श, मर्यादापुरुषोत्तम,दृढव्रती, रामायण, प्रतिमानाटक, उत्तररामचरितम्,रघुवंश रामायण-मंजरी, बालरामायण

प्रस्तावना- संस्कृत साहित्य के मनीषियों का यह मन्तव्य है कि रामायण संस्कृत साहित्य का आदि काव्य है और इस आदि काव्य के प्रणेता महर्षि वाल्मीकि आदि कवि हैं। यह भारतीय संस्कृति का प्रतिनिधि महाकाव्य है। यह ग्रन्थरत्न सभी आदर्शों से ओत प्रोत है और इस ग्रन्थ ने मर्यादापुरुषोत्तम श्री राम के पूत चरित की अमिय धारा का अवगाहन करवाया है। परवर्ती संस्कृत साहित्य ने इस ग्रन्थ को आधार बनाकर अनेक ग्रन्थ लिखे गए जिनका नायक श्री राम है-

1. वाल्मीकि रामायण – रामकथाओं में वाल्मीकि रामायण का स्थान सर्वोपरि है। इसे संस्कृत का आदि-काव्य कहा गया है। 7 काण्डों वाले ग्रन्थ रामायण के राम भारतीय साहित्य का आदि नायक है। वाल्मीकि ने राम के रूप में एक आदर्श मानव चरित्र का निर्माण किया है। जब रामायणके प्रारम्भ में यह पूछा जाता है कि हे श्रेष्ठ मुनि इस जगत् में गुणवान वीर्यवान, धर्मज्ञ, कृतज्ञ, दृढव्रती कौन है? सत् चरित्र से युक्त, सर्वचराचरों के लिए हित करने वाला, विद्वान, सामर्थ्य से युक्त एक ही प्रियदर्शन पुरुष कौन है? इन सभी प्रश्नों का उत्तर नारद ने इसे प्रकार दिया –

इक्ष्वाकुवंशप्रभवो रामो नाम जनैः श्रुतः।
नियतात्मा महावीर्यो द्युतिमान् धृतिमान वशी।।(रामयण, बालकाण्ड)

अर्थात् इक्ष्वाकुवंश में राम नाम से एक विख्यात पुरुष है, वे मन को वश में रखने वाले, शक्तिशाली, सौन्दर्य सम्पन्न, धैर्यशाली, जितेन्द्रिय हैं।

ईश्वरीय विशिष्टता व असाधारण गुणों के स्वामी होते हुए भी राम अपने किसी भी क्रियाकलाप से मानवेत्तर प्रतीत नहीं होते हैं। उनमें अनेक लौकिक व अलौकिक गुणों का समावेश है। श्रीराम धर्म के मूर्तरूप है। वाल्मीकि का कथन है कि- 'रामो विग्रहवान धर्मः' अर्थात् धर्म के यथार्थ स्वरुप को समझे बिना श्रीराम के-दिव्य-चरित्र को समझा जा सकता है। श्रीराम का स्वभाव पुष्प से अधिक कोमल तथा वज्र से भी अधिक कठोर है। एक ओर भावना को कर्तव्य से ऊंचा स्थान देते हैं। जब वह खेल में भी भरत, लक्ष्मण व शत्रुघ्न को जिताने और स्वयं में आनन्द का अनुभव करते है, वहीं वज्र से भी कठोर है। जब श्रीराम लोक रंजन के लिए अपनी पत्नी त्यागने का निश्चय करते है। यह लोकमत को सर्वोपरि स्थान देने के लिए निजत्व एवं आत्मियत्व को परित्याग करने का आदर्श स्थापित करता है।

राम न्यायप्रिय थे। उन्होंने बहुत अच्छा शासन किया इसलिए लोग आज भी अच्छे शासन को रामराज्य की उपमा देते हैं उनके लंका विजयोपरांत मातृभूमि पर व्यक्त विचार महानतम राष्ट्रप्रेम की शिक्षा देते हैं श्रीराम का वचन था-

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Self Attested

【論文】

戦後マニプルとナガ丘陵における戦時賠償要求

ディーパク・ナオレム
（ダウラト・ラーム大学講師）

第二次世界大戦は「大アジア戦争」とも呼ぶことができる。死者の数、破壊の規模、そして継続時間においてヨーロッパの前線を上回ったからである[1]。1941年1月、英領インド北東部の辺境に、東方から軍隊がやってきて、英国の支配から解放されるという噂や予言が流れ、戦火が迫ってきた。1942年12月、マニプル藩王国の政務駐在官（Political Agent）であるChristopher Gimsonとマハーラージャー（藩王）Bodhchandraはマニプルを「作戦地域」と宣言し、インパールの連合軍司令官にマニプル藩王国の行政を引き渡した[2]。何度かの作戦延期の後、日本の帝国陸軍はインパールとコヒマを連合国軍から奪う作戦を開始した。連合国軍は戦時行政府をマニプル藩王国および周辺のナガ丘陵とルシャイ丘陵においていた。1942年に連合軍の大軍が進駐し、アジアで崩壊しつつあった大英帝国を、台頭する日本帝国から防衛するためにこの地域を要塞化したのである。連合国陸軍の入域、20万人に及ぶビルマと中国からの戦争難民、日本軍による空爆、そして1944年3月8日から7月18日かけてのインパールとコヒマでの戦闘によって、この地域は壊滅的被害を受けた。強制立ち退き、動産・不動産の喪失、激しいインフレ、生活必需品の欠乏、食糧不足、飢餓、死と病気は戦争中のこの地域住民の共通の経験となった。

救援と復興の要求、そして戦争賠償問題

戦争が進行するにつれ、隣接するベンガルでの飢餓がこの地域にも広がることが懸念された。迫りくる危機に対してイギリス政府は1944年、救済・復興を担うアッサム救済事業庁（Assam Relief Measures: ARM）を設置し、インド亜大陸植民地期における最大級の復興事業を開始した[3]。その後、家を追われた地元民への食糧と避難所の提供を目的として、多数の救援キャンプがマニプル藩王国とナガ丘陵に設置された[4]。アッサム救済事業庁の役人はまた、住宅再建のための物資、喪失・盗難にあった家畜の代替、医薬品、食糧その他生活必需品の輸送も行ったと主張している。

1 See Tim Harper, "A Long View on the Great Asian War" in D. K. W. Hock (eds) *Legacies of WWII in South and East Asia*, Institute of South East Asian Studies Publisher, 2007.

2 Letter from Mr. Gimson, Political Agent in Manipur, to Maharaja Bodh Chandra, dated 10th December, 1942, Manipur State Secretariat Library, Imphal; *Draft Authority for the declaration of Operational Area*. Manipur State Archives (MSA), Imphal.

3 Bore, A. B., *A Report on the Measures of Rehabilitation and Reconstruction undertaken by the government of India in the Naga Hills and the Manipur State in 1944 in order to repair the ravages caused by the Japanese invasion of 1944*, 1945, Assam State Archives (ASA), Guwahati.

4 Deepak Naorem, "Japanese invasion, war preparation, relief, rehabilitation, compensation and 'state-making' in an imperial frontier (1939-1955)", *Asian Ethnicity*, Vol. 21(1), pp. 96-121.

また、戦時中の救援や復興に現地の人々が満足しているとの記述もある[5]。

日本軍の侵略がもたらした動乱に対応するため、植民地政府およびマニプル藩王国の当局は大規模な地域救済・復興活動を行ったと主張している。当局はアッサム救済事業庁による救済策が、戦後生じた一連の社会経済問題を解決して余りあるはずだと確信していた。ところが、終戦直後、地域の多数の住民が戦争中の財産の喪失・損害に対する戦時賠償を求め始めた。マニプル藩王国ダルバール（宮廷議会）議長のF. F. Pearson大尉によれば、1944年以降、国務の最大の問題が戦時賠償問題であった[6]。1944年、戦時賠償を求める声が沸き起こり始めると、マニプル藩王国ダルバールと政務駐在官は藩王国が人々の要求に応えると言明した。1944年2月2日付マニプル藩王国ダルバール決議第1号および1944年4月5日付決議第5号により採択された1943年戦争被害（賠償保証）法は、戦争中の損失と被害へのマニプル藩王国に対する補償に関して、イギリス政府に一定の責任を課した[7]。この地域の破壊は、侵略してきた日本軍によるものだけでなく、連合軍によってもたらされたものであった。連合軍は戦争準備中に、日本軍に対する軍事行動として、この地域の財産を破壊し、町や村の住民を避難させ、焦土作戦を広範囲に行ったのである。

ダルバールはアッサム州政府と協議の後、マニプル藩王国の臣民からの要求に応え始めた。同様に、ナガ丘陵県長官（Deputy Commissioner）も数千人のナガ丘陵の住民からの請求を受理した。マニプルの住民が戦争被害に対して賠償を求めるのはこれが初めてではない。その数十年前のイギリス・クキ戦争の後には多数の住民が救済と金銭的補償を要求した[8]。同様に、1941年から1943年にかけて、インパールが日本帝国陸軍による空爆を受け民間人の死者および財産への多大な被害が生じた後も、被害を受けた住民が金銭的補償を求めた。戦争被害特別措置法の下で、1943年から1944年にかけて政府は爆撃で死亡した人の負傷者や近親者への支給として198件、合計23,500ルピーを認可した[9]。1944-45年には、さらに7,270ルピーが認可された[10]。戦争被害の個々の請求に対処するため、マニプル藩王国ダルバール議長の監督の下、請求処理事務所が設けられた。土地・雇用・処理局も請求処理事務所の支援に動員された。F. F. Pearson大尉が1947年8月11日までマニプルの請求処理局を監督し、その後は新憲法の下、初代首席大臣に任命されたMaharaj Kumar Priyobarta Singhが1947年9月10日まで請求処理局の監督にあたった。その下で、地元の歴史家であるW. Yumjao Singhが首席請求処理官に任命された。

住民たちは金銭的補償を求める嘆願書を大量に提出するようになり、そのほとんどが嘆願書作成階級の者たちにより作成された。補償請求が莫大な数に上ったため、マニプルのダルバール議長は

5 Bore, A *Report on the measures of Rehabilitation*, p. 3.

6 *Administrative Report of the Manipur State, 1944-45*, MSA, Imphal, pp. 15-16

7 *Manipur State Durbar Proceedings, 1944*, Resolution no 1 of Feb 2, 1944 and no 5 of April 5, 1944, MSA, Imphal.

8 No. 6057, Payment of compensation to sufferers in the recent Kuki rebellion in Manipur up to the limit of Rs 1,75,00; *Indian Office Records* (IOR): L/PS/11/164, British Library (BL), London.

9 'Air Raid Precautions', *Administrative Report of Manipur State*, 1943-44, MSA, Imphal, p. 25.

10 *Administrative Report of the Manipur State*, 1944-45, MSA, Imphal, pp. 15-16.

Rajesh Kumar, Jyotirmoy Maity, Divya Mathur, Abhishek Verma, Neha Rana, Manish Kumar, Sandeep Kumar and Ashok K. Prasad*

Green synthesis of triazolo-nucleoside conjugates via azide–alkyne C–N bond formation

Abstract: Modified nucleosides are the core precursors for the synthesis of artificial nucleic acids, and are important in the field of synthetic and medicinal chemistry. In order to synthesize various triazolo-compounds, copper and ruthenium catalysed azide–alkyne 1,3-dipolar cycloaddition reactions also known as click reaction have emerged as a facile and efficient tool due to its simplicity and convenient conditions. Introduction of a triazole ring in nucleosides enhances their therapeutic value and various photophysical properties. This review primarily focuses on the plethora of synthetic methodologies being employed to synthesize sugar modified triazolyl nucleosides, their therapeutic importance and various other applications.

Keywords: anticancer activity; antiviral; azide-alkyne; click chemistry; Triazolo-nucleoside.

1 Introduction

Nucleosides are the building block of DNA and RNA and it has a long and rich history in the field of drug discovery [1]. During the past few decades, numerous modified and carbocyclic nucleosides had been synthesised and plenty of these molecules demonstrated various pharmacological properties namely antiviral, antibacterial and anticancer, etc. [2]. Presently, more than 30 nucleoside/nucleotide analogue drug candidates are available in the market and are being efficiently used for treating viral, parasitic, fungal and bacterial infections. Many candidates of this class are currently at the stage of clinical and preclinical trials of drug discovery and development [1, 3]. In search for new clinically useful nucleoside analogous, introduction of a triazole

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Bio-genic synthesis of calcium coated zinc oxide nanoparticles from *beetroot extract* and their photo-degradation study on methylene blue and rhodamine B

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Beet root extract
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Rhodamine B
Methylene blue
Degradation

ABSTRACT

The advent of nanotechnology has helped in several invention in science & technology. Contamination of surface water, ground and soil by various industrial dyes causes several ecological problems. Zinc oxide nanoparticles as photocatalysts and semiconductor materials show unique physical properties at the nanoscale and can be used to solve these problems to some extent. In this paper, we synthesized ZnO NPs and calcium-coated ZnO nanoparticles using extract of beetroot and then, for industrial point of view, we studied the photocatalytic degradation of methylene blue and rhodamine B using sun as a natural light source (sunlight). We have synthesized calcium-coated ZnO nanocomposites with 20–50 nm particle size. Synthesized nanomaterials were characterized by using the different physio-chemical techniques such as - FT-IR, XRD, TEM, SEM, EDX and UV-spectrophotometer do their photocatalytic degradation.

1. Introduction

The latest advancements in the nano-science field have gathered significant focus from different sectors since they could be used for diagnosing, detecting, purifying industrial waste (Sharma et al., 2017), catalysis (Gangadoo et al., 2017), therapeutics (Venkatasubbu et al., 2016), food technology (Menon et al., 2018)and role in energy utilization or production. The contamination of water resources, including groundwater and reservoirs, as a consequence of increased industrialization and population growth, has made water treatment one of today's most concerning challenges. As a result, it's critical to clean and recycle industrial and municipal wastewater. Due to their outstanding benefit as adsorbents and for use in filtering, nanoparticles have attracted much attention in the last decades to treat wastewater (Iravani, 2011). Photocatalysts play a very important role in pollutant treatment (Nayak and Sahu, 2022). The keyword "photocatalysis" first appeared in the scientific literature in 1911 (Bruner and Kozak, 1911).

Photocatalyst" is derived from two words "photo," which means light, & "catalyst" which is chemical agent that fastens the chemical reactions by absorbing light or photons. Since they have a potential in reducing environmental pollution, improvements have been made to the photocatalytic activity or reaction rates (Abdeltif et al., 2020a). This field has a lengthy history, and several useful catalysts have already found a market. Because pollutants should be adsorbable on catalyst surfaces, materials with a wide surface area and strong interactions have been considered for the general removal of pollutants. Under Visible Light illumination, photogenerated holes and electrons play crucial roles, as depicted in Fig. 1 In the CB, the electrons travel to the catalyst's surface and react with oxygen to form active: O_2^- radicals, and holes in VB react to the OH/H_2O-absorbed species to form OH free radicals. The h+ , O^{2-}, and OH free radical species consequently have an vital role in the degradation of pollutants. Over 16,000 scientific papers, including the terms "photocatalyst" or "photocatalysis", have been published in the previous 10 years, and the number of publications is rising each year (Rueda-Marquez et al., 2020).

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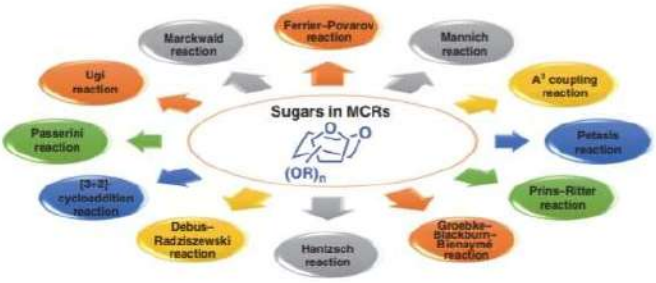
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Synthesis V. K. Maikhuri et al. Review

Sugars in Multicomponent Reactions: A Toolbox for Diversity-Oriented Synthesis

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Abstract Multicomponent reactions (MCRs) cover strategically employed chemical transformations that incorporate three or more reactants in one pot leading to a functionalized final product. Thus, it is an ideal tool to achieve high levels of complexity, diversity, yields of desired products, atom economy, and reduced reaction times. Sugars belong to the class of naturally occurring compounds with fascinating applications in the field of drug discovery due to the presence of various hydroxy groups and well-defined stereochemistry. However, their potential in MCRs has been realized only recently. This account describes recent advances in the synthesis of sugar-derived heterocycles synthesized by MCRs. We hope to encourage the synthetic and medicinal chemistry community to apply this powerful MCR chemistry to generate novel glycoconjugate challenges.

1 Introduction
2 Synthesis of Various Functionalized Sugar Compounds
2.1 Passerini and Ugi Multicomponent Reactions
2.2 Petasis Reaction
2.3 Hantzsch Reaction
2.4 Domino Ferrier–Povarov Reaction
2.5 Marckwald Reaction
2.6 Groebke–Blackburn–Bienaymé (GBB) Reaction
2.7 Prins–Ritter Reaction
2.8 Debus–Radziszewski Imidazole Synthesis Reaction
2.9 Mannich Reaction
2.10 A^3-Coupling Reaction
2.11 [3+2]-Cycloaddition Reactions
2.12 Miscellaneous Reactions
3 Conclusion

Key words sugars, multicomponent reactions, isocyanides, aldehydes, domino reactions

1 Introduction

In these times of gradually increasing significance of sustainability and environmental concerns, multicomponent reactions (MCRs) are gaining enormous importance and wider acceptance as a powerful tool for the convergent synthesis of a variety of highly functionalized molecules.[1] By definition, multicomponent processes are reactions of more than two starting materials resulting in a product containing most of the employed atoms.[2] MCRs can ensemble a diversified library of compounds that are tedious to procure through sequential multistep synthesis. Appealing features such as high yields, bond-forming efficiency, atom economy, reduced reaction time, minimal waste generation, and cost-effectiveness have made MCRs highly recognized in industry and academia as an ideal tool to design new biologically active chemical entities for the drug discovery process.[3] The first accomplished MCR was the formation of benzoylazotide from bitter almond oil and ammonia *via* benzaldehyde and hydrogen cyanide in 1838 by Laurent and Gerhardt.[4] In 1850, Strecker officially introduced the synthesis of α-amino cyanides by the MCR of ammonia, carbonyl compounds, and hydrogen cyanide. Since then, several basic MCRs that are classical examples of named reactions such as the Biginelli, Mannich, Hantzsch, Ugi, and Passerini reactions, and many of their variations have been discovered.[5] Further, MCRs can be categorized into three categories: domino-type MCRs, sequential MCRs, and consecutive MCRs. In domino-type MCRs, all reagents are added at the beginning of the process and intermediates

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Explaining the linkage between antecedents' factors of adopting online classes and perceived learning outcome using extended UTAUT model

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ARTICLE INFO

Keywords:
Adaptability
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ABSTRACT

The success of rolling out online courses depends on users adopting this technology and understanding the fundamental difficulties confronting the existing online education delivery system. This research delves into the causes and effects of how well students adjust to using an online learning environment. The study also investigates whether gender categories of respondents moderates the relationship between adaption of online classes and perceived learning outcome. Using Smart PLS and SEM the results of a survey taken of 531 Indian students show that students' adaptability to online classrooms has a major impact on the knowledge they gain from these courses, with a slight moderating effect of respondents' gender on the knowledge they gain. The majority of respondents have a positive outlook on taking classes online. However, they also recognize that the digital divide is a significant barrier to their education. The findings are expected to be helpful in increasing awareness and facilitating quicker, more informed decision making by those responsible for shaping educational policy, curriculum, and technology.

1. Introduction

The rapid spread of the COVID virus has resulted in a meteoric rise in the popularity of distance education in recent years (Kumar, Ha, et al., 2023; Verma et al., 2021). All around the country, schools are required to use e-learning as a supplementary teaching tool (Agarwal, 2021; Zogas et al., 2016). There has been an unexpected and rapid surge in the demand for education delivery systems, necessitating robust and feature-rich e-learning platforms (Donkin et al., 2019). There has been a shift in recent years toward using asynchronous online learning environments as an alternative to more conventional face-to-face classroom settings (Pei & Wu, 2019). By providing higher-quality instruction at a lower cost, the online education system can reduce the overall cost of traditional classroom instruction by as much as 40 percent. Since students can now effortlessly share their knowledge on virtual platforms, e-learning has revolutionized the way we learn.

Ninety-four percent of students in more than 190 nations on all seven continents have been impacted by the COVID-19 epidemic, which has caused widespread disruption to educational systems (UN Report, 2020; Kumar, Verma, et al., 2023; Singh, Chamola, et al., 2023). Institutions of higher learning must effectively adapt to the changing times by shifting their focus to online education. This method of instruction, which emphasizes the use of computers and other forms of electronic media, has only recently become commonplace in India. By 2026, it is expected that the global e-learning market will have expanded from its 2019 valuation of $144 billion to $374.3 billion. There would have been no way to provide education to India's 1.3 billion school-aged children if not for the advent of e-learning. The only country to have significant growth during the pandemic was India (Agarwal, 2021). Another research predicts that by the end of the fiscal year 2025, the online education market in India will have grown to be worth $5 billion (India Global Business, 2021).

A well-designed and well-organized lesson plan, technological fluency, instructional tools, forethought, and online teaching expertise

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Informal workers in India as an economic shock absorber in the era of COVID-19: A study on policies and practices

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Abstract.
BACKGROUND: With greater uncertainties and economic divides in Indian formal and Informal economies; the lockdown in its unprecedented ways severely knocked the crucial vulnerabilities of majorly the informal sector of the economy.
METHODS: The study was conducted across the Indian population who have suffered from the bad impact of COVID-19 and the lockdown. The data collection process was conducted during the COVID-19 outbreak from June 2020 to October 2020. Multiple regression analysis and independent-sample t-test were applied to test the hypothesis.
RESULTS: The study closely highlights the role of the government system towards non-government organizations those who played a crucial role in the welfare of the informal workers. The results suggest that the most affected group of people in the COVID-19 lockdown are the informal workers who were working on daily wages for their bread and butter. The government endeavor was also found significant in supporting the informal workers.

Keywords: Informal worker, COVID-19, lockdown, Impact Assessment, Mitigation measures



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Ensuring brand loyalty for firms practising sustainable marketing: a roadmap

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Abstract

Purpose – The purpose of this paper is to explore the impact of sustainable marketing practices of firms on consumers' attitudinal and behavioral brand loyalty. In addition, this study also aims to explore the mediating effect of brand trust and brand affect on this relationship.

Design/methodology/approach – A combination of descriptive and causal research has been used, for which data was collected from 582 respondents and processed using structural equation modeling to establish multivariate relationships. The PROCESS method was used to estimate mediation effects.

Findings – A rather valuable insight that emerged is the significant role that brand trust and brand affect play in engendering attitudinal and behavioral brand loyalty among consumers, for firms adopting sustainable marketing practices. Findings revealed that sustainable marketing practices result in enhanced brand trust, which further translates into higher levels of brand affect, thereby leading to attitudinal brand loyalty and further resulting in behavioral brand loyalty. This study also highlights the importance of brand affect in developing enduring behavioral brand loyalty.

Research limitations/implications – Consumers today are changing their consumption habits, preferring to satisfy ideological and symbolic needs rather than just rational needs. So, marketers practising sustainable marketing should aim to leverage brand trust and brand affect to ensure lasting behavioral brand loyalty.

Originality/value – The examination of the effect of sustainable marketing practices on brand-related variables has contributed to a better understanding of the mechanism that underlines the operation of emotion-based enduring loyalty. The vast majority of studies that provided insights about sustainable marketing practices and consumer behavior thereof were dominated by European and American perspectives and very few studies exist with a focus on developing economies. This study attempts to fill this void by exploring the personal care market in India.

Keywords Sustainable marketing, Attitudinal brand loyalty, Behavioral brand loyalty, Brand trust and brand affect

Paper type Research paper

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Digital transformation in tourism sector: trends and future perspectives from a bibliometric-content analysis

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Abstract

Purpose – This article analyzes research on digital transformation in the tourism sector, providing insights into leading work, authors, journals, trends and future research opportunities. However, limited in-depth research exists on this topic, and the existing studies lack an understanding of its development, scope and relevant areas.
Design/methodology/approach – The study utilized the Scopus database to identify 61 articles on digital transformation in the tourism sector. The research employed VOSviewer software to analyze publication and citation structure, incorporating bibliometric variables like co-authorship, co-citation network, keywords co-occurrence network and bibliographic coupling.
Findings – The study yielded valuable insights from top-cited articles, revealing their contributions to digital transformation in tourism research. It also highlighted publication trends and the impact of authors, journals and studies and conducted co-occurrence, co-authorship and bibliographic analyses to identify key trends and issues in the tourism sector. The study calls for further examination of the digital revolution in tourism research and outlines future opportunities for researchers in this area.
Research limitations/implications – To enhance the comprehensiveness of data collection, it is recommended that researchers consider including publications from databases such as WOS (Web of Science), Dimensions and PubMed in addition to the Scopus database. This broader inclusion of sources can provide different network structures and valuable insights from the field of digital transformation in the tourism sector.
Originality/value – The research provides substantial value to the study of digital transformation in tourism by focusing on bibliometric data from the Scopus database for the period from 2017 to 2022. By analyzing this data, it identifies significant trends in digital transformation within tourism research. Additionally, the study uncovers new areas of digitization in the tourism sector, further enhancing its value and relevance.

Keywords Digital transformation, Tourism, Smart tourism, Tourism sector, Big data, Bibliometric
Paper type Literature review

1. Introduction

Digital transformation (DT) has gained prominence in marketing practice and research, driving significant changes through the integration of digital technologies (Rêgo *et al.*, 2021). The tourism industry has been at the forefront of digital innovations, such as online bookings (Cheng *et al.*, 2023; Ozdemir *et al.*, 2023; Cuomo *et al.*, 2021). DT aims to enhance organizational

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Shen Teh/ Shui Ta: The Shifting Identity in Bertolt Brecht's *The Good Person of Szechwan* through the Lens of Marxist Fetishization

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Abstract:

Modern European Drama has emerged as one of the most significant historical and socio-political accounts of the World War II era. The playwrights like Bertolt Brecht, Dario Fo, Samuel Beckett, Ionesco and Henrik Ibsen to name a few have established a new form of Theatre and represented ideas pertinent to the spatio-temporal sensibilities of the twentieth century in their notable works.

This paper is a humble attempt to understand the mechanisms of Bertolt Brecht in association with the Theatre of the Absurd and his attempt at delving into the world of Marxism, Commodity formation, and Fetishization of the Commodity. This paper will specifically read *The Good Person of Szechwan* through the lens of Marxist Fetishization and uncover the use of Masking in the play in reference to the Marxist ideologies that are at play in Brecht's work.

Keywords: ***Modern European Drama, Bertolt Brecht, Epic Theatre, Theatre of the Absurd, Marxism.***

"Art is not a mirror with which to reflect Reality, but a hammer with which to shape it" (Bertolt Brecht). The playwright who did not confine to 'art for art's sake' but believed in the didactic and revolutionary potential of a work of art, Bertolt Brecht created a new theatrical form that would help restructure and rewrite reality of his times. He wrote *The Good Person of Szechwan* in exile during the rise of the Nazi regime in the World War II era. The play was

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Overpopulation: A Hyperobject inducing '*Slow Violence'*

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Abstract

The paper theorizes overpopulation as what Timothy Morton terms *hyper objects* that are too enormous in the spatial-temporal continuum for humans to comprehend. The article goes on to determine how overpopulation is a causality of what Rob Nixon terms as 'Slow Violence' on the planet. Nixon defines 'Slow Violence' as violence that occurs gradually over some time and might not be presented as violence at all. The paper presents three arguments to analyze the causality of ecological damage by overpopulation that humans are overlooking. It goes on further to evaluate specific effective corrective measures for anthrop harmonic living.

Keywords: Environmental Humanities, Hyper objects, Slow Violence, Deep Ecology, Anthropoharmonism

"…a finite world must have a finite population."
-Garrett Hardin, "The Tragedy of the Commons"

Who defines what 'finite population' entails? How much is 'enough'? Do we have the intellectual capacity to quantify it? How do we define 'overpopulation'? In the twenty-first century, humanity is perplexed by these essential questions. For this paper, let us define overpopulation as a state when a population exceeds its 'carrying capacity .'The 'carrying capacity' refers to the maximum number of individuals of a species that can exist in a habitat indefinitely without becoming a threat to others. There is a compelling need to plummet our population growth rate, stabilize, and gradually reduce our numbers to provide a fair chance for nature and other living beings to thrive and heal from the copious amounts of damage entailed by us in a minuscule time frame. This paper proposes that overpopulation joins the bandwagon of the damage-inducing causality on the rhythmic structure of an interconnected web of biotic

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The Dovetailed 'Madonna' and the 'Whore' in Bertolt Brecht's *The Good Person of Szechwan* and Harold Pinter's *The Birthday Party*

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ABSTRACT

The role and position of women in society have constantly been evolving, based on the socio-political demand of the times. Modernism stands on the bloody land of the two world wars and boasts about the scientific developments of the world. However, it also disrupts the public space/ private space binary and the gendered occupants of these spaces undergo an enormous shift due to multiple factors associated with age.

This paper delineates primarily the idea of viewing the woman through a divisive binary lens of either revering her as a Madonna, a goddess; or sexualizing her to the extent of labelling her a whore. The paper studies the two great Modern Dramatists, Harold Pinter and Bertolt Brecht, and their individual works. It establishes the spectrum of morality and sexuality that women are made to adhere to and on the pretext of which they are simultaneous, subjugated. It goes on to analyse how the two works, The Good Person of Szechwan and The Birthday Party, and the women in the plays deal with the categories that they are labelled with and whether are they able to free themselves of the oppressive powers at play, making sure to acknowledge that the playwrights themselves are from the other gender.

Keywords: Modern European Drama, Gender Studies, Modernism

" 'A life of feminine submission, of "contemplative purity', is a life of silence, a life that has no pen and no story, while a life of female rebellion, of "significant action," is a life that must be silenced, a life whose monstrous pen tells a terrible story." (Gilbert and Gubar 2000, 36)

This paper will indulge in the stories written by two male playwrights and try to bring out the female voices in the patriarchal world. It will illustrate the coming together of two extremes, the 'virginal mother' and the 'promiscuous woman' in the context of Modern Theatre. Before the modern age, there was little hope for women to transgress the binary of the angel and the madwoman.

Patriarchal structure, in the Modern period, reproduces itself in material reality, social spheres, and ideological spaces. Subsequently, patriarchy is a structure built on a set of ideas and principles about the 'rule of the patriarch or father figure'. It encompasses the majority of the society and has a 'center'. This 'center' is

Examining the Problematics of Material Ecofeminism in Indian Cinema

Priyanka Arora

Abstract

This paper tries to engage with the concept of Material Ecofeminism through the lens of 'Indian cinema', thereby, analysing films from regional cinema, like Hindi films (*Sherni*, *Bhediya*, *Kaun Kitney Paani Mein*); Malayalam film (*Aranyakam*); and Kannada film (*Taledanda*) to name a few.

Material Ecofeminism is the view that connects institutions of labour, power, and property as the sources of domination over both women and nature. It falls in the third wave of Ecocriticism as per Professor Scott Slovic. Multiple scholars like Vandana Shiva, Maria Mies, Stuart Curran, Ariel Salleh, and Charlotte Sussman, to name a few, have critically engaged with the category. The renewed interest in the field is exemplified by some of the recent publications such as, *Routledge Handbook of Ecofeminism and Literature*, *Routledge Handbook on Ecosocialism*, Vandana Shiva and Maria Mies's *Ecofeminism*, and *Ecocriticism: Big Ideas and Practical Strategies* by Professor Swarnalatha Rangarajan and edited by Professor Scott Slovic.

The paper is a novel attempt to read cinema through the lens of ecology and gender studies. There has been an attempt in 'Indian cinema' to project issues of gender oppression through parallel oppression of nature. The paper delineates the cinematic language being one of the key driving forces of change and effective medium for projection of material ecofeminism. The paper tries to bring forth the problematics of this engagement and how successful are these endeavours to create a more egalitarian and anthropoharmonic society, provided art has its own limitations.

Keywords: Material Ecofeminism, Ecocriticism, Indian Cinema, Ecofeminism, Film Studies.

indraprasth

WAR IN UKRAINE: THE GEO-STRATEGIC AND POLITICAL IMPLICATIONS FOR INDIA

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INTRODUCTION

President Viktor Yanukovych of Ukraine's 2013 stance against an association agreement with the European Union was the spark that ignited tensions between the Ukrainian people and Russian political pressure (Higgins, 2014). Protests against the government, culminating in the 2014 Ukrainian Revolution, were spurred by the strong resolve of Ukrainian residents and political parties favouring a nationalist approach in opposition to Russian influence (Conant, 2014). The incident sparked open hostilities between Ukrainians with a heightened feeling of national pride and a counter-anti-revolution and pro-Russian movement in the border regions. A crucial flashpoint for the war was the peninsula of Crimea. Pro-Russian soldiers invaded Ukrainian territory, sparking an effective armed battle and shutting off all communication and transportation with the rest of the country (Bebler, 2015). Crimea became the battlefield as the conflict progressed, revealing a strong counterattack led by an underappreciated Ukrainian military. The earlier uprising against the pro-Russian leader stoked an already strong feeling of independence and identity, which explains the intensity of the response (Sherr, 2020). Referendum, heavily slanted towards the promotion of demonization of the Ukrainian authorities and the control of the voting process, formalised Russia's annexation of Crimea (Bebler, 2015).

Donbass, a buffer zone between eastern and southern Ukraine, saw an escalation of fighting. The results of the 2010 Ukrainian election revealed a deeply divided nation, with a majority of supporters for Yanukovych clustered in the southeast, close to the Russian border (Conant, 2014). After Russia annexed Crimea, separatist groups arose across the Donbass areas. Violent riots, occupations of public institutions, and demands for segregation unfolded in Donetsk and Luhansk first, then spread to most of the neighbouring districts like a chain reaction (Mitrokhin, 2015). The conflict in Ukraine, which appeared at first glance to be a civil war between separatist rebel forces and the Ukrainian military, was supported by the Russian Federation and its forces in a "hybrid warfare" (Delcour & Wolczuk, 2015) to undermine Ukrainian legitimacy without running the risk of being accused and persecuted by international organisations. Ukraine, the Russian Federation, and the independence-seeking areas of Donbass have been engaged in a long process of peace-making since September 2014, when the first of several shaky ceasefires was established as part of the Minsk accord (Mitrokhin, 2015). While progress was made toward a peace deal at a summit in Paris, the military conflict was not ceased; instead, it entered a permanent state of "frozen conflict" (BBC, 2019). Despite the Minsk Agreements being negotiated in 2014/2015, which called for a ceasefire, the withdrawal of all foreign armed groups, and constitutional reform recognising the special status of Donetsk and Luhansk, fighting between Russian-backed separatists and Ukrainian government forces has continued in the Donbas for the last eight years.

Military action against Ukraine was initiated by Russia on 24 February 2022, with troops entering from Belarus in the north, Russia in the east, and Crimea in the south. Defending the people of the Donbas and "demilitarising and denazifying Ukraine" were stated as goals of the "special

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PUBLIC SERVICE DELIVERY IN THE ERA OF DIGITAL GOVERNANCE

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1. INTRODUCTION

To achieve continuous optimization of service delivery, constituency, participation, and governance through the transformation of internal and external relationships through technology, the Internet, and new media, digital governance primarily focuses on using ICT in all aspects of Government operations.

IT's influence on people's lives is undeniable, and it's just expanding. It is difficult, if not impossible, for most organisations to operate without extensively depending on information and communications technology, which have infiltrated almost every professional, commercial, and industrial activity. As no part of society functions in a vacuum, it stands to reason that the many forms of technology are also involved in interactions between individuals, groups, and organisations. Regarding social and information sharing, the government is not left behind. Organizations within the government use Technology to manage their states, giving rise to the field of Electronic Governance.

Numerous case studies published by various multilateral organisations show that digital can be used in a wide variety of contexts to speed up the spread of information, enhance the effectiveness of public services, make government administration more transparent and accountable, cut down on corruption, and encourage citizen participation in municipal government. However, the delivery of such advantages in large-scale initiatives is seldom verified by analytical studies or impact evaluations (Bhatnagar and Singh 2010). A recent anti-corruption book (Bhatnagar, 2013) acknowledged the crucial role of Digital in lowering corruption, but it also noted how difficult it has been to fully realise this promise. Although it is crucial to maintain service delivery, governments must increasingly consider e-government and e-governance, as indicated by the United Nations Public Administration Network (UNPAN) poll of 2012. Expanding e-reach government's would let the government play a more transformational role in creating unified systems that work together smoothly. It is possible to increase the deployment of e-governance since its current use is only minimal in emerging nations in Asia. Realizing the full potential of Digital deployment to enhance service delivery is crucial. In addition to learning how to tap into this potential, knowing which aspects are crucial for widespread implementation is essential.

The possible value of implementing Digital inside businesses has been conceived in various ways. One advantage is Digital's capacity to mitigate the principal-agent dilemma by decreasing information asymmetry (Gurubaxani and Whang 1991). Further advantages that apply to businesses of all sizes include increased access to markets and suppliers, streamlined interactions with all stakeholders, and more widely available information thanks to electronic publication.

2. PUBLIC SERVICES DELIVERY

Both industrialised and developing nations have had a long-standing interest in finding ways to enhance the delivery of public services, here defined as those services given to the public by or on behalf of governments (local, municipal, or larger-scale). The emphasis here is on the measures taken and planned to enhance the delivery of public services in OECD nations.

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भाषा का प्रश्न और सिनेमा

–डॉ. नीतू गुप्ता

भाषा ने मानव–मन के उद्गारों को व्यक्त करने में जो स्तुत्य योगदान दिया है उसी का परिणाम है कि मनुष्य के मन में उठने वाले विचार, भाव यहाँ तक की जो स्वप्न वह सोती–जागती आँखों से देखता है सभी भाषा में ही साकार हो पाते हैं। यह भाषा ही है जिसने साहित्य को संभव बनाया है। देश जब गुलामी की बेड़ियों में जकड़ा छटपटा रहा था तब इसी भाषा ने अपनी वास्तविक शक्ति दिखाई और समूचे देशवासियों को एक धागे में पिरोकर अंग्रेजी हुकूमत के खिलाफ एक मुहिम छेड़ी जिसमें सभी अंग्रेजों को देश छोड़कर भागना पड़ा। यह भाषा ही है जिसने मूक सिनेमा को गति एवं अभिव्यक्ति दोनों प्रदान की। मूक सिनेमा में अभिनय तो लाजवाब था किन्तु अभिव्यक्ति का अभाव दर्शकों को खलता था। सन् 1934 के बाद की फिल्मों में भाषा के आगमन ने सिनेमा को दृश्य के साथ–साथ श्रव्य माध्यम भी बना दिया।

भाषा और सिनेमा के इस मेल से एक नए सिनेमाई युग का आरम्भ हुआ। बोलती फिल्मों के आरंभिक दौर में निर्देशक ने भाषा की रचनात्मकता का बेहद सफल और प्रभावी प्रयोग किया जिसमें बाद में धीरे–धीरे नाटकीयता का भी समावेश होने लगा। सिनेमा ने भाषा और भाषाई संस्कृति दोनों के स्वरूप को विकसित किया। किसी भी फिल्म में पात्रों की परिस्थितियों और परिवेश के आधार पर ही भाषा का प्रयोग किया जाता है।

भाषा और सिनेमा के इस मेल से एक नए सिनेमाई युग का आरम्भ हुआ। बोलती फिल्मों के आरंभिक दौर में निर्देशक ने भाषा की रचनात्मकता का बेहद सफल और प्रभावी प्रयोग किया जिसमें बाद में धीरे–धीरे नाटकीयता का भी समावेश होने लगा। सिनेमा ने भाषा और भाषाई संस्कृति दोनों के स्वरूप को विकसित किया। किसी भी फिल्म में पात्रों की परिस्थितियों और परिवेश के आधार पर ही भाषा का प्रयोग किया जाता है। प्रत्येक भाषा–भाषी समाज में भाषा का स्वरूप कभी एक जैसा नहीं रहता। समय बदलने के साथ–साथ उसमें निरंतर परिवर्तन होता रहता है। यही परिवर्तन सिनेमा में भी दृष्टिगत होता है। फिल्मों में देशकाल–वातावरण के अनुसार भाषा का चयन किया जाता है। आमतौर पर हिन्दू देवी–देवताओं एवं पौराणिक विषयों पर आधारित फिल्मों में संस्कृतनिष्ठ हिंदी का प्रयोग होता था, किन्तु ऐतिहासिक विशेषकर मुगलकाल को प्रस्तुत करने वाली फिल्मों की भाषा उर्दू मिश्रित हिंदी होती थी। इसमें भी विशेष ध्यान इस बिंदु पर दिया जाता था कि संवाद बोलने वाला पात्र किस पृष्ठभूमि से सम्बन्ध रखता है। उदाहरण के तौर पर मुगल–ए–आज़म फिल्म से हम इस बिंदु को भली–भाँति समझ सकते हैं। शहजादे सलीम का यह संवाद कि "मुझ पर जुल्म ढाते हुए आपको यह सोचना चाहिए

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Transition Metal Chemistry
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Copper(II) complex of N,N´-bis-(benzimidazol-2-yl-methyl)-hexane-1,6-dicarboxamide ligand: synthesis, structure and catalytic oxidation of amines in ionic liquid

Gauri Ahuja[1] · Kuldeep Mahiya[2]

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Abstract

A new copper(II) complex, $[Cu(L)NO_3]NO_3{\cdot}2H_2O$, has been synthesized with *N, N'-bis*-(benzimidazol-2-yl-methyl)-hexane-1,6-dicarboxamide as a ligand, L = GBSA (Ahuja and Mathur in Spectrochim Acta Part A 83:180–186, 2011). The single-crystal X-ray structure characterization confirms that copper(II) ion in the complex possesses a distorted penta-coordinate geometry with one of the nitrate anions bound to copper(II) as a monodentate ligand. The N_2O_2 equatorial plane of the copper(II) complex comprises of carbonyl oxygen atom (O1), nitrate oxygen atom (O3) and two benzimidazole nitrogen atom (N1,N4), while the axial position is occupied by oxygen atom (O2) of amide carbonyl. Low-temperature EPR study indicates distorted tetragonal geometry, while cathodic $E_{1/2}$ value indicates stabilization of copper in + 2 oxidation state in solution. TGA data demonstrated thermal decomposition pattern of the complex. The complex was studied as a catalyst for the oxidation of aromatic and aliphatic primary and secondary amines in ionic liquid, $[BMIM][BF_4]$ as a solvent and TBHP as an external source of oxygen at 45–50 °C, affording good yields under mild conditions. Products formed were analyzed by GCMS.

Introduction

Ionic liquid is defined as a salt with melting point below the boiling point of water. Ionic liquids are known by different names such as neoteric solvents, designer solvents, ionic fluids and molten salts [2]. Most of the ionic liquids are composed of organic cation and inorganic anion. In order to be liquid at room temperature, the cation should preferably be unsymmetrical, i.e., the alkyl groups should be different. Also, depending upon the combination of cation and anion, polarity and hydrophilicity or hydrophobicity of ionic liquids can be varied [3]. Due to its non-volatility, strong dissolution, low flash point, high thermal stability, non-explosive nature, high polarity, high electrical conductivity and good catalytic activity, they have become good alternative to the conventional volatile liquid solvents. Therefore, it serves as an environmental friendly solvent which has replaced conventional catalysts having limitations pertaining to yield, selectivity and reaction conditions. Catalytic oxidation of amines is an important functional transformation, leading to the formation of hydroxyl, nitroso, nitro, amides, acids, aldehydes, ketones, nitriles, etc., as products or by-products. The conventional methods involved in the oxidation process often require hazardous reagents, severe reaction conditions, expensive catalysts and substrates. Various oxidizing reagents, viz. hydrogen peroxide, peracids and dioxiranes, have been utilized for the oxidation of secondary amines [4, 5]. Oxidative transformation of primary amines to nitriles has been carried out in the past using stoichiometric metal oxidants such as nickel peroxide [6, 7], copper reagents in combination with oxygen [8], silver reagents [9], cobalt peroxide [10] and lead tetra acetates [11], $NiSO_4/K_2S_2O_8$ [12, 13], $RuCl_3/O_2$ [14], $RuCl_3/K_2S_2O_8$ [15] and ruthenium complex/O_2[16, 17]. DuPont et al. extensively reviewed the application of ionic liquids as catalytic phase in various organometallic reactions [18]. Catalytic applications of metal nanoparticles have also been explored in ionic liquid media by Migowski and Dupont [19]. The present work that focuses on utilizing ionic liquid $[BMIM][BF_4]$,1-butyl-3-methylimidazolium tetrafluoroborate, is an example

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Bio-genic synthesis of calcium coated zinc oxide nanoparticles from *beetroot extract* and their photo-degradation study on methylene blue and rhodamine B

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ABSTRACT

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The latest advancements in the nano-science field have gathered significant focus from different sectors since they could be used for diagnosing, detecting, purifying industrial waste (Sharma et al., 2017), catalysis (Gangadoo et al., 2017), therapeutics (Venkatasubbu et al., 2016), food technology (Menon et al., 2018)and role in energy utilization or production. The contamination of water resources, including groundwater and reservoirs, as a consequence of increased industrialization and population growth, has made water treatment one of today's most concerning challenges. As a result, it's critical to clean and recycle industrial and municipal wastewater. Due to their outstanding benefit as adsorbents and for use in filtering, nanoparticles have attracted much attention in the last decades to treat wastewater (Iravani, 2011). Photocatalysts play a very important role in pollutant treatment (Nayak and Sahu, 2022). The keyword "photocatalysis" first appeared in the scientific literature in 1911 (Bruner and Kozak, 1911).

Photocatalyst" is derived from two words "photo," which means light, & "catalyst" which is chemical agent that fastens the chemical reactions by absorbing light or photons. Since they have a potential in reducing environmental pollution, improvements have been made to the photocatalytic activity or reaction rates (Abdeltif et al., 2020a). This field has a lengthy history, and several useful catalysts have already found a market. Because pollutants should be adsorbable on catalyst surfaces, materials with a wide surface area and strong interactions have been considered for the general removal of pollutants. Under Visible Light illumination, photogenerated holes and electrons play crucial roles, as depicted in Fig. 1 In the CB, the electrons travel to the catalyst's surface and react with oxygen to form active: O_2^- radicals, and holes in VB react to the OH/H_2O-absorbed species to form OH free radicals. The h+ , O^{2-}, and OH free radical species consequently have an vital role in the degradation of pollutants. Over 16,000 scientific papers, including the terms "photocatalyst" or "photocatalysis", have been published in the previous 10 years, and the number of publications is rising each year (Rueda-Marquez et al., 2020).

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ORIGINAL RESEARCH ARTICLE

Photodegradation of Methylene blue and Rhodamine B using potato starch mediated zinc oxide nanoparticles and its calcium nanocomposites: Greener approach

Darshan Singh[1*], Anuradha[1], Surendra Kumar[2], Amar Kumar[3], Neelu Dheer[4], M. Ramananda Singh[5], Rajni Kanojia[6], Sangeeta Kaul[7], Ishwar Prasad Sahu[8]

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ABSTRACT

Zinc oxide is considered an effective photocatalyst for degradation of several organic contaminants found in wastewater. This work reports the biological synthesis of zinc oxide nanoparticles and its calcium nanocomposites to study the photocatalytic deterioration of two dyes, viz. Rhodamine B and Methylene blue, under natural sunlight. Nanoparticles were synthesized using zinc acetate and starch extracted from potato at pH 7–8. Potato starch acts as both a capping agent and a reducing agent. They were characterized spectroscopically via XRD, SEM, HR-TEM, EDAX and FT-IR techniques. Bean/spherical shaped ZnO NPs were obtained in the size range of 29–49 nm whereas calcium coating on ZnO decreased the particle size, i.e., 25–35 nm. Their photocatalytic ability to degrade Rhodamine B and Methylene blue was studied under natural sunlight and monitored using UV-Vis spectrophotometer. Synthesized ZnO nanoparticles and its calcium coated ZnO nanocomposites showed promising results in degradation of these dyes. Methylene blue was completely degraded in an hour at 8 mg of the sample. Although degradation of Rhodamine dye was slow, synthesized samples were effective catalysts as compared to the ones reported in the literature.

Keywords: ZnO NPs; Ca-ZnO Nanocomposites; Potato Starch; Methylene Blue; Rhodamine B

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1. Introduction

World appears as an aesthetic place due to the colours in the surrounding. These are either natural or man-made. The key component that renders colours around us is dyes. Dyes are primarily responsible for the colour of fabrics and drugs. Dyeing process requires a massive amount of water for processing and activation of colour. There are several industries like tanneries, food processing, cosmetics, textile, and pharmaceuticals that discharge toxic contaminants[1,2]. Textile industries are mainly responsible for water pollution as they discharge unwanted effluents and release that in nearby water bodies. Moreover, in some cases, wastewater is directly used for irrigation purposes that is dangerous to edible crops as well as to soil. Rapid industrialization has led to the tremendous production of dye loaded wastewater in the past few

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Participation of women sportsperson from India in the modern Olympic games till 2020: A study

Dr. Azad Singh

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Abstract
The primary objective of the study is to discuss the female participation from India in the Modern Olympic Games till 2020. This is a descriptive research based on the secondary data collected from sources such as the factsheets and reports available on the websites of the International Olympic Committee (IOC) and the Indian Olympic Association (IOA) and many other publications published by various authors on this issue. The results represent that the participation of women sportspersons from India in the Modern Olympic Games was uncertain and insignificant till 2000. From 2000 onwards, this number increased and in 2016 Rio Olympic Games, the female participation from India raised to 46.15% of the total participation from the country. This increase can be attributed to a number of initiatives introduced to broad base sports in India and also to produce excellence.

Keywords: Women sportsperson, Olympic games, Olympic committee

Introduction
"There is no chance for the welfare of the world unless the condition of women is improved. It is not possible for a bird to fly on only one wing." The 'gender diversity challenge' portrays that, though there is a significant progress toward gender equality in sports, the male and female sportsperson are still treated differently in many aspects. Evidences suggest that the sports managers, coaches and fans treat women athletes differently and their performances are often seen as inferior to that of their male counterparts in terms of competitiveness. This perception is creating barrier for the women sportspersons to get equal access to resources and facilities necessary to attain excellence in sports. The 'exceptional performance' is placed at one end of the continuum, while the 'poor performance' is placed at the other end. Examination of the collected data reveals that the men and the women sportspersons fall all along the continuum.

This means that some women will outperform the men in sports, as some men will outperform the women. From this analysis, it can be said that the performances of female athletes are not inferior to that of the male athletes in all aspects and thus equal access must be provided to the female sportspersons. Otherwise, such dispersion cannot be removed. Women participation in leadership positions in sporting organizations was insignificant for a long period of time the social expectations from leaders are that they should be caring, supportive and nurturing this. On the contrary, the social expectations from the male leaders are that they should be strong, authoritative and someone who can take charge.

The authors stated that this social perception acts as a deterrent for the women participation in the leadership positions in the sporting organizations.

India is a country where traditional attitude and religious myths of people have constructed to form the social culture that defines the gender roles in the society. An Indian woman has traditionally been observed as a liability, which has to be maintained and has roles limited towards the family and household. The rigid belief of the society has always considered women to be naturally weaker than men and therefore the negligence towards women in any aspect of life has been huge. In a country where there has been a general lack of healthy attitude towards women, a negative approach towards the women playing sports is evident throughout the history. The participation of women in sporting activities has been discouraged not only because of their traditionally defined roles in the society, but also because of the mentality of people which defines women to be incapable physically and

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The Idea and Practice of Democracy | Suranjita Ray

Many incidents in the recent days in particular that curtail freedom of speech and expression, compel us to engage once again with the idea and practice of democracy. Freedom of speech and expression guaranteed in the Constitution of India in Article 19 as a Fundamental Right is the essence of liberty. It includes the right to voice one's opinion, the right to seek information and ideas, and the right to receive and impart information, which are essential to strengthen democracy. However, it is not an absolute right and 'reasonable restrictions' can be imposed on its exercise for certain purposes as specified in Article 19(2). Freedom of speech and expression can be reasonably restricted in interest of the sovereignty and integrity of India. security of the state, friendly relations with foreign states, public order, decency and morality. contempt of court, defamation and incitement to an offence. Thus speeches or expressions which incite violence or commitment of offence that creates internal disorder or disturbs public order and public safety, or undermines the security of State, decency or morality of society. and affects the reputation or status of another person which amounts to defamation, need to be restricted.

But, many a times the restrictions imposed are found unreasonable. At this conjecture, the most important of these is invoking sedition charges to crush dissent, disagreement, and criticism against the government. Misuse of law of sedition to supress dissenting voices of the people during the last decade and a half has put many human rights activists, journalists, artists and scholars behind bars. Increasing arrests and humiliations are everyday experiences which remind us of the undemocratic propensities of the State. Right to free speech, free movement and peaceful assembly have become precarious today. Understanding democracy cannot be isolated from the lived experiences of people which undermine democratic values, norms and ethos.

While the essence of democracy is to preserve the space for debates, dialogues, differences of opinion, divergent thoughts and perceptions, and dissent, we see increasing decline of such space. The three contentious Farm Laws are the immediate reason for farmers protests and massive unrest countrywide that has drawn the attention of the world. The protests by the farmers have continued unabated in several states and at the borders of national capital for more than hundred days now. While the Prime Minister calls the farm laws as a 'watershed moment' in agriculture and explicates that it will provide more opportunities to the farmers to sell their produce at a better price thereby increasing their income, the protesting farmers see the laws as 'anti-farmer' and unfair. They demand repeal of the farm laws alongside the long-pending implementation of the recommendations of Swaminathan Commission.

Several rounds of talks till 22 January 2021 between the government and several farmers union have ended without any solutions. The government's usual strategy to blame the opposition parties for spreading pernicious rumours/misinformation and misleading campaigns to instigate the protesters has become less convincing as more and more people from several backgrounds have overcome their fears and helplessness to stand united and express solidarity with the farmers. It is a historical movement that has gained momentum as it not only raises basic demands of farmers but also pushes for the right to peaceful protest and the right to dissent in a democratic country. The Prime Minister's unequivocal message that there is no going back on the farm laws and statement calling the activists as andolanjeevi (professional protesters) and parjeevi (parasites) has only added to the distrust.

Abridged Dialogical Spaces

Research Article

Micropropagation of *Leucaena leucocephala* from *in vitro* cultured shoot tip explants

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ABSTRACT

Multiple shoots have been produced from shoot tip explants excised from *in vivo* grown plants on MS + BA medium. These shoots produced multiple roots when subcultured on a fresh MS medium containing IAA. The browning of explants was inhibited using polyvinylpyrrolidone which is supposed to absorb polyphenols as the main cause of browning of explants.

Keywords: Callusing, Multiple shoots, Polyvinylpyrrolidone, Shoot tips

INTRODUCTION

Forests are the best source of renewable energy and also provide raw materials for several important industries. Among leguminous trees are of special interest from an ecological point of view, since many of them can readily fix atmospheric nitrogen. Therefore, it is essential to improve our fabaceous forest trees using tissue culture techniques and present plant biotechnological approaches. The application of tissue culture techniques offers novel and quick means of improving trees over the conventional time-consuming breeding methods. In addition to that, height of trees and long life put further hindrance. The genetically superior trees with fast growth rate can be rapidly multiplied through micropropagation. Mascarenhas and Muralidharan (1989) have summarized the work on tissue culture studies of forest trees in India. The first report of tissue culture using shoot tip cultures of a leguminous tree was published by Skolmen and Maps (1976) in *Acacia koa*. In their studies, shoots were regenerated from shoot tip derived callus though at a very low frequency. From literature survey, it has been noticed that leguminous trees are very recalcitrant for *in vitro* differentiation. However, there are some positive reports where regeneration has been achieved using juvenile explants excised from *in vitro* grown young seedlings, for example, *Albizia lebbeck* (Gharyal and Maheshwari, 1983), *Dalbergia sissoo* (Mukhopadhyaya and Ram, 1981), *Acacia nilotica* (Mathur and Chandra, 1983), *Leucaena leucocephala* (Datta and Datta, 1985; Dhawan and Bhojwani, 1985), *Dalbergia latifolia* (LakshmiSita *et al*., 1986), and *Sesbania bispinosa* (Kapoor and Gupta, 1986). There are very few reports on clonal propagation using explants, excised from field grown mature plants. In these studies, either axillary buds from nodes or apical buds have responded well, for example, in *Prosopis cineraria* (Goyal and Arya, 1984), *Albizia procera* (Ror and Datta, 1985), *L. leucocephala* (Datta and Datta, 1985), and *D. latifolia* (LakshmiSita *et al*., 1986).

MATERIALS AND METHODS

Seeds of *Leucaena* were obtained from Pratap Nursery, Dehradun, and were sown in the Botanical Garden of the Department, Delhi University. Young shoots 2–3 cm were excised from 5-year-old trees of *Leucaena* growing in botanical garden. Shoot pieces were washed with tap water several times and finally surfaced sterilized with chlorine water in the culture room inside a laminar flow cabinet for 10–20 min. Subsequently, they were washed thrice with sterilized distilled water (2–3 min each) to remove all traces of chlorine. Later, just 2–3 mm long shoot tips containing 3–4 leaf primordia were excised from sterilized twigs. All steps from surface sterilization to inoculation were carried out under sterile conditions in a laminar flow placed in the culture room. MS (Murashige and Skoog, 1962), NB (Nitsch, 1969), and B_5 (Gamborg *et al.*, 1968) basal as well as supplemented with various phytohormones (BA, IAA, and NAA) were used. All media contained 3% sucrose (BDH) and 0.8% agar (Difco-Bacto). The pH of all media was adjusted to 5.8 before autoclaving. Approximately 20 ml of the medium was poured into each culture tube and finally autoclaved using standard parameters. All cultures were maintained in the culture room

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Annealing of deep level defects in GaAs nanostructures by ion beam irradiation

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ABSTRACT

Present study reports the fabrication of Gallium Arsenide (GaAs) nanostructures on silicon (Si) substrates with the help of GaAs ions produced by hot and dense argon plasma in a modified dense plasma focus device. The fabricated nanostructures are further irradiated by Ar^{2+} ion beam having energy of 100 keV and fluences of 1×10^{13} ions/cm^2, 5×10^{14} ions/cm^2 and 5×10^{15} ions/cm^2 in a ion beam accelerator. The morphological, stoichiometric and optical properties of as-fabricated and ion beam irradiated nanostructures have been compared to study the presence of defect states. As-deposited GaAs nanodots were found to be modified as nanostructured films upon ion irradiation. Excess arsenic present in as-deposited nanodots as deep level defect, is removed from ion irradiated nanostructured films. Thus, we found that the deep level defect states i.e., arsenic antisite (EL2) were annealed out in ion irradiated samples as is evident from Raman and photoluminescence spectra. It is found that ion irradiation reduces the EL2 defects in nanostructured films which have immense potential applications in enhancing efficiency of optoelectronic and electronic devices.

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1. Introduction

Gallium arsenide (GaAs) nanostructures are the potential candidate for making high efficient optoelectronics and electronic devices [1–3]. The efficiency of these devices can be further increased by using defect free GaAs nanostructures. In general, GaAs nanostructures possess structural and electronic defects such as dislocations, stacking fault, Arsenic antisite etc [4–6]. Defects introduced due to arsenic antisite introduce a deep level in the middle of the band gap which is commonly known as EL2 defect. EL2 is main native defect found in GaAs nanostructures, which reduces the performance and efficiency of electronic and optoelectronic devices [7]. Earlier reports [8–13] suggest that the origin of EL2 defect is arsenic (As) antisite (As_{Ga}) present in the GaAs nanostructures due to excess of As. Thus, it is necessary to remove the excess As from nanostructures, which passivates the EL2 defect and enhance the efficiency of devices.

In an earlier study [14], it was observed that the as-deposited GaAs nanostructures when fabricated using high fluence and highly energetic ions in a modified dense plasma focus (DPF) device, possesses excess of Arsenic which is the main cause of EL2 defects. The irradiation of GaAs nanostructures by low energy ion beam (having energy from few keV to hundreds of keV) can reduce such deep level defects and increase the efficiency of device fabricated on the irradiated nanostructures. Thus, in present study, as-deposited GaAs nanostructures were ion irradiated and its effect on the morphological, stoichiometric and optical properties of nanostructures has been reported.

2. Experimental details

The GaAs nanostructures were fabricated on silicon substrates. GaAs wafer of purity 99.99% was cut in the form of a disc of diameter 17 mm and fixed on the top portion of the modified anode of DPF device. The details of modification and formation of high temperature, high density and extremely non-equilibrium plasma in modified DPF device has already been reported earlier [14–17]. The hot, dense and extremely non-equilibrium plasma formed at top of the modified anode ablates GaAs target and subsequently GaAs is deposited on silicon substrates kept at an optimized distance of 5.0 cm from the top of central anode. Previous studies indicated that two bursts of plasma of duration ~100 ns (shot) were needed for the formation of nanodots [14–17]. The thickness of as-deposited films was found to be ~30 nm measured using

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Zinc Oxide Nanostructures Fabricated under Extremely Non-Equilibrium Plasma Conditions

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Keywords: Zinc Oxide, Nanostructures, Plasma assisted deposition, Optical band-gap, Photoluminescence.

Abstract. In the present work, extremely non-equilibrium, high temperature and high density argon plasma is used for producing ions from pellet of zinc oxide (ZnO) fitted on top of anode. These ions along with energetic argon ions move vertically upward in a fountain like structure in post focus phase of plasma dynamics and material ions get deposited on the glass substrates placed at 4.0 cm from anode top. This process of production of material ions from ZnO pellet leads to nucleation and nanostructures formation with one and two bursts of focused plasma. The surface morphology studied using scanning electron microscopy shows the formation of nanostructures with mean size about 8 nm. The structural properties of nanostructures in X-ray diffraction pattern show [100] and [002] planes of hexagonal ZnO. Photoluminescence studies show peaks related to defect transitions. The band-gap of nanostructures found from Tauc plot is smaller than that of the bulk ZnO. The resultant morphological, structural and optical properties of nanostructures suggest the possible applications in visible optoelectronic devices.

Introduction

The nanostructures are the ideal systems for studying transport mechanisms in one-dimensional systems for developing new generation nanodevices with high performance. The compound semiconductors of II-VI group such as zinc oxide (ZnO) has received intense attention due to its remarkable combination of physical and optical properties. ZnO has wide band gap of 3.37 eV, it has high exciton binding energy (60 meV) and it also provides the diverse growth of morphologies. These properties make ZnO, a key material in the fields of nanotechnology and wide band-gap semiconductor [1,2]. The nanostructures of ZnO show shift in the band gap due to the quantum confinement effect. This shift of the band gap results in the application of the nanostructures in the devices operated in the shorter wavelength range. This property is useful for the fabrication of UV light emitting devices from ZnO nanostructures. In addition, the high electrical conductivity and optical transmittance of ZnO in visible region render the ZnO nanostructures an ideal candidate for applications like transparent conducting electrodes in flat panel displays and window layers in solar cells [3].

The fabrication of ZnO nanostructures have been reported by several techniques such as RF sputtering [4], pulsed laser deposition [5], metal organic chemical vapor deposition [6], thermal evaporation [7], electrochemical [8] etc. The fabrication of ZnO nanostructures on silicon and quartz substrates using modified dense plasma focus (DPF) device have been reported earlier by Malhotra et. al. [9] in which the change in morphological and optical properties of ZnO nanostructures were observed upon changing the substrate from silicon to quartz. Optical band-gap studies have not been reported by Malhotra et. al. [9] which is necessary to determine the applications of fabricated ZnO nanostructures in optoelectronic devices over a specific optical region. Thus, it is necessary to explore the change in morphological, structural, optical etc. properties of ZnO nanostructures when fabricated on glass substrate.

In this paper, we reported the fabrication of ZnO nanostructures on glass substrate using ions of ZnO generated by hot, dense and extremely non-equilibrium argon plasma produced in modified DPF device. Morphological, structural and optical properties of fabricated ZnO nanostructures have been presented. The optical band-gap studies were also carried out to determine the spectral range of the optoelectronic devices.

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Monoclinic Zirconium Oxide Nanostructures Having Tunable Band Gap Synthesized under Extremely Non-Equilibrium Plasma Conditions †

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Abstract: Zirconium oxide (ZrO_2) is a wide and direct band gap semiconductor used for the fabrication of optoelectronic devices. ZrO_2 based optoelectronic devices span a wide optical range depending on the band gap of ZrO_2 material. The band gap of ZrO_2 can be tuned by fabricating it to the nanoscale. In this paper, we synthesized the ZrO_2 nanostructures on quartz substrate using ZrO_2 ions produced by the ablation of ZrO_2 pellet due to high temperature, high density, and extremely non-equilibrium argon plasma in a modified dense plasma focus device. Uniformly distributed monoclinic ZrO_2 nanostructures with an average dimension of ~14 nm were obtained through X-ray diffraction and scanning electron microscopy studies. The monoclinic phase of ZrO_2 nanostructures is further confirmed from photoluminescence (PL) and Raman spectra. PL spectra show peaks in ultra-violet (UV), near-UV, and visible regions with tunable band gap of nanostructures. A similar tunability of band gap was observed from absorption spectra. The obtained structural, morphological, and optical properties are compared to investigate the potential applications of ZrO_2 nanostructures in optoelectronic devices.

Keywords: nanocrystalline materials; zirconium oxide; synthesis; luminescence; energy band gap

1. Introduction

Zirconium oxide (ZrO_2) is an interesting semiconducting material with a wide band gap, which has been studied extensively to explore its fundamental properties for making highly efficient devices. The band gap of ZrO_2 decreases with the increase of the processing temperature, which makes it more conductive, and hence it can be used in applications-oriented research. ZrO_2 has a high melting point, high mechanical and thermal resistance, high dielectric constant, and low electrical conductivity. ZrO_2 is also chemically stable with excellent hardness and biocompatibility, which renders it as a suitable candidate to be used for chemical, optical, dielectric, and mechanical applications [1–3]. ZrO_2 has the potential to be used in making fuel cells [4], protective coatings for mirrors [3], and optoelectronic devices [5]. ZrO_2 possess a high dielectric constant, which makes it an ideal candidate for the replacement of conventional gate oxide in field effect transistors in the future generation nanoelectronic devices.

The physical properties of ZrO_2 are influenced significantly by its crystal structure. ZrO_2 exists in three polymorphic phases depending upon the growth temperature, that is, monoclinic (exists at low temperatures below 1150 °C and is a thermodynamically stable phase), tetragonal (exists at intermediate temperatures within the range of 1150–2370 °C), and cubic (exists at very high temperatures greater than 2370 °C) [6]. The monoclinic crystal structure, being the

Metal-Oxide-Semiconductor Capacitors Fabricated on Zirconium Oxide High-K Gate Dielectric Nano-Layers

Onkar Mangla, Savita Roy

Abstract*— In this study, we have fabricated zirconium oxide (ZrO_2) nanolayers on silicon substrates by ablation of ZrO_2 pellet due to interaction with the high temperature, high density and extremely non-equilibrium argon plasma in a modified dense plasma focus device. ZrO_2 nanolayers are fabricated with two bursts of focused plasma on silicon substrates placed at distances of 4.0 cm and 5.0 cm from anode top. The thickness of nanolayers is found to be ~ 30 nm and ~ 20 nm for 4.0 cm and 5.0 cm substrate distances, respectively. Scanning electron microscopy (SEM) studies show formation of uniform nanolayers with nano-size structures of average size ~ 26 nm and ~ 19 nm for 4.0 cm and 5.0 cm substrate distances, respectively. Atomic force microscopy analyses further confirms the size and morphology of nanolayers obtained in SEM results. Current-voltage and capacitance-voltage measurements are done in Al-ZrO_2-Si metal-oxide-semiconductor (MOS) capacitor configuration. Fabricated MOS capacitors have low leakage current density of about 1.72×10^{-8} A/cm^2 at 1 V and capacitance density of about 2.2 μF/cm^2. The conduction mechanisms which governs the electrical properties of MOS capacitors are found to be field/tunnel emission and Schottky emission in low and high electric field regimes, respectively. The fabricated MOS capacitors have improved electrical properties in terms of low leakage current and high capacitance density as compared to others reported in literature which is advantageous for next-generation MOS nanoelectronic devices.

Keywords: Zirconium oxide; nanolayers; dense plasma focus; metal-oxide-semiconductor; nanoelectronics.

INTRODUCTION

The next-generation nanoelectronic devices require miniaturization of metal-oxide-semiconductor field effect transistors (MOSFETs), which is obtained by reducing the thickness of gate dielectric to sub-100 nm range [1,2]. The gate dielectric which was preferred in MOSFETs is silicon dioxide (SiO_2) before the sub-100 nm technology node. In sub-100 nm technology node SiO2 should be further scale down to have a thickness below 2 nm. The scaling of SiO_2 below 2 nm causes high leakage current and reliability issues such as tunneling [1-3]. In next-generation MOS technology this problem can be alleviate by using materials having high-κ (high dielectric constant) as gate dielectric. High-κ material when used as gate dielectric will results in equivalent capacitance even with physically thicker layer. The high-κ materials used presently as gate dielectric are having several drawbacks like low mobility and interface defect etc. which leads to undesirable carrier scattering [4] and degrade the performance and quality of next-generation MOS devices. Thus, it is necessary to investigate new high-κ material for MOS device technology.

Several high-κ materials such as titanium dioxide [5], tantalum oxide [6], aluminum oxide [7], hafnium oxide (HfO_2) [8], lanthanum oxide (La_2O_3) [9] and ZrO2 [10] have been used as gate dielectric to replace SiO_2. Out of the several high-κ material, HfO_2 is the most explored material for gate dielectric and it also shows improved electrical properties which make it one of the suitable high-κ material for gate dielectric. On the other hand, ZrO_2 is less explored material as gate dielectric but it possess several electrical and structural properties which are superior than HfO2 such as high-κ value of about 26, wide band gap of about 5.7 eV, stable with silicon substrate and gate electrode metals. This makes ZrO_2 more suitable and desirable gate dielectric material than HfO_2. However, the electrical properties of fabricated MOS capacitor are also depends on the method of fabrication of dielectric material.

ZrO_2 thin film for MOS capacitor applications has been deposited by several techniques such as atomic layer deposition [11], e-beam evaporation [12], plasma enhanced chemical vapor deposition [13] and sputtering [14]. Among them plasma based techniques are advantageous because they use ion implantation for deposition. In the similar manner, we have used the modified dense plasma focus (DPF) device making use of high-temperature, high-density and extremely non-equilibrium argon plasma for the ablation of solid target material. The modified DPF device has already been used for deposition of HfO2 [8] and La_2O_3 [9] for MOS capacitor applications.

In this paper, we reported the fabrication of ZrO_2 nanolayers on silicon substrates through material ions generated due to ablation of ZrO_2 pellet by hot, dense and extremely non-equilibrium argon plasma in a modified DPF device. The nanolayers are comprehensively analyzed for their morphological properties using scanning electron microscopy (SEM) and atomic force microscopy (AFM). MOS capacitors fabricated on ZrO_2 nanolayers are analyzed for their electrical properties using current-voltage (J-V) and high frequency capacitance-voltage (C-V) measurements. The obtained results show improvement in MOS nanodevice

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STUDY OF MORPHOLOGICAL, STRUCTURAL, OPTICAL AND TRANSPORT PROPERTIES OF GALLIUM NITRIDE NANODOTS FABRICATED UNDER EXTREME PLASMA CONDITIONS

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Abstract - In the present paper, we reported the fabrication of gallium nitride (GaN) nanostructures on sapphire substrates through the ions of GaN. These GaN ions are generated due to the interaction of GaN pellet with hot, dense and extremely non-equilibrium argon plasma in a modified dense plasma focus device. In the process of fabrication two bursts of focused plasma were used and the sapphire substrates were placed at distances of 4.0 cm and 5.0 cm from the top of central anode. Morphological studies using scanning electron microscopy reveals formation of nanodots having average diameter ~ 71 nm and ~ 35 nm at 4.0 cm and 5.0 cm distances, respectively. Formation of nanodots have been further confirmed in transmission electron microscopy results. X-ray diffraction pattern show peaks corresponding to hexagonal GaN. Photoluminescence spectra show emission peaks corresponding to band edge, blue and UV emissions. Optical absorption studies reveals increase in optical band gap of nanodots from that of bulk GaN. Transport studies using Hall measurement indicate n-type nature of fabricated GaN nanodots. The obtained optical and transport properties of GaN nanodots suggest the potential applications of nanodots in GaN based nano-optoelectronic devices.

Keywords - Gallium Nitride, Dense Plasma Focus, Nanodots, Photoluminescence, Hall Measurement, Optoelectronic Devices.

I. INTRODUCTION

III-V compound semiconductors have gained considerable attention due to their applications in wide range of devices such as high power electronic devices [1] and ultraviolet (UV) and visible optoelectronic devices [2-4]. Among the several III-V compound semiconductors, III-V nitride based semiconductors are identified as potential candidates because of their desirable electronic and optical properties, thermal and chemical stability and doping capabilities. These properties of III-V nitride based semiconductors make them more suitable for optoelectronic device applications. The III-V nitride based semiconductors are available in both n- and p-type forms which make them suitable for blue-green light emitting diodes (LEDs) and near-UV laser diodes (LDs) [5]. Out of the all III-V nitride based semiconductors, gallium nitride (GaN) has attracted the interest of researchers due to its unique optical and electronic properties. GaN has a wide direct band gap of 3.41 eV at room temperature and is a promising material for short wavelength optoelectronic devices, such as LEDs and LDs. In addition, GaN is also useful in making high power and high temperature operation devices, on account of its high melting temperature, high breakdown field, and high saturation drift velocity [6,7]. GaN when fabricated at nanoscale show novel properties due to quantum confinement effect which render GaN nanostructures suitable candidate for applications in photovoltaic, LEDs and various nanodevices [8]. The applications of GaN nanostructures depend upon the morphology and optical properties. However, the morphology and optical properties are strongly depend upon the method of fabrication of GaN nanostructures. Several chemical and physical methods have already been used to fabricate wide range of morphologies of GaN nanostructures [9,10]. Apart from chemical and physical methods variety of plasma-based methods have also been used to fabricate GaN nanostructures [11-14]. Many of the above mentioned techniques suffer from several disadvantages as they need either high temperature in the furnace for synthesis or require long reaction time or require heating or biasing of substrates or annealing of deposited material. Modified dense plasma focus (DPF) device which is a source of hot, dense and extremely non-equilibrium argon plasma, when used for nanofabrication can overcome the shortcomings of the above mentioned techniques.

In addition to the method of fabrication the morphology and other properties of GaN nanostructures are also depend on the use of a compatible substrate. In general, the substrate should have similar lattice constant and thermal parameter for the growth of high quality GaN nanostructures. Sapphire is one of the substrates possessing these qualities and also it is the most used substrate for fabrication of GaN nanostructures due to its hexagonal symmetry and high temperature stability (~ 1000 ºC) [15]. In the present study, we fabricated GaN nanodots on sapphire substrate using the ions of GaN produced by the hot, dense and extremely non-equilibrium argon plasma in a modified DPF device. The fabricated nanodots are further analyzed to study their morphological, structural, optical and transport properties. The obtained results have been discussed and compared with earlier work done on glass, quartz and silicon substrates [16].

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Bilayer of zirconium oxide/lanthanum oxide high-κ dielectric fabricated for metal-oxide-semiconductor nano-electronic device applications

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ABSTRACT

This study reports the fabrication of zirconium oxide (ZrO_2)/lanthanum oxide (La_2O_3) bilayer on silicon substrates using the ions generated in a modified dense plasma focus device. Both ZrO_2 and La_2O_3 are fabricated using one burst of focused plasma each on substrates kept at a distance of 4.0 cm from top of the anode. The as-deposited bilayer is further annealed to study the effect of annealing on the characteristics of the bilayer. The bilayer is found to have uniform morphology as obtained in scanning electron microscopy and atomic force microscopy results. The uniformity of bilayer is found to improve upon annealing. These as-deposited and annealed bilayers are electrically characterized through current-voltage and capacitance-voltage measurements in a metal–oxide-semiconductor (MOS) capacitor configuration. The leakage current density and capacitance density of MOS capacitors fabricated on as-deposited and annealed bilayers, respectively are ~2.89×10^{-10} A/cm^2 and ~7.23×10^{-12} A/cm^2 at 1 V and ~2.18 μF/cm^2 and ~2.72 μF/cm^2. Conduction mechanism of MOS capacitor is field/tunnel emission and Schottky emission at low and high electric field, respectively. The annealed bilayers are found to possess improved morphological and electrical properties making them suitable candidate for future nano-electronic device applications.

1. Introduction

The next-generation nano-electronic device requires efficient metal–oxide-semiconductor (MOS) capacitors having smaller size and improved electrical characteristics in terms of low leakage current density and high capacitance density. Traditionally, silicon dioxide (SiO_2) was used as gate dielectric material in MOS device, which reaches its limitation when the thickness is reduced below 2 nm in sub 100-nm technology [1]. The limitation of SiO_2 such as high leakage current is alleviated by using high-κ gate dielectric materials. Several high-κ gate dielectric materials have already been investigated in earlier researches [2–4] to replace the SiO_2. In an earlier study [4], we have shown that use of zirconium oxide (ZrO_2) high-κ dielectric in MOS capacitors can result in improved electrical characteristic of the fabricated device. Moreover, it is reported in literature [3,5] that stacking of two high-κ dielectric materials one over another results in further improvement in the electrical characteristics of the fabricated MOS capacitors. This motivates us to investigate the use of novel stack of high-κ dielectric material ZrO_2/lanthanum oxide (La_2O_3) in MOS capacitors to be used in future nano-electronic device applications. In this study, we reports the fabrication of ZrO_2/La_2O_3 high-κ dielectric materials bilayer and their use in the MOS capacitors. The morphological and electrical properties of fabricated bilayer based MOS capacitors are compared for as-deposited and annealed bilayers.

2. Materials and methods

ZrO_2/La_2O_3 bilayers were deposited on p-type silicon substrates cleaned using standard RCA cleaning procedure. For deposition of La_2O_3 and ZrO_2 the powder of respective material of 5 N purity was compressed at 10 MPa pressure to form pellets, which were subsequently sintered at 800 °C for 4 h. The thickness and diameter of pellets were ~5 cm and ~13 cm, respectively. These pellets were fitted on modified anode of the dense plasma focus (DPF) device. In order to carry out deposition the silicon substrates were kept at an optimum distance of 4.0 cm from top of the anode. The modifications made in DPF device for nanofabrication and its detailed procedure were already reported in earlier studies [2,6]. One burst of focused plasma is used for deposition using each material pellet. The argon plasma having characteristics of high temperature, high density and extremely non-equilibrium formed

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Synthesis of gallium arsenide nanostructures for solar cell applications

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ABSTRACT

Gallium arsenide (GaAs) nanostructures are fabricated on gold coated silicon substrate with the help of GaAs ions generated by high density, high temperature and extremely non-equilibrium argon plasma in a modified dense plasma focus device. The nanostructures were found to have average dimension in range of 17 nm to 21 nm. It is found that the gold acts as a nucleating agent for growth of GaAs nanostructures. Emission peak in photoluminescence spectra confirms good quality of nanostructures related to its purity. These nanostructures are found to possess the high absorption in a wide optical range which will have applications in solar cell. Hall measurements reveal high carrier concentration of ~2.4 × 10^{19} cm^{-3}. The electrical properties show open circuit voltage of 0.50 V, short circuit current density of 32.7 mA/cm^2, fill factor of 80% and efficiency ~13.12%. The obtained optical and electrical transport properties indicate that the GaAs nanostructures so obtained are the potential candidate for solar cell applications.

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1. Introduction

Preparation of semiconductor nanostructures via different techniques has been the area of considerable interest since the last decade [1–6]. Of all other semiconductors, especially, the III-V class of semiconductor like gallium arsenide (GaAs) having direct band gap of 1.42 eV attracted much attention due to its wide range of applicability in device physics [7]. GaAs is the most suitable candidate for fabrication of photovoltaic devices [8], heterostructures [9], semiconductor lasers [10] and light emitting diodes [11]. The band gap of GaAs increases at nanoscale [5], which will lead to shift in the spectral range of photovoltaic devices such as solar cell and hence it can be used in broad spectral range. It is well known that materials with larger band gap have higher open circuit voltages and fill factors (FFs), whereas low band gap materials such as GaAs leads to high photoelectric current, which results in increase in the efficiency of the solar cell. Thus, GaAs nanostructures is one of the most suitable materials for making a solar cell.

Further, it has been observed that the efficiency of solar cell fabricated using GaAs nanostructures can be increased by incorporation of gold (Au) [12]. This is because the incorporation of Au in GaAs nanostructures increases carrier (electron) concentration. The efficiency of GaAs nanostructures to absorb most of the incoming photons enable them as a material for complete spectral utilization from ultraviolet-to-visible-to-infrared. This motivated us to carry out this study in which GaAs nanostructures are deposited on Au coated p-type silicon substrates. It is reported in the literature [13] that the efficiency of solar cell can be increased by in-situ passivation of GaAs nanostructures. However, we have use modified dense plasma focus (DPF) device which is a plasma-based ion implantation method and have overcome this disadvantage of passivation. The morphological, optical and electrical transport properties are reported for solar cell applications.

2. Experimental details

GaAs nanostructures were fabricated on Au coated p-type silicon substrate using GaAs ions, which were generated by high temperature, high density and extremely non-equilibrium argon plasma in a modified DPF device. The details of modifications done in DPF device for nanofabrication and process of formation of focused argon plasma on top of central anode were reported in earlier studies [4–6,14]. The silicon substrates were coated with Au of thickness ~15 nm and ~27 nm for sample 1 (S1) and sample 2 (S2), respectively. In the present experiment, GaAs disc (99.99% purity) of diameter ~17 mm was fitted on the top of the central anode. Au coated silicon substrates were placed at a distance of 4.0 cm from top of anode. The focused argon plasma formed at top of anode ablates GaAs disc. The ablation from GaAs disc by focused argon plasma generates GaAs ions, which were deposited on Au coated silicon substrates. In the present experiment, GaAs ions hit the substrates in two bursts of focused plasma.

The surface morphology was analyzed using scanning electron microscopy (SEM) on MIRA3 TESCAN field emission scanning electron microscope. The optical absorption spectra were recorded,

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Synthesis of nano-diamond-like carbon for protective optical window coating applications

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Abstract. This study reports the fabrication of carbon using ions of carbon generated by high temperature, high density and extremely non-equilibrium argon plasma produced in modified dense plasma focus device. Carbon is deposited using two bursts of focussed plasma on n-type silicon substrates kept at a temperature of 20 (room temperature) and 130°C. The formation of nano-diamond-like carbon (nano-DLC) is observed at substrate temperature of 130°C. The samples deposited at different substrate temperatures are found to have amorphous in nature as observed from X-ray diffraction studies. These amorphous samples of carbon and nano-DLC possess nanostructures of average size ∼27 and ∼10 nm for 20 and 130°C substrate temperature, respectively, as obtained from atomic force microscopy and scanning electron microscopy studies. The possibility of formation of nano-DLC was analysed using Raman measurements. Peaks related to D and G band of graphitic carbon are observed in Raman spectra of both the samples. However, the samples grown at substrate temperature of 130°C show peaks related to nano-grain of diamond in Raman spectra, indicating high sp^3 content, thereby confirming the formation of nano-DLC. The hardness measurement reveals the maximum value of hardness ∼45.5 GPa for nano-DLC sample, which reconfirms that sample is of nano-DLC nature. The nano-DLC are found to have band gap of ∼2.45 eV, which makes the nano-DLC a potential candidate for applications in protective optical window coating.

Keywords. Nano-DLC; nanoparticles; deposition; scanning electron microscopy (SEM); Raman spectra; dense plasma focus.

1. Introduction

Diamond-like carbon (DLC), a metastable state of amorphous carbon consist of a mixture of diamond-like sp^3 and graphite-like sp^2 bondings. Diamond is electrically an insulator with a band gap of ∼5.5 eV, whereas graphite is electrically a conductor with zero band gap. Diamond is hard, whereas graphite is soft. Thus, the properties of DLC films mainly depend on the sp^3/sp^2 ratio. Sp^3 bonds mainly govern the mechanical properties, whereas sp^2 bonds govern electrical and optical properties in DLC films. DLC as a material has high mechanical hardness, is chemically inert, highly transparent (optically) and wide band gap semiconductor [1]. The thin films of DLC have a wide range of applications including protective coating for optical windows, magnetic storage disks, car parts, biomedical coating and in micro-electromechanical (MEMs) devices [2–7].

DLC was first produced by Aisenberg and Chabot [8] in 1969 through ion beam deposition of carbon. Now, DLC can be produced by various methods, such as ion beam deposition [8,9], magnetron sputtering [10], ion plating [11] and laser plasma deposition [12]. All these studies [3–12] report the fabrication of DLC thin films. The fabrication of nano-DLC is not yet reported in the literature. However, Dayal *et al* [13] have reported fabrication of nanostructured DLC thin films and studied their structural and mechanical properties. This motivates us to fabricate nano-DLC and further study its properties for future applications in protective coating for optical windows.

The techniques reported in literature [8–12] for fabrication of DLC thin films are physical or plasma-based techniques. Out of these various deposition techniques, plasma-based techniques based on ion implantation [14] are supposed to be superior techniques. One of such plasma-based ion implantation driven technique is dense plasma focus (DPF) device. The modified DPF device is a source of high density, high temperature and extremely non-equilibrium plasma which generates high fluence material ions that can be used to deposit thin films and nanostructures under different processing conditions. The modified DPF device has already been used for nanofabrication of several materials [15–17] including thin films of DLC [18].

In the present study, we have used modified DPF device to deposit nano-DLC on n-type silicon substrate with two bursts of focussed plasma at optimum substrate temperature. The deposits are then characterized by X-ray

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FRAME BASED RECONSTRUCTION OF SIGNALS IN MULTIRATE IMPLEMENTATION

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Abstract. We define multidimensional discrete time Zak transform (MDTZT) and discuss various properties of MDTZT. We show that MDTZT is relevant to discrete sampling of multivariate discrete time signals. Also, we study multivariate discrete time Weyl Heisenberg (MDTWH) systems for oversampling and critical sampling schemes. By utilizing Zak transform, we give the formulations of the existence of MDTWH frames, tight MDTWH frames and dual of MDTWH frames in the context of oversampling. Moreover, we show that MDTZT provides a good method to evaluate the coefficients of the MDTWH system expansion in the case of oversampling. Also, we discuss the sampling results of the MDTWH system for critical sampling. Finally, we give the applications of MDTWH frames to reconstruction of the multivariate Weyl Heisenberg system in the periodic space $\mathrm{L}^2([0,1)^d)$.

1. Introduction

Let $\mathscr{H}$ be a real (or complex) separable Hilbert space with inner product $\langle .,. \rangle$. A family $\{f_n\}_{n\in\mathbb{Z}} \subseteq \mathscr{H}$ is a *frame* (or *Hilbert frame*) for $\mathscr{H}$, if there exist constants $A, B > 0$ such that

$$A\|f\|^2 \leq \sum_{n=-\infty}^{\infty} |\langle f, f_n\rangle|^2 \leq B\|f\|^2, \text{ for all } f \in \mathscr{H}. \tag{1.1}$$

The scalars A and B are called the *lower* and *upper frame bounds* of the frame, respectively. They are not unique. If $A = B$, then $\{f_n\}$ is called an *A-tight frame* and if $A = B = 1$, then $\{f_n\}$ is called a *Parseval frame*. The inequality in (1.1) is called the

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Weyl-Heisenberg frames and Balian-Low theorem in $\ell^2(\mathbb{Z})$

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ABSTRACT

This paper focuses on the reconstruction of digital signals in multirate digital signal processing. We study the discrete time Weyl-Heisenberg (DTWH) system for oversampling schemes and describe the frame operator of DTWH frames as the composition of the sampling operator and interpolation operator. Using discrete time Zak transform, we characterize the dual discrete time Weyl-Heisenberg tight frames, DTWH frames, and tight DTWH frames based on oversampling schemes. In addition, we discuss the applications of DTWH frames to the reconstruction of Weyl-Heisenberg systems in periodic space $L^2([0, 1))$. Finally, we give Balian-Low theorem for an orthonormal basis formed by DTWH systems and weak Balian-Low theorem for exact DTWH frames in sequence space $\ell^2(\mathbb{Z})$.

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I. INTRODUCTION

Let $\mathcal{H}$ be a real (or complex) separable Hilbert space with inner product $\langle .,. \rangle$.
A sequence $\{x_n\}_{n=1}^{\infty} \subseteq \mathcal{H}$ is a *frame* (or *Hilbert frame*) for $\mathcal{H}$, if there exist numbers $A, B > 0$ such that

$$A\|x\|^2 \leq \sum_{n=1}^{\infty} |\langle x, x_n \rangle|^2 \leq B\|x\|^2 \text{ for all } x \in \mathcal{H}. \tag{1.1}$$

The scalars A and B are called the *lower* and *upper frame bounds* of the frame, respectively. They are not unique. If $A = B$, then $\{x_n\}$ is called an *A-tight frame* and if $A = B = 1$, then $\{x_n\}$ is called a *Parseval frame*. The inequality in (1.1) is called the *frame inequality* of the frame.

The operator $T : \ell^2 \to \mathcal{H}$ defined as

$$T(\{c_k\}) = \sum_{k=1}^{\infty} c_k x_k, \ \{c_k\} \in \ell^2$$

is called the *preframe operator* (or *synthesis operator*) and its adjoint operator, $T^* : \mathcal{H} \to \ell^2$, is called the *analysis operator* and is given by

$$T^*(x) = \{\langle x, x_k \rangle\} \text{ for all } x \in \mathcal{H}.$$

Composing T and T^*, we obtain the *frame operator* $S = TT^* : \mathcal{H} \to \mathcal{H}$ given by

$$S(x) = \sum_{k=1}^{\infty} \langle x, x_k \rangle x_k \text{ for all } x \in \mathcal{H}.$$

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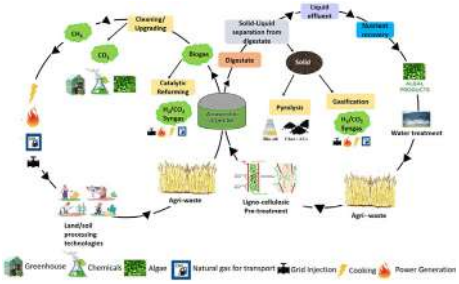
Review

Valorization of agricultural waste for biogas based circular economy in India: A research outlook

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GRAPHICAL ABSTRACT



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ABSTRACT

Environmental deterioration and the need for energy security are intrinsic problems linked with the linear economy based on fossil fuels. Recently, a transformation to a sustainable circular bio-economy is being experienced where biomass waste is being valorized for energy production as well as minimization of waste and greenhouse gas emissions. The agricultural waste, generated in vast quantities in India is a prospective feedstock for biogas production. Agri-waste to biogas based circular economy requires an integration of agri-waste management, biogas production and utilization and policy support. This paper comprehensively discusses the potential of biogas production from agricultural waste, its upgradation and utilization along with the government initiatives, policy regulations. In addition, barriers that impede the development of an efficient agri-waste to biogas based circular economy, and the future research opportunities to meet the growing needs for agri-waste management, energy production and climate change mitigation are discussed.

1. Introduction

The 17 Sustainable Development Goals (SDGs) of the United Nations were designed to motivate and facilitate the world economies to address the major challenges faced by our society and environment. At the heart of most SDGs lies the underlying principle of optimum and responsible usage of resources for purposes leading to a convincing transition to a circular economy. One of the mechanism to achieve that

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Emotional Intelligence: A Comparative Study between Sports Women and Non-Sports Women of Daulat Ram College

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Abstract

Ability of an individual to assess, perceive and manage his emotions as well as others is known as Emotional Intelligence. **Aim:** the purpose of the research article was to compare the emotional intelligence between sports women and non-sports women of Daulat Ram College. **Research Hypothesis:** It was hypothesized that there was no significant difference between the emotional intelligence level of sports women and non-sports women of Daulat Ram College. **Methodology:** The study was delimited to the sports women and non-sports women of Daulat Ram College. The data was collected on 100 women (50 sports women and 50 non-sports women) of Daulat Ram College. Data was collected with the help of emotional intelligence scale developed and standardized by singh (2004). **Statistical Analysis:** The data was collected on emotional intelligence and statistical calculation was made with the help of SPSS16. Descriptive statistics were computed for the mean & SD and independent t-test was used to assess the significant difference between emotional intelligence level of sports women and non-sports women of Daulat Ram College. The .05 level of significance was used. **Results and Findings:** The result of the study revealed that there was a significant difference found in terms of emotional intelligence among sports women and non-sports women of Daulat Ram College. The emotional intelligence level of sports women was found to be higher than the non-sports women of Daulat Ram College.

KEYWORDS: Emotional intelligence, Sports women, Non-sports women, Descriptive statistics, and Independent t-test.

INTRODUCTION

Emotional intelligence was described formally by **Salovey and Mayer (1990)**. They defined it as 'the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions'. They also provided an initial empirical demonstration of how an aspect of emotional intelligence could be measured as a mental ability **Mayer, Di Paolo, & Salovey (1990)**. In both articles, emotional intelligence was presented as a way to conceptualize the relation between cognition and affect. Historically, 'emotion' and 'intelligence' were viewed as being in opposition to one another **Lloyd (1979)**. How could one be intelligent about the emotional aspects of life when emotions derail individuals from achieving their goals **Young (1943)**? The theory of emotional intelligence suggested the opposite: emotions make cognitive processes adaptive and individuals can think rationally about emotions.

Emotional intelligence is an outgrowth of two areas of psychological research that emerged over forty years ago. The first area, cognition and affect, involved how cognitive and emotional processes interact to enhance thinking **(Bower, 1981; Isen, Shalker, Clark, & Karp, 1978; Zajonc, 1980)**. Emotions like anger, happiness, and fear, as well as mood states, preferences, and bodily states, influence how people think, make decisions, and perform different tasks **(Forgas & Moylan, 1987; Mayer**

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The Adaptive Coping by Caregivers of Individuals with Mental Illness

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ABSTRACT

Present research is an exploratory study carried out to understand the coping resources used by caregivers of individuals with psychological disorders and to know the impact it has on their mental health. Caregivers adapt to a number of coping strategies to overcome the difficulties they face due to the responsibility of caring for a loved one. The sample comprises 50 caregivers (25 males and 25 females) of individuals being treated at a psychiatric clinic for various disorders. The Mean age of the sampled persons was 47.42 years. The tools administered were Coping Resources Inventory (Hammer and Marting, 1988) and the Mental Health Inventory (Veit and Ware, 1983). A semi-structured interview was also conducted to find out the coping strategies used by the caregivers. Religious and spirituality was found as the best coping strategy (50%) by caregivers and the frequency of mental agony was minimum. The present study has implications for Intervention based programs for the caregivers as it can help to enhance and develop healthy coping strategies and reduce their stress and burden due to caregiver role.

Key Words : Caregiver, Care recipient, Coping resources

INTRODUCTION

Coping has become one of the central concepts in the discipline of psychology. Coping is the management of external and internal demands that are considered to be exceeding an individual's resources (Lazarus and Folkman, 1984). The individuals try to modify or eliminate the issue they are facing, try to decrease its intensity by changing their own views and relieve the effects by diverting themselves in various means such as consumption of tranquilizers, alcohol or to do something physical.

Coping includes thoughts, emotions and actions. It involves purposeful and conscious actions of an individual. These actions occur as a response to events that shakes the senses of stability.

Billings and Moos (1981) views coping as a set of psychological mechanisms that protects an individual from psychological and external threats. It is considered as an attempt to eliminate feelings of discomfort.

Coping resources are inherent in individuals that help them to cope with stress, experience fewer intense symptoms when exposed to the stressor and to recover faster from a stressful situation (Hammer and Marting, 1998). Several studies have highlighted the role of effective coping resources in caregivers which improves relationships in the family and reinforces cohesion where as other studies have expressed the negative impact of caregiving on the general health and psychological conditions of the caregivers.

A Caregiver can be a friend, relative or a neighbor who gives day-to-day unpaid and practical support to an individual who is not able to complete daily living tasks. The individual who receives care is the care recipient who is suffering from some chronic condition that causes difficulties in completion of daily living tasks. Researchers have focused upon the mental health of caregivers. For instance, Victorian Carers Program conducted a

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8

This chapter discusses the importance of emotional intelligence and presents a case for including emotional intelligence in positive education.

Emotional Intelligence and Positive Education: Preparing Students for a Better Tomorrow

Pooja V. Anand

Traditionally, the discipline of Psychology has taken an illness or deficit oriented approach as a result of which it has focused more on weaknesses and finding solutions to get rid of them. This approach is inadequate as it addresses only a part of the issue of human nature. The emerging approach of positive psychology in contrast takes a positive view of human nature. It focuses on the strengths in people. The beginning of the positive psychology movement can be traced to the APA Presidential address by Seligman in 1998. Snyder and Lopez (2007) defined positive psychology as "the science and applications related to the study of psychological strengths and positive emotions" (p. 22).

Positive psychology aims at enhancing optimal functioning in individuals, groups, and communities through the effective utilization of strengths. Seligman and Peterson (2004) developed the VIA classification of strengths which provides a comprehensive classification of human virtues and strengths. In the VIA classification, twenty-four strengths have been classified under six virtues. The virtue of Wisdom and Knowledge entails the strengths of Creativity, Curiosity, Open-mindedness, Love of learning, and Perspective; the virtue of Courage includes strengths of Integrity, Bravery, Persistence, and Vitality; Humanity comprises Kindness, Love, and Social intelligence; Citizenship, Fairness, and Leadership are subsumed under the virtue of Justice; Temperance contains the strengths of Forgiveness, Modesty, Prudence, and Self-regulation; and the virtue of Transcendence includes Appreciation of beauty and excellence, Gratitude, Hope, Humor, and Spirituality.

The approach of positive psychology has found applications in various domains like health, community, work, etc. One of the most significant

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