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Saudamini Das & Nisha Maria DSouza

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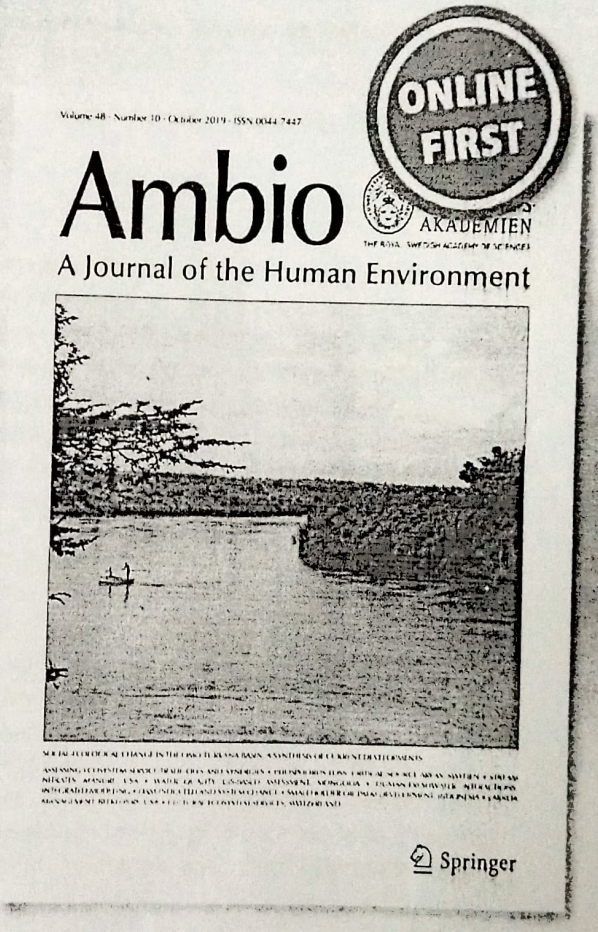

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Study of Factors Influencing Consumer Buying Behaviour

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Abstract

'Customer Is the King.' Any business organization stands in the business world only with the ultimate support of the customer. Business organizations can be successful and survive in the long run by understanding Consumer Behaviors, that is how their consumers behave while purchasing products and services. Consumer behavior or buying behavior can be influenced by several factors such as social factors, psychological factors, cultural factors, personal factors, and economic factors.

This paper covers the concept of consumer behavior as well as the factors which influence consumer buying behavior.

Keywords: Psychological, Social, Cultural, Economic Factors, Consumer Behavior.

Introduction

Consumers don't behave in the same manner every time when they buy goods or services. Consumers preferences are changing with change in their income. lifestyle, taste and preferences, advancement in technology, personality and many other factors. today's consumer wants value for money. Consumers' wants are becoming highly diversified because of change in their social and economic factors. Marketers need to study and understand their buying behavior so that they can determine the right marketing mix that will satisfy their needs and wants and in turn marketers can also earn profit. The ultimate purpose of marketers is to satisfy their customers and to have a long-lasting win-win relationship with them.

The person who utilizes or consumes the products or services is referred to as a consumer. The customer is the person who buys the product. Consumer and customer can be same person or can be different if customer is not using the product himself. Marketers need to understand the consumer personality traits and the reasons of consumer purchases. Consumers buy products because of pleasure, necessity, fashion, care, love and affection, competition, jealousy, power, prestige, economy, durability, comfort, quality and good performance. Some environment sensitive consumers also buy products which are green in nature in order to protect the environment. If marketer understand the motive behind the customer purchase then they can make the suitable product or service available. Then they will be able to satisfy their customers' needs and wants and sustain their business in the long run.

ROW NO. 42

आधुनिक भारत में : महिला आन्दोलन



डॉ. साधना कुशवाहा

भारत की दौलत से पुर्तगाली अमीर बने थे। इस बात ने यूरोप की अन्य जातियों को भी भारत से व्यापार के लिए प्रेरित किया और उनमें परस्पर होड़ लग गई। अंग्रेज सबसे चालाक और कूटनीतिज्ञ थे इसलिए वह भारत में अपने पैर जमाने में अपेक्षाकृत अधिक सफल हुए।

भारत के ऐश्वर्य की कहानी ने 15वीं शताब्दी में यूरोपवासियों के मन में सोने की चिड़िया को हथियाने का स्वप्न जगा दिया था।

सन् 1757 में प्लासी के मैदान में भारत की पहली हार हुई। प्लासी और बक्सर की लड़ाई में नवाब की हार से अंग्रेज का व्यापारिक मानदंड, राजदण्ड बन गया।

पूर्वी भारत ने अंग्रेजों के हाथों कठपुतली बनना स्वीकार नहीं किया, जिससे यहाँ-वहाँ जन-विद्रोह फूट पड़े। यद्यपि वे विद्रोह बाद में अँगेजों द्वारा निर्ममता से दबा दिए गए, पर वे अंग्रेजों के लिए समय-समय पर सिरदर्द बने रहे। कई जगह तो उन्हें नाकों चने चबवाए गए। कुछ प्रसिद्ध विद्रोह हुए जो जंगल महल का जमींदार विद्रोह, संन्यासी विद्रोह, चुआड़ों का विद्रोह, वहावी विद्रोह, बैकरपुर का प्रथम सैनिक विद्रोह, किंतूर चुंदेला विद्रोह, संथाल विद्रोह और आगे चलकर कूका विद्रोह।

1757 से 1857 तक पूरी सदी का इतिहास इन विद्रोहों से भरा पड़ा है जिससे 1857 के सगठित विद्रोह का मार्ग प्रशस्त हुआ।

सन्यासी विद्रोह की सूत्रधार देवी चौधरानी

उस समय के लेफ्टिनेंट ब्रेनन की एक रिपोर्ट से पता चलता है कि भवानी पाठक की विद्रोही गतिविधियों के पीछे देवी चौधरानी का प्रमुख हाथ था। उनके अधीन अनेक वेतनभोगी बंकरदाज थे, जिनके रख-रखाव के लिए देवी चौधरानी, भवानी पाठक से लूट के धन का हिस्सा लेती थी। भवानी पाठक के मारे जाने के बाद भी देवी चौधरानी ने हार नहीं मानी और वह बराबर लड़ती रही। बंकिम चंद्र के प्रसिद्ध उपन्यास 'आनंद मठ' में सन्यासी विद्रोह की गतिविधियों का अच्छा दिग्दर्शन है। लगभग 20 वर्षों तक चलते रहे आजादी की लड़ाई के इस प्राथमिक संघर्ष में सन्यासी विद्रोह की एकमात्र सशक्त महिला नेता के रूप में चौधरानी का नाम अमर है, अन्त तक वह अंग्रेजों के हाथ नहीं आई।

रानी साहब कौर

रानी साहब कौर बारी दोआब के राजा जयमल सिंह की पत्नी थी। जिन दिनों लार्ड वेलेजली अपनी कूटनीति का जाल फैला रहा था, पंजाब की छोटी-छोटी रियासतें अपनी स्वाधीनता की रक्षा के लिए अपनी सेनाओं का पुर्नगठन कर रही थीं। सन् 1799 में अंग्रेज सेनापति सर टॉमस ने जींद पर आक्रमण किया। इसके बाद वह पंजाब की अन्य रियासतों पर अधिकार करता, इसके पूर्व रानी साहब कौर ने मध्यस्थता करके सर टॉमस की सिक्खों से सुलह करा दी, पर भाई साहब सिंह को उसके साथियों ने अपनी बहन रानी साहब कौर के विरुद्ध भड़का दिया और रानी कौर को बंदी बना दिया गया, लेकिन मौका पाकर वह बहादुर, रानी कैद से भाग निकली। अंतिम दिनों में उन्होंने अपने पति जयमल सिंह के साथ भवानीगढ़ किले की कैद में बिताए।

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गांधी और पर्यावरण

उमेश कुमार[6]

विश्व में पर्यावरणीय आन्दोलन की विशाल छत के नीचे अनेक समूह हैं जो गांधी जी के साथ जुड़ाव रखते हैं। गांधीजी के जीवन में पर्यावरण को लेकर बदलाव रस्किन की पुस्तक 'अन टू दिस लास्ट' पढने के बाद आया और उसी क्षण से वे साम्यवादी बन गए। इस नतीजे पर पहुँचने के साथ ही गांधीजी ने दक्षिण अफ्रीका में सामुदायिक श्रम पर आधारित जीवन की शुरुआत अपनी पत्रिका "इंडियन ओपिनियन" के प्रकाशन की नई व्यवस्था से की। उन्होंने फोनिक्स में (डरबन के पास एक छोटा रेलवे स्टेशन) भूमि खरीद कर अपने भारतीय और यूरोपीय सहयोगियों के साथ सामूहिक श्रम के आधार पर आवास निर्माण से लेकर प्रेस चलाने तक का सारा काम शुरु किया। इसमें संपादक और श्रमिक सबकी समान सहभागिता थी। यह स्वावलंबन पर आधारित सामुदायिक श्रम का प्रयोग था। इसमें एक समय ऐसा भी आया जब उन लोगों ने मशीन की जगह शारीरिक श्रम से प्रेस चलाना शुरू कर दिया। जैसा कि गांधीजी ने लिखा है कि उनके लिए वे नैतिक उत्थान के सर्वोच्च क्षण थे।

सामुदायिक जीवन में पर्यावरण को लेकर इससे भी बड़ा प्रयोग टॉल्सटॉय फॉर्म था। इसमें जेल की सजा काट रहे सत्याग्राहियों के परिवारों के सामूहिक जीवन की व्यवस्था की गई थी। जोहान्सवर्ग के पास इसके लिए गांधी के एक जर्मन सहयोगी कालेनबाख ने 1100 एकड़ का एक फॉर्म खरीद दिया। शुरू में इसमें दस औरतों और सात मर्दों के लिए व्यवस्था की गई। इनमें हिंदू, पारसी, ईसाई और मुसलमान-सभी धर्मों के लोग थे, जिनमें तमिल, तेलुगू, गुजराती और उत्तर भारतीय थे। अपने लिए आवास का निर्माण सबने मिलकर स्वयं ही किया। भाषायी भिन्नता के बावजूद इनकी शिक्षा की सम्मिलित व्यवस्था की गई। मल-मूत्र आदि के निस्तार की एक ऐसी व्यवस्था की गई, जिससे पर्यावरण शुद्ध रहे और साथ ही उपयोगी खाद् तैयार हो जाए, जो सामुदायिक कृषि के लिए उपयोग में आए। यह सब होना चमत्कार-सा लगेगा जब तक हम यह न मान लें कि सहयोग और पारस्परिकता का भाव मनुष्य का आनुवांशिक गुण हैं, जिसे प्रतिस्पर्धा की वर्तमान सभ्यता ने हजारों वर्ष के विकास के क्रम में नष्ट करने का काम किया है। संघर्ष के साथ रचनात्मक कार्यक्रम, जो गांधी जी के आंदोलन का महत्वपूर्ण चरित्र रहा है, उस दिशा की ओर इशारा करता है, जिसमें चलकर वर्तमान सभ्यता के विकल्प के तौर पर उसके भीतर से ही एक नई जीवन पद्धति का विकास किया जा सकेगा। अराजकतावादियों की यह कल्पना थी कि किसी तरह धक्का देकर वर्तमान व्यवस्था को नष्ट कर देने से सहयोग आधारित समाज स्वतः अस्तित्व में आ जाएगा, किसी चमत्कार की आशा जैसी लगती है। 1960 के दशक में फ्रांस से शुरू होकर यूरोप और अमेरिका में छात्रों और बाद में उसके समर्थन में जुड़े मज़दूरों के आंदोलनों ने औद्योगिक व्यवस्था के

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[6] सहायक प्रोफेसर, स्वामी श्रद्धानन्द कॉलेज (इतिहास विभाग), दिल्ली विश्वविद्यालय, दिल्ली

Disaster and Resilient Sustainability: A Case Study of Pacific Island of Taiwan

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Abstract:

Leave No One Behind is the catch line of the Disaster Resilient Report for Sustainable Development by United Nations Economic and Social Convention on Asia and the Pacific (ESCAP). This is the largest regional intergovernmental platform with 53 member States and 9 associate members; ESCAP has emerged as strong regional think-tank offering countries sound analytical products that shed insight into the evolving economic, social and environmental dynamics of the region. Natural disasters can destroy the outcomes of years of work and investment by communities, governments and development organizations. That is why the principle of the disaster resilience is central to the 2030 Agenda's Sustainable Development Goals. Taiwan stands here as the central focus as it's the most vulnerable nation in terms of disaster but also the best example of the resilience and sustainable development. This chapter explains the three important cities of Taiwan namely, Kaohsiung (southern part), Taipei (northern part) and Taichung (Central portion) and their fight for sustainability.

Key word: Disaster, Resilience, Sustainability, Development and Taiwan

Introduction:

Disaster Risk Reduction is the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events. Resilience is the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions. Definitions are from United Nations Office for Disaster Risk Reduction, United Nation International Strategy on Disaster Reduction (UNISDR) Terminology and Disaster Risk Reduction (Geneva, 2009).[1]There were fewer disasters in 2016, but they still took a heavy toll – killing 4,987 people, affecting 35 million people and causing estimated damage of about $77 billion. The greatest loss of life was through flooding, which caused 3,250 deaths. But droughts also affected 13 million people. Since 1970, the number of people killed has fluctuated considerably from year to year but has averaged 43,000 annually, principally from earthquakes, storms, and floods. Beyond the fatalities, many more people have been affected. Since 1970 a person living in the Asia-Pacific region has been five times more likely to be affected by natural disasters than a person living outside the region.

This team UNISDR has worked effortlessly on the post 2015 agenda in line with the incoming deficiencies of the Millennium Development Goals. The risks of disasters can be reduced with the help of prevention, preparedness, and early warning systems for predictable events like the major natural events and other atmospheric weather impact conditions such as cyclones, large storms, heavy precipitation events, heat and

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A CONCEPTUAL STUDY OF ECONOMIC EMPOWERMENT OF WOMEN: VIEW OF DR. B R AMBEDKAR

Dr. Mahendra Pal Singh*

ABSTRACT

Women Empowered entire and evidence-based decision making and economic stage who enables to woman save your life, family, social, money, develop your education, country, finance investment in income-generating activities, increase the women's income to financial services Women empower focus on learning skills and increase works capacity for economic, self-esteem, increasing access to information and resources, and promoting collective action and community organizing, this combination of economic and woman empowerment as guide and decision-making in their household and communities. Education is something which every person should well be educated for economic growth. Education right should be all possible ways than every business, society, industries, company developed to country so that help the increasing economic and to develop a good economic partnership in women. But very few people have know that Babasaheb was a great scholar who made an outstanding contribution as an economist, sociologist, legal shiner, educationalist, journalist, parliamentarian along with social reformer and human right, which required women's empowerment to make the country excellent and improve the economic condition of the country. Dr. B R Ambedkar was one of the man personalities having great remember able contributions in economics.

KEYWORDS: *Education, Women's Empowerment, Literacy and Numeracy, Social Development.*

Introduction

Dr. B R Ambedkar thought that education for every woman dreadful importance as groundwork of progress in your life. First of all, became a thought that every person unconsidered the good objective needs for everyone and grow up impartial to the knowledge that enabled to the safe side and her progress came to a moratorium. Dr. B R Ambedkar did not visualize education just as an appliance for development of a child's personality and as a resources income everybody sustenance. Rather, their accepted education as the most powerful agent for bringing concerning about required change in society and a condition for connected effort for launching any and everywhere social movement in modem times.

For every person whose, woman or man was an education compulsory good thing to liberate the women from illiteracy, insensibility and superstition and thus enable them to fight against all forms of injustice, exploitation and oppression. He felt if the every woman will be educated then they could they're she takes care of society and social work and institution and every place. She can take place of every man and became a making also good country rather good society. Mahatma Jyotirao Phule also described the indispensability of education for the redemption of the delist in the following words: He wants to each and every woman to educate, and their intellect for every woman want of educated, for want of morality their progress for want of regular progress, their wealth vanished all their sorrows sprang from illiteracy Every woman she wanted to see like me educated.

It is the education which is the right weapon to cut the social slavery and it is the education which will enlighten the downtrodden masses to come up and gain social status, economic betterme According to him women should be given social education and socio-cultural right for their welfare and all round development. He stressed that "Each and every section of women should be given their due share

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Caste and Electoral Politics in Bihar

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Abstract

Caste has become one of the most crucial aspects to determine electoral politics in post-Independent India, particularly Bihar. The dominance of higher castes in Bihar's politics was challenged from the 1960s onwards. The reasons behind such development were the historical grounds of movements in the northern states of India as well as leaders such as Jai Prakash Narayan, Lohia, and Kanshi Ram who led to the formation of parties based on caste combinations. This paper is an attempt to highlight how the initial 3 decades from 1947 to 1990 represents a significant timeline to lay the foundation of caste based electoral politics.

Keywords: Caste, Electoral Politics, Bihar, Representation, Samajawadi, Political Parties, movement.

Introduction

Electoral politics has always been the dominant playground for a power struggle in societies. During pre-independent India, electoral politics was a matter of significant concern as most of the elite classes and dominant caste leaders. Ambedkar had encouraged the people coming from lower castes and formed institutions so that they could participate in electoral politics. Ambedkar had realized that without the electoral and political representation of the marginalized and the deprived castes, real and true democracy was not possible. Moreover, Ambedkar aspired to establish social and economic democracy before establishing political democracy. He observed that the disadvantaged people have always been used for electoral, social, economic and political gain by the higher castes and advantaged communities.

The role of marginalized communities which constitutes 80 per cent of the population play a major role in the electoral system of India. Ambedkar has been a significant personality in the making of caste an important factor in electoral politics particularly in Madhya Pradesh and Maharashtra in the pre-independent India. In post-independent India, the rise of the Dalit Panther movement and Kanshi Ram popularized the significance of caste-based votes in Indian in general and in northern states such as Uttar Pradesh and Bihar in particular. This paper seeks to understand how caste has been an important factor in influencing the electoral politics in Bihar in the post-independent period. This is to declare that this paper uses the writings and facts used to study a major research project titled "Mapping Electoral Behavior in Reserved Constituencies: A Study of Bihar Assembly Elections" sponsored by the Indian Council for Social Science Research, Delhi (2015-18).

The First Phase: Stability to Unstable Government

Bihar was a significant place for caste politics in post-independent India. During the initial period, there was absolute dominance of the upper caste politics in the state. However, the situation started being transformed from 1967 onwards. From 1967 to 1975 there was heavy ups and downs in Bihar's politics. In early 1960 the relations between landlords and peasants and farmers had become tensed due to the failure of land reform. This had also led to the rise of other backward castes in this period.

It is also significant to note that during the initial periods' Congress leaders in Bihar was dominated by the higher castes who could never think to devolve power to any other social groups and that to the lower castes. Society was in full swing with feudal landlords. Such a

roll 53 - link

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Industrialization and its impacts on environment in India

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Abstract: To industrialize a nation is to expand its manufacturing sectors in addition to its agricultural sectors. Agriculture alone cannot support a nation's economic growth to the same extent as an industrialized nation. In actuality, these are the pillars charged with fostering and preserving the nation's stable economic environment. Without adequate industrialization, the nation stays underdeveloped even if modernization has its own drawbacks that damage the environment and the health of the populace. With its technological advancement, it offers all the components required to support the nation's economy. India, a developing nation during the colonial era, adopted the non-industrial model. However, a sizable portion of Indians saw this approach as a barrier to prosperity and believed that only industrialization could maximize the nation's economic growth. In order to reduce poverty in India after independence, Jawaharlal Nehru, the nation's first prime minister, used industrialization as a tactic. On the one hand, it generates riches and employment possibilities, while on the other, it damages the environment. A pollution-free environment that is completely unaffected by industries is a fiction. Due to industrial pollution, industrialization has resulted in environmental damage. Highly polluting sectors include thermal power plants, coal mines, cement, sponge iron, steel & ferroalloys, petroleum and chemicals which produce dust, smoke, fumes and poisonous gas emissions. These have not only become dangerous but also irreparably harmful for our ecology and environment in industry specific clusters.

Keywords: Environment, Industry, Industrialization, Economy

INTRODUCTION:

India has come a long way from the time of colonial rule to the strong, independent, and modern India that exists today, going so far as to pursue the path of progress (Alam, 2007). Industrialization has a direct impact on ontogeny in every country (Ahsan, 2009). India was seen as a centre for indigenous industry during the pre-colonial era. Not only does industrialization have positive benefits, but it also has negative ones. The industrialization has led to development in various fields including agriculture, manufacturing sector, coal, automobiles, gas and chemicals. This has surely developed the economy of India and the lifestyle of people living in the country. Industrial development has long started to negatively impact the environment. The entire natural system components, such as the soil, water, air, and biodiversity, as well as the surrounding ecosystem, are put under a great deal of stress. Given the gravity of the issue, the effects of industrialization on the environment require a more thorough and emotional analysis (Charrett, 2009).

Delhi

ROW-54 E

वैश्वीकरण और महात्मा गाँधी

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वैश्वीकरण को अंग्रेजी में ग्लोबलाइजेशन (Globalisation) कहते हैं, जोकि अंग्रेजी के शब्द 'ग्लोब' (Globe) से बना है। ग्लोब का विशेषण ग्लोबल होता है जिसका अर्थ है – पूरे विश्व को समाहित करने वाला ।आर्थिक, राजनीतिक तथा सामाजिक विचार–विमर्श में इसका बार–बार उल्लेख होता रहता है। वैश्वीकरण का सामान्य अभिप्राय है – अन्तर निर्भर विश्व, जिसमें विश्व के एक भाग में घटी किसी भी घटना, उत्पन्न किसी मामले और चुनौती का प्रभाव आवश्यक रूप से विश्व के अन्य भागों पर भी प्रकट होता है। वैश्वीकरण को मात्र अर्थशास्त्र तक सीमित नहीं मानता अपितु यह इसे आर्थिक एकीकरण के लिए एक राजनीतिक निर्णय मानता है जोकि लोकपंत्र को सशक्त बनाने के लिए एक साथ घनिष्ठ रूप से कार्य करते है। यद्यपि वैश्वीकरण अपने सैद्धान्तिक रूप में प्रशंसनीय है परन्तु इसके व्यावहारिक प्रयोग ने इसे विरोधाभाषी बना दिया है। वर्तमान में देखा जाए तो वैश्वीकरण का स्वरूप मूलरूप से सार्वभौम न होकर कुछ पूँजीवादी (धनी) देशों खासतौर पर संयुक्त राज्य अमेरीका के वर्चस्व का प्रतीक जैसा हो गया है, वही इस परिप्रेक्ष्य में महात्मा गाँधी का वैश्विक चिन्तन विशेष प्रासंगिक हो गया है, जो उनके स्वदेशी के विचार पर आधारित है। अतः इस शोध प्रपत्र का मुख्य उद्देश्य वर्तमान वैश्वीकरण और गाँधीजी के वैश्वीकरण के मध्य मूलभूत अन्तरों का विवेचन करना तथा भविष्य निर्माण की असीम एवं नवीन संभावनाओं को प्रस्तुत करने का एक प्रयास है।

वैश्वीकरण :

वैश्वीकरण कोई नवीन अवधारणा नहीं है। यह मान्यता कि भूमण्डलीकरण या वैश्वीकरण उच्चतर प्रोद्योगिकीय अन्वेषणों एवं सूचना क्रान्ति का परिणाम है और बाजार द्वारा इसका संरूपण होता है पूर्णतया स्वीकार्य नहीं है। अतः यह उतनी ही प्राचीन है जितना राजनीतिक चिन्तन का इतिहास। भारत में 'वसुधैव कुटुम्बकम्' की धारणा अनादिकाल से विद्यमान है। कुछ विद्वान वैश्वीकरण को एक नई आवधारणा के रूप में स्वीकार करते हैं। वे मानते है कि, यद्यपि वैश्वीकरण पूर्णतया एक नई प्रक्रिया नहीं है, तथापि, इसे उपनिवेशवाद और आधुनिकीकरण के सदृश्य भी नहीं माना जा सकता है। इस कोटि के विद्वान मानते है कि 1980 के दशक से द्वआयामी विश्व का परिदृश्य बदलने लगा। सोवियत संघ के नेतृत्व में साम्यवादी देश राजकीय स्वामित्व वाली केन्द्र–नियोजित अर्थव्यवस्था में विश्वास करते थे जबकि संयुक्त राज्य अमेरिका के नेतृत्व में प्रजातांत्रिक व गैर साम्यवादी देश निजी स्वामित्व वाली उन्मुक्त और बाजारोन्मुखी अर्थव्यवस्था में विश्वास करते थे। पर सोवियत संघ के विखण्डन के पश्चात उन्मुक्त अर्थव्यवस्था का आलिंगन किया गया। अन्तर्राष्ट्रीय वित्तीय एवं व्यापारिक संस्थाओं की सदस्यता व्यापक तौर पर ग्रहण की गई एवं स्वतंत्र व्यापार और विदेशी पूंजी निवेश को प्रोत्साहन देने की नीति का अनुसरण प्रारम्भ हुआ। वैश्वीकरण की नीति वस्तुतः उदारीकरण और निजीकरण का तार्किक परिणाम है। Crocker ने वैश्वीकरण के सम्बन्ध में अभिमत रखने वालों को तीन वर्गों में विभाजित किया है–

(i) **Hyper globalists (अतिभूमण्डलवादी)** – जो भूमण्डलीकरण के पक्षपाती है।
(ii) **Skeptics (संशयवादी)** – जोकि भूमण्डलीकरण को शंका की दृष्टि से देखते हैं।
(iii) **Transformalists (रूपान्तरणवादी)** – जोकि दोनों के अति मतों को रूपान्तरण कर मध्य मार्ग को अपनाने पर बल देते हैं।

हेवुड के अनुसार "वैश्वीकरण ने भौगोलिक दूरी को कम कर दिया है तथा प्रादेशिक सीमाओं का महत्व निरंतर कम होन लगा है।" स्काल्टे के शब्दों में "वैश्वीकरण एक विक्षेत्रीयकरण है अथवा इसे लोगों के बीच पारक्षेत्रीय संबंधों का विकास कहा है।"

महात्मा गांधी का नैतिक एवं धार्मिक दर्शन

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भारतीय परम्परा में प्राचीन से ही नीति एवं धर्म का चिन्तन साथ–साथ चलता रहा है। जिसका उद्देश्य मानव कल्याण रहा है। मानवीय व्यवहार को एक दिशा देने के लिए ताकि उसका सम्पूर्ण विकास हो सके, जिसके लिए कुछ आदर्शों को स्थापित किया गया। इन आदर्शों की प्राप्ति का मार्ग नीति एवं धर्म से होकर जाता है, जो उसके आचरण को मर्यादित एवं अनुकूलित करता है।

धर्म और नैतिकता गांधी के लिए पर्यायवाची शब्द थे। धर्म से उनका अभिप्राय विश्व के व्यवस्थित नैतिक अनुशासन से है। वे नैतिकता और धर्म में कोई भेद नहीं करते थे। आचार्य कृपलानी ने नैतिकता और धर्म के विषय में गांधी के विचारों को स्पष्ट करते हुए लिखा कि महात्मा गांधी के लिए धर्म और नैतिकता में कोई भेद नहीं था। उनके अनुसार मूलतः ये दोनों एक ही हैं और इसके सूचक दोनों शब्दों का एक–दूसरे के लिए प्रयोग किया जा सकता है। किसी कर्मयोगी के लिए यह स्वमाविक ही है, क्योंकि उसे तो जीवन के प्रत्येक क्षेत्र में काम करना पड़ता है।[1]

धर्म शब्द का सर्वप्रथम प्रयोग ऋग्वेद में हुआ है। वहाँ धर्म का प्रयोग व्युत्पत्ति लक्ष्य अर्थों में न होकर आचार संहिता के लिए हुआ है। धर्म का व्युत्पत्ति मूलक शाब्दिक अर्थ है– धारण करना। महर्षि व्यास ने भी यही अर्थ किया है।[2] मनुस्मृति में वेद, स्मृति, सदाचार और आत्मा की प्रसन्नता को धर्म की संज्ञा से अभिहित किया गया है।[3] इस प्रकार उपर्युक्त अधिकांश परिभाषाएँ धर्म के नैतिक पक्ष पर ही बल देती है। यथार्थ में धर्मव्यक्ति एवं समष्टि के जीवन का मूलाधार है।

धर्म के बाह्य आडम्बर मिलकर धर्म के सच्चे अर्थ को प्रमावित करते हैं। मनुष्यों का स्वार्थ धर्म के साथ मिलकर धर्म को कलुषित कर देते हैं। गांधी ने धर्म के बाह्य आडम्बर को त्याग कर उसके सार तत्त्व को समझने पर बल दिया है। इसी कारण उन्होंने धर्म का आधर नैतिकता को माना है। गाँधी का ऐसा मानना है कि जो धर्म व्यवहारिकता से परे और नैतिकता से अलग है, उसे धर्म की उपाधि नहीं दी जा सकती। धार्मिक मनुष्य के प्रत्येक कर्म का स्त्रोत उसका धर्म होता है। धर्म का अर्थ ईश्वर के साथ बंधन है।

महात्मा गांधी ने कहा है– मनुष्य दिना धर्म का ठीक वैसा ही है जैसे बिना जड़ का पेड़, अतः धर्म रूपी आधार पर ही जीवन रूपी भव्य इमारत खड़ी की जा सकती है।[4] गांधी आगे कहते हैं– मनुष्य धर्म के बिना नहीं रह सकता। कुछ नास्तिकवादी यह कहते हैं कि उन्हें धर्म से कोई सम्बन्ध नहीं। गांधी कहते हैं कि– यह ठीक उसी प्रकार की बात हुई जैसे कोई मनुष्य यह कहें कि वह सांस तो लेता है किन्तु उसकी नाक नहीं है। मनुष्य ईश्वर के साथ बुद्धि से, सहजज्ञान से या अंधविश्वास से अपना कुछ–न–कुछ सम्बन्ध मानता है। कट्टर से कट्टर अज्ञेयवादी या नास्तिक भी किसी न किसी नैतिक सिद्धान्त की आवश्यकता अवश्य स्वीकार करता है। वह उसके पालन में कुछ–न–कुछ भलाई और उल्लंघन में कुछ–न–कुछ बुराई अवश्य समझता है।[5]

गांधी धर्म शब्द का अर्थ स्वयं बताते हुए कहते हैं– "धर्म शब्द का प्रयोग मैं इसके वृहद् अर्थ में करता हूँ। इसका अर्थ आत्मानुभूति या आत्मज्ञान है।"[6] आत्मा का ज्ञान होना और ईश्वर का ज्ञान होना ही धर्म का अर्थ है।[7] धर्म का अर्थ ईश्वर के साथ बाँधना है। वे आगे कहते हैं कि धर्म से मेरा अभिप्राय उस धर्म से है, जो सब धर्मों की बुनियाद है, जो हमें अपने सर्वजनहार का साक्षात्कार कराता है।[8] धर्म आत्मा के विज्ञान के बारे में बताता है।[9]

गांधी के धर्म सम्बन्धित युक्तियों से यह स्पष्ट होता है कि धर्म आत्मा तथा ईश्वर का विज्ञान है। धर्म मानवीय दुर्गुणों पर विजय प्राप्त कर तथा करुणा की भावना जाग्रत करने की प्रेरणा देता है। धर्म का कार्य आत्मा तथा परमात्मा का पहचान कराना तथा ईश्वर साक्षात्कार कराना है। धर्म मानव को एक–दूसरे से पृथक नहीं करता यह मानव का मानव के साथ प्रेम भावना को जागृत करता है। गांधी

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Relationship between Agriculture Output and Irrigated Area in India

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Abstract

Modern agriculture in India is highly dependent on irrigation as rainfall in India is highly erratic, unreliable and insufficient in the large areas of the country. Along with other factors, the development of irrigation infrastructure had contributed a lot in the phenomenal increase in the production of food grains and made us self-dependent in it in late sixties. Moreover, the surplus production of wheat first and then paddy further increased the investment on irrigation infrastructure. The latest trends in the agriculture production indicate that the level of production is not as high as achieved at that time. In this background it becomes interesting to find out whether the production is still worth at the present intake of water through various irrigation methods. So in the present paper an attempt is made to test the relation between the agriculture output and the irrigated area by different sources at state level in India. Data on output and irrigated have been taken from government publications and to reduce the impact of seasonal fluctuations average data of 3 years (2011-2014) have been used. On the basis of these data the relative residuals of agriculture output on different irrigation have been calculated and its spatial patterns have been analysed. Direct positive correlations have been found in most cases except in few cases where negative relation has been traced. The study suggests adopting some other method of irrigation and changing in cropping patterns as per climatic conditions of the regions can make farming more sustainable. Irrigation sources are further divided into two categories namely canal and other sources to test if there is any difference in the residuals due sources of irrigation.

Key-Words: Agriculture Output, Irrigated Area, Correlation, Regression, and Mapping of Residuals.

Introduction

Agriculture is the backbone of Indian economy as it feeds vast population, a large proportion of workforce is engaged in it, a large share of income in rural areas is generated by it and a sizable proportion of raw materials come from agriculture sector. Due to non-reliable rainfall, the irrigation facilities are needed to sustain agriculture in the country. Development of irrigation facilities needs huge investment and resources need to be diverted from other sectors towards agriculture one. Just after Independence, increase in food grains and agriculture products

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Sewage Waste Treatment in Selected Cities of India: A Spatial Analysis

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Abstract

The volume of sewage waste generated from urban areas is increasing with increasing urban population in India. It has become essential to develop a system of management for the sewage so that its inherent utility can be tapped along with preventing water pollution. The treated sewage could be used to meet the demand for various urban activities like irrigating parks, washing floors, generation of energy, utilisation in industries etc. The sewage waste, usually left to sink in land or diverted to the water bodies is not only a loss to a resource but also polluting the water bodies, underground water and ultimately enters into the food chain, which will disrupt the harmonic balance of the regional ecosystem. In this alarming situation it becomes necessary to understand the status of sewage waste in urban India. Based on the secondary data taken from reports published by Central Pollution Control Board and other Government of India departments, the present paper attempts to analyse the spatial pattern of sewage waste in urban areas of the country and find out gaps between generation and treatment of sewage affluences.

Key-Words: Sewage Waste, Solid Waste, Waste Water Generation, Sewage Waste Treatment.

1. Introduction

With the rapid increase in population in India, urban settlements are also experiencing influx of migrants and growing in the size of area and population in the form of agglomerations. With the concentration of population at such urban centres, there is an increase in the demand of water supply for various purposes. The recent stress of availability of toilets in each dwelling will further increase the demand for water supply and release of sewage waste in the country. On the one hand, we are struggling to maintain the required supply of water to the urban population, on the other, a great efforts is being put to treat a huge amount of sewage waste released from the sewages. In some of the urban centres, it is much problematic to collect, transport, treat and to dispose the waste. As a result, it is allowed to sink into soil or discharged into water bodies without treatment and polluting the water resources of the region. Due to scarcity of water resource, the sewage waste is being treated using advanced technology in many countries and in few cities in India for further use in urban areas and agriculture sector. Now, sewage wastes have become a precious resource by producing electricity, cooking gas, bricks, road making materials etc. from it and if it is not done then it is considered as loss of such resources. Due to global climate change, the demand for water is going to increase particularly in urban settlements. To meet this increasing demand of urban water supply, use of treated sewage water is essential.

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Climate Change and Energy Efficiency: Challenges and Issues in India

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INTRODUCTION

Human beings are trying to exploit the nature from the day of his appearance on the surface of the earth. Earlier he was wandering from one place to another place in search of food. Slowly and gradually he learnt various means of extracting the resources from nature for his comfort. His greed keep on increasing with the increase in population and level of technology. In his race for increasing level of comfort, he forget what he is paying back to the nature. The waste products, which resulted from the technology he used, increased in amount and their impact are felt globally in the form of climate change. Increasing average temperature, drought, outbreaks of virus and insects, declining water supplies, reduced agricultural yields, flooding, soil erosion and depleting ozone layer are some of these. The level has increased so much that human survival is threatened. As a result, the problem was realised and attempts are made to control the factors responsible for climate change at local, state, national and international level. Initially the focus was on replacing the technology and the machines responsible for increasing temperature. We were able to achieve some success in replacing the green house gas emitting appliances. Then there was a debate of developed versus developing that who is responsible, who will bring down the consumption level and who will bear the cost. But the debate remained inconclusive and still going on. Later on it was decided to find out some other ways also, increase in energy efficiency is one of the most important way out. Since by increasing the levels of energy efficiency, energy will be saved. Saving energy is equivalent to production of energy. By saving energy, the burning of fuels or consumption of other sources of energy would be saved and the carbon emission level will be brought down. India on its part set a target to increase energy efficiency level in India by adopting various measures as an international commitment. Under global compulsions, Government of India enacted the Energy Conservation Act, 2001. This act put forth a legal framework, institutional arrangement and a regulatory mechanism at the central and state level for energy efficiency efforts in India. Designated consumers, standard and labeling of appliances, energy conservation building codes, creation of institutional set up (BEE) and establishment of energy conservation fund are five major features of the Act. Standard and labeling program aims to provide the consumers an informed choice about the energy saving and thereby the cost saving potential of the relevant marketed product. The equipments/ appliances notified are AC s. Tube lights, frost free refrigerators, distribution transformers, induction motors, direct

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Application of Remote Sensing and GIS For Site Suitability of Rain Water Harvesting Structures

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Abstract

Site suitability studies for rainwater harvesting structures are an integral part of watershed management. It needs a large volume of multidisciplinary data from various sources. Remote sensing is of immense use for natural resources mapping and generating necessary spatial database required as input for GIS analysis. GIS is an ideal tool for collecting, storing and analyzing spatial and non - spatial data, and developing a model based on existing factors to arrive at a suitable natural resources development and management action plans. Both these techniques in conjunction with each other are the most efficient tools for selecting suitable sites for rain water harvesting structures. In the present study, an integrated remote sensing and GIS based methodology is adopted for identifying the suitable sites for rain water harvesting structures in the chosen study area located in the Solani watershed of Dehradun District, Uttarakhand, India. IRS-1D P6 - LISS III &IV precision geocoded FCC data on 1:50,000 scale and field observation data were used for extracting thematic information such as geomorphology, geological structures, soil, landuse landcover, well locations, drainage pattern etc. of the area. Slope map and flow accumulation maps were prepared using Survey of India toposheets on 1:50,000 scale. The various thematic layers and field observation data were integrated into GIS and various spatial and non spatial queries were performed. The suitable sites for installation of artificial recharge structures and water harvesting structures were identified.

Keywords: watershed, rain water harvesting, remote sensing, GIS, farm pond, check dam, DEM, stream order, barren land.

Introduction:

Watershed management is an integrated effort for increasing production through better utilization of primary resources without causing any adverse effect on the ecological balance. The watershed approach has conventionally aimed at treating degraded lands with the help of low cost and locally accessed technologies such as in situ soil and moisture conservation measures, afforestation etc. and through a participatory approach that seeks to secure close involvement of the user communities. Watershed management has been defined as an integration of technologies within natural boundaries of a drainage area for optimum development of land and water resources to meet the basic minimum needs of the people in a sustainable manner. The concept of integrated treatment of all lands on watershed basis was adopted and implemented by the Damoder Valley Corporation in the areas of Bihar and West Bengal(Guy Honore 1999). Integration of remote sensing and geographical information system(GIS) provides a reliable, accurate and update database on land and water resources which is prerequisite to identify suitable site for water harvesting such as farm pond, check dams, percolation tanks and gully plugs(I.P.Abrol, Dhurv Narayan et. al. 1997).

A large number of techniques have been recently evolved for the watershed management. After a considerable amount of experimentation and model building, it has been felt that these techniques have to be integrated in a comprehensive manner. Remote sensing and GIS technology provide a ground for integrating the various parameters over a geographical platform with high and analytical capabilities, like the location of feature over space and time, the patterns and trends of development and different analytical permutation and combination.

Remote sensing and GIS are valuable tools for generating and analyzing this thematic information (Ouattara et.al 2004). Harvested water can be used for variety of purposes when the common sources such as: springs or well fails to meet the demand. In addition to supplying drinking water for people, livestock and wildlife; water harvesting system can provide supplemental water for growing food and fibre crops (Verma et.al.1995).Water harvesting can be done at domestic level it is a common practice to harvest rainwater from roofs, hillrock surfaces and store it in tanks or to recharge the groundwater. Jeykumar (2001), Hannah(2001), and Adhitayan (2001) discuss the methodology of roof water harvesting and its use. At society level, water harvesting can be done at large level to meet the local irrigation and drinking demand

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Original Article

General obesity and Cardiovascular diseases among Gaur Brahmin population of NCR/Delhi

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ABSTRACT

Aims: Cardiovascular diseases are one of the leading causes of mortality and morbidity among human beings. The presence of endemic Cardiovascular diseases and their risk factors differ from population to population. The Cardiovascular diseases associated risk factors are sub-categorised into two forms, one is traditional and the other is non-traditional risk factors. The present study shows the prevalence of both risk factors and its association with Cardiovascular diseases, especially with reference to general obesity.

Materials and methods: The present study includes a total of 506 Gaur Brahmins residing in Delhi and National Capital Region India. Household survey was conducted and data were collected by using pre-tested interview schedule. Somatometric measurements were taken following the international standard techniques. Approx 5 ml blood was collected from each individual unrelated up to the first cousion. The serum was used to analyse the lipid profiles and fasting glucose level. All necessary statistical analyses were performed using the Statistical Package for Social Sciences (SPSS) and MS Excel. The ethical clearance was obtained from the Ethical Committee of the Department of Anthropology, University of Delhi, Delhi.

Results and conclusion: The mean value of Somatometric variables such as Body Mass Index, Waist circumference and Waist-hip ratio and physiological variables DBP and SBP (diastolic blood pressure and systolic blood pressure) were found to be higher than their respective ranges in the studied population. General obesity, though found to be less common in this population as compared to abdominal obesity, but it is found to be contributing to dyslipidemia.

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1. Introduction

Cardiovascular diseases (CVD) are considered as the leading cause of death worldwide, affecting the circulatory system. The growing evidence of an increase in mortality and morbidity as 80% CVD related deaths being reported from low and middle income countries like India and Nearly half of these deaths are likely to occur among individuals with younger age (30 years) [1]. The presence of Cardiovascular diseases and its risk factors vary from population to population. In a country like India, where the genetic diversity is reported to be next to Africa and also diversifications at various levels like religion, caste, language, geography, etc. which tend to make the situation more complex [2]. In developed countries, the burden of cardiovascular disease enhanced over several decades due to a long period of epidemiological transition, whereas in the developing countries, the emergence of cardiovascular disease during the last 3 to 4 decades has been a very concerning challenge for the governments. The estimated increased ratio (76%) for cardiovascular disease incidence by 2030, compared with 1970 that is 36%, while in comparison with the developed countries, the developing nation has higher (82.4%) chance of cardiovascular disease incidence in 2030 than 1970 [3,4]. In India, the rapid pace of economy as well as epidemiological transition are leading cause of cardiovascular disease and are very important risk factors for death among people. The Cardiovascular diseases and its associated risk factors are recently being categorised into traditional and nontraditional risk factors [5].Traditional risk factors include age, sex, obesity, dyslipidemia, hypertension, etc., whereas nontraditional risk factors like metabolic syndrome, Non HDL-C, hypertriglyceride waist which are considered basically as the derivatives of the traditional risk factors. In Indian context, the extent of these risk factors is being reported mostly on the basis of geographical region

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An Assessment of Perceptions and Attitudes about Potable Water Issues: A Study of Selected Wards in Delhi

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Abstract:

Due to the ever-expanding water demand for the world's growing economy and population coupled with the effects of changing climate, shortage of water has become a reality In many parts of the world, and with it, mankind is experiencing severe harm to human health, livelihoods and ecosystems. Currently 83.42% of Delhi's homes have access to piped water. However, the city administration falls short in both providing inhabitants with drinking water and in the proper re-use of wastewater. There are still certain parts of the city where piped water is not available. Areas with access to services also have issues with supply frequency and quality. Since the previous few decades, concern for Delhi's water security has grown from a minor issue to a major one. The current study is based on a household survey conducted in selected wards in Delhi. This study investigated the status of potable water availability in the sample urban areas using the results of the perception survey. The study examined a variety of issues that are often linked to the price, availability and quality of potable water that households may "access." In order to evaluate the role of various variables that contribute to varying degrees of water scarcity in the chosen wards, a water scarcity index was developed based on survey data. With this study, we hope to learn more about how people view water and how they use it in different ways. The analysis shows several of the sample wards urgently need to enhance their potable water supply to satisfy the need.

Key words:- Potable Water, Supply and Demand, Cost, Quality, Accessibility, Scarcity Index

1. Introduction:

Due to the presence of water, our planet stands apart from every other one. As the population rises, there is a significant increase in the demand for accessible and readily available water, placing further strain on our finite resources. While there is a growing demand for "high quality" water at the same time water shortages are being experienced globally due to the steadily rising demand for water for household, agricultural and industrial uses. Despite the huge population boom, the amount of water on earth is presently equal to what it was 2,000 years ago when the population was almost three percent of what it's today (Bansil,2004). Even though there is more than enough freshwater in the world to meet all current and future requirements, its distribution over space and time is

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Excitation of Gould–Trivelpiece mode by streaming particles in dusty plasma

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Cerenkov interaction; dusty plasma; growth rate

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Abstract

In this paper, we study the excitation of Gould–Trivelpiece (TG) waves by streaming ions in dusty plasma and derive the dispersion relation of the excited waves using first-order perturbation theory. The motion of charged particles is controlled by electromagnetic fields in plasma. The energy transfer processes which occur in this collisionless plasma are believed to be based on wave–particle interactions. We have found that the TG waves may be generated in a streaming ion plasma via Cerenkov interaction, and the ions may be accelerated by TG waves via cyclotron interaction, which enable energy and momentum transfer. The variation in the growth rate of TG wave with dust grain size and relative density of negatively charged dust grains is also studied. The dust can cause an unstable TG mode to be stable in Doppler resonance, and can induce an instability in Cerenkov interaction.

Introduction

Gould–Trivelpiece (TG) waves are electrostatic waves which are significantly observed in the range of frequency between ion plasma frequency and electron cyclotron frequency. For many decades, the TG waves are being investigated theoretically and experimentally (Trivelpiece and Gould, 1959; Malmberg and Wharton, 1966; Mannheimer, 1969; Lynov *et al.*, 1979; Schamel, 1979) by the researchers due to their property of absorbing and heating the electrons effortlessly near the boundary of the plasma. In bounded plasmas, the TG wave appears as a short radial wavelength, whereas in unbounded plasmas, it is found to be accompanied with a short azimuthal wavelength (Stenzel and Urrutia, 2016). Praburam and Sharma (1992) have studied the excitation of TG wave of higher frequency vibrations by electron beam of low-energy. Carmel *et al.* (1990) have experimentally demonstrated the effect of high-power relativistic electron beam on a plasma column. They found that electrostatic TG modes propagate with the frequency below the plasma frequency, whereas electromagnetic waves propagate with the frequency above the plasma frequency. Zhai *et al.* (1993) observed TG mode in the experimental investigation of a plasma-filled backward wave oscillator. Haas and Pascoal (2017) have studied the electrostatic instabilities in magnetized plasma driven by neutrino. They found that the magnetic field significantly improves the linear instability growth rate for Supernova type II environments. High-frequency electromagnetic waves have been studied in unbounded as well as warm plasma by Assis and Sakanaka (1990). Mouzouris and Scharer (1998) examined the helicon wave along with TG wave through wave propagation and absorption simulations. In their study, they developed a computer code in which they found that the power absorption is due to TG wave near the edge region, whereas transportation and deposition of energy in the core region of plasma is due to helicon wave.

Over the decades, there has been a great deal of interest shown by the researchers in the study of electrostatic and electromagnetic waves in dusty plasma environments. In laboratory, these waves have been investigated in non-magnetized dusty plasma (Pieper and Goree, 1996) and magnetized dusty plasma (Thompson *et al.*, 1997). Theoretically, these waves have been studied for the effect of dust parameters on the dispersion and growth rate of these waves in various interactions (Prakash *et al.*, 2013*a*, 2013*b*, 2014; Sharma *et al.*, 2014; Gupta *et al.*, 2015). Recently, excitation of TG wave by relativistic electron beam in magnetized dusty plasma has been studied by Kaur *et al.* (2018). In their study, they observed that the growth rate decreases with relativistic factor. Barkan *et al.* (1996) have studied ion-acoustic waves in magnetized dusty plasmas and found that the phase velocity of the ion acoustic waves (IAWs) lift up with the negatively charged dust grains. The drastic reduction in the strength of the Landau damping has also been reported in this case. Prakash *et al.* (2013*a*) have studied the excitation of surface plasma wave via Cerenkov and fast cyclotron interaction by a density-modulated electron beam in a magnetized dusty plasma cylinder and found that the dust significantly affects the dispersion and growth rate of waves. Excitation of lower hybrid wave by an ion beam has been investigated by Prakash *et al.* (2013*b*) and they found that the lower

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Review

The onus of cannabinoids in interrupting the molecular odyssey of breast cancer: A critical perspective on UPR^{ER} and beyond

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ABSTRACT

Cannabinoids, commonly used for medicinal and recreational purposes, consist of various complex hydrophobic molecules obtained from *Cannabis sativa* L. Acting as an inhibitory molecule: they have been investigated for their antineoplastic effect in various breast tumor models. Lately, it was found that cannabinoid treatment not only stimulates autophagy-mediated apoptotic death of tumor cells through unfolded protein response (UPR^{ER}) activated downstream effectors, but also imposes cell cycle arrest. The exploitation of UPR^{ER} tumors as such is believed to be a major molecular event and is therefore employed in understanding the development and progression of breast tumor. Simultaneously, the data on clinical trials following administration of cannabinoid is currently being explored to find its role not only in palliation but also in the treatment of breast cancer. The present study summarizes new achievements in understanding the extent of therapeutic progress and highlights recent developments in cannabinoid biology towards achieving a better cure of breast cancer through the exploitation of different cannabinoids.

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Contents

1. Introduction 438
2. Cannabinoid receptor signaling 438
3. Receptor profiling in breast cancer 438
4. ERS induced UPR^{ER} and its consequences in breast cancer 439
   4.1. Molecular mechanism of ERS induced UPR^{ER} 440
5. Impact of cannabinoids on UPR^{ER} 441
   5.1. de novo ceramide synthesis 441
   5.2. Expression of p8 441

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frontiers in Immunology

REVIEW

Molecular Insights Into the Relationship Between Autoimmune Thyroid Diseases and Breast Cancer: A Critical Perspective on Autoimmunity and ER Stress

Safikur Rahman[1], Ayyagari Archana[2], Arif Tasleem Jan[3], Durgashree Dutta[4], Abhishek Shankar[5], Jihoe Kim[1]* and Rinki Minakshi[2]*

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The etiopathologies behind autoimmune thyroid diseases (AITDs) unravel misbehavior of immune components leading to the corruption of immune homeostasis where thyroid autoantigens turn foe to the self. In AITDs lymphocytic infiltration in the thyroid shows up a deranged immune system charging the follicular cells of the thyroid gland (thyrocytes) leading to the condition of either hyperthyroidism or hypothyroidism. The inflammation in AITDs consistently associate with ER function due to which disturbances in the ER protein homeostasis leads to unfolded protein response (UPR) that promotes pathogenesis of autoimmunity. The roles of ER stress in the instantaneous downregulation of MHC class I molecules on thyrocytes and the relevance of IFN γ in the pathogenesis of AITD has been well-documented. Thyroglobulin being the major target of autoantibodies in most of the AITDs is because of its unusual processing in the ER. Autoimmune disorders display a conglomeration of ER stress-induced UPR activated molecules. Several epidemiological data highlight the preponderance of AITDs in women as well as its concurrence with breast cancer. Both being an active glandular system displaying endocrine activity, thyroid as well as breast tissue show various commonalities in the expression pattern of heterogenous molecules that not only participate in the normal functioning but at the same time share the blame during disease establishment. Studies on the development and progression of breast carcinoma display a deranged and uncontrolled immune response, which is meticulously exploited during tumor metastasis. The molecular crosstalks between AITDs and breast tumor microenvironment rely on active participation of immune cells. The induction of ER stress by Tunicamycin advocates to provide a model for cancer therapy by intervening glycosylation. Therefore, this review attempts to showcase the molecules that are involved in feeding up the relationship between breast carcinoma and AITDs.

Keywords: lymphocytic infiltration, Grave's disease, Hashimotos's thyroiditis, autoantigens, autoantibodies

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Changing Spatial Pattern of Net Value Added by Agriculture in India

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Abstract : With the advancement of farming technology and decreasing natural fertility of arable land, the cost of agriculture production is increasing and the income of the famers has gone down considerably in India. The decreasing farmer's income is the main concern of the present Government and various attempts have done to increase value addition in the agriculture sector. Most of the time, due to bumper production, the farmers are force to sell their products a very low rates. But the same products are sold at quite high prices to the customers in the market. It indicates that there is a significant value addition in the agriculture sector of the economy. But there are spatial and temporal variations in the value addition in agriculture in India In the stage of economic slowdown; agriculture is the only sector with higher level of value addition as compared to other industrial categories. In such conditions it will be interested to highlight the spatial and temporal patterns of Value addition by agriculture in different states of India. Based on the data released by the National Statistical Office, Ministry of Statistics and Programme Implementation, Government of India, the present paper attempts to identify states with higher amount of value addition. States with high positive and high negative changes in value addition from 2012 to 2018 are also listed.

Key words : System of National Accounts (SNA), Net State Value Added (NSVA), per hectare Net State Value Added,

Introduction : India is a country with diversity in terms of resources, population and economic activities. The most important economic activity in India is agriculture, as it is significantly contributing to the production of food grains, raw material producer, highest value addition sector and source of livelihood of a large population. The people whose livelihood is based on agriculture are agitating over minimum support price and other issues related to their activities. Their main contention is that the cost of production has increased many times and the prices they are getting from the sale of their products are quite low. It indicates that farming is now a loss making activity. On the other hand the prices of agricultural products in market for consumers are quite high. It indicates that there is significant value addition in agriculture sector of the economy. Understanding the spatial and temporal variations in value addition by agriculture will definitely reflect some interesting features. In this background, attempt is being made in this paper to highlight the spatial patterns of Net State Value Addition (NSVA) in 11 industrial categories of the economy at state level in India, in general, and by agriculture, in particular. The changing spatial patterns from 2012 to 2015 (taking fixed prices of 2011-2012 as base prices) will also be highlighted.

Concepts Used and Data Base

"The term "value-added" describes the economic enhancement a company gives its products or services before offering them to customers. Value added helps to explain why companies are able to sell their goods or services for more than they cost to produce. Adding value to products and services is very important as it provides consumers with an incentive to make purchases, thus increasing a company's revenue and bottom line."[1] The contribution of private industry or government sector to overall gross domestic product (GDP) is the value-added of an industry, also referred to as GDP-by-industry. If all stages of production occurred within a country's borders, the total value added at all stages is what is counted in GDP. The total value added is the market price of the final product or service and only counts production within a specified time period. Value-added in an industry refers to the difference between the total revenue of an industry and the total cost of inputs—the sum of labour, materials, and services—purchased from other businesses within a reporting period. Value added reflects the value generated by producing goods and services, and is measured as the value of output minus the value of intermediate consumption. Value added also represents the income available for the contributions of labour and

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Incidence of Farmers' Suicide in India: A Spatial Analysis

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Abstract

Suicide is a horrible incident in human society and suicide by farmers is one of the worst social and economic problems which definitely dent the welfare state image of India. Though suicide in general and by the farmers in particular are not new in India, but the recent increase in incidences in some of the agriculturally developed states made us to give attention to this issue. The present paper based on data published by National Crime Record Bureau and the Agriculture Statistics report by the Government of India. Here, attempted has been to analyse the spatial pattern of incidences of suicide in farming sector and to identify various reasons behind it. The important feature of spatial distribution of incidences of suicides in farming sector is that the incidences are more concentrated in the states located in the north-western part of southern plateau Punjab and Haryana. The states of Maharashtra and Karnataka are the most affected followed by Andhra Pradesh, Telangana and Madhya Pradesh. Other states having substantial farming have quite low incidence of suicide by farmers. It has been found that most of suicides are committed my male members of the family There are positive correlation between the suicide and the small land holding, poverty, practice high capital investment taking loans. It is negatively associated with cold storage facility, high intensity of cropping. To overcome suicide problem, structural changes in farming is the need of the hour.

Key Words: Farmers' suicides, Cropping Intensity, Mechanisation, farm-loan, welfare state

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Introduction: With the increasing level of mechanisation and gradual decline in land holdings (the average per household size of land), the cost of farming is increasing in India. Farming is not as simple as it used to be as traditionally it was based on manual with aid of animals, use of cattle's dung as manure and seeds were used from the production of last years. In the present day farming, a farmer has to pay for most of the inputs right from high yielding treated seeds, chemical fertilisers, pesticides, use of machines in preparation of farms, irrigation, harvesting and even for transfer of the produces to home or mandies. A huge amount has to be spent on these, which has to be managed from local financial sources at exorbitant rate of interests as getting loan from banks is not easy. At the time of crops failure, farmers are not able to return the amount taken as loan and further they have to take loan for the next crops if there are consecutive crops failures resulting in farmers trapped in the vicious circle of the loan. In such a situation, many times such farmers end their life by taking extreme steps like suicide. The consecutive crop failure not only affects the farmers but also has an adverse impact on the earning capacity of agricultural labourers as they are directly dependent on farming and harvest of crops. There are hardly any alternate sources of livelihood in villages for such people. There are incidences of suicide by agricultural labourers too in such distress conditions. Suicide either by a farmer or by an agricultural labourer has social and economic implications not for the person but for the family, society, state, nation and the humanity. This happens differently in different regions. Hence, it becomes imperative to spatial analysis of the

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An Assessment of Water Resource Availability: A Case Study of Selected Villages in Delhi

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Abstract:

Water is a major factor in economic and social development while serving a primary function in preserving the integrity of the natural environment. It is critical for the wider public health to have access to clean and easily accessible water, regardless of whether it is used for drinking, domestic purposes, agriculture or recreational activities. A nation's economic growth may be considerably boosted by better water supply, improved sanitation and water resource management. Substantial geographic, social, and economic divides continue to persist between rural and urban regions and also within towns and cities, where residents of minimal income, unregulated, or unofficial settlements often have far less access to improved water sources than other people. Over the last 50 years, Delhi has experienced tremendous urbanization with ever-increasing population and economic expansion causing water crisis in some parts of the city. Delhi offers an intriguing combination of planned areas, industrial areas, villages, slums and various unplanned settlements. According to the government rules each of these settlement types reflects various levels of service provision for water resources. The current study is based on the household survey in the selected villages of Delhi. Through the findings of primary survey, this research examines the status of water availability in the selected villages. In doing so, it explores a number of often connected concerns pertaining to the cost, quantity and quality of water at families "access." On the basis of survey results water scarcity index was formulated to assess the role of different factors which are responsible for different level of water scarcity in the selected villages. This study seeks to advance our understanding of how people perceive water and the various ways that people utilize it. The study indicate an urgent need to improve water supply provision in some of the sample villages.

Key Words: Water Scarcity, Socio-Economic Characteristics, Cost, Ground Water, Water Scarcity Index

1. Introduction:

Water is the foundation of all living things. It is the element that sets our world apart from other planet. From the arctic ice caps to human cells and soils, it is present everywhere. It has both quantity and quality features, where quantity refers to the to the chemical, physical and biological properties of water and quality relates to the amount of water that is available (Banergee,1999). Water is deliberated as a highly potent infrastructure-driven life support system in cities, although such finite resources have become scarce in the current

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Cropping Patterns in India: Spatial and Temporal Analysis

Dr. Daljit Singh, Associate Professor, Swami Shraddhanand College, University of Delhi.
Dr.R.N.Dubey, Associate Professor, Dr.B.R.Ambedkar College, University of Delhi

Abstract

Indian agriculture is facing a second phase of change since nineties due to introduction of globalisation and liberalisation. The processes of globalisation and liberalisation, equipped with the information and communication technology have brought some structural changes in the Indian agriculture. Phasing out of subsidies from agriculture and restrictions of distribution of food grains under public distribution system to a small fraction of population has brought down the purchasing by government agencies. This has led the farmers to think of changes in the crops grown since the time of green revolution. It is assumed that the area under traditional crops like wheat and paddy will go down and area under crops like maize, cotton, pulses and oilseed will increase. The present paper based on ICRISAT data attempts to test this hypothesis but surprised to find out that no such major change has occurred in the cropping pattern of India.

Key words: Cropping pattern, globalisation, liberalisation, agricultural subsidies

1. Introduction: Agriculture is the backbone of India economy, as a large proportion of Indian population is dependent on it. Indian agriculture has been revolutionised after introduction of new approach to agricultural practices with the provision of high yielding varieties of seed, chemical fertilisers, insecticides, pesticides, farming machines etc. during mid-sixties which increased output manifold in food grain production. Though the increase in production was need of time and helped us in attaining self-sufficiency in food grains but there were some limitations too. The high yielding varieties of seed were limited to few crops. The new approach too was limited to the few areas which were able to take the economic benefits of it. The massive use of fertilisers, pesticides etc and extra extraction of water from ground for surface irrigation, over a period of time, started showing adverse impacts in terms of salinity,

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A Spatio -Temporal Analysis of Stubble Burning in Wheat Bowl of India

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Dr. R N Dubey, Associate Professor, Bhim Rao Ambedkar College (University of Delhi)
Ms. Vaishali Sharma, Assistant Professor, Swami Shraddhanad College (University of Delhi)
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Abstract :- The present paper attempts to analyse the spatio-temporal extent of stubble burning over the wheat bowl of India including neighbouring part of Pakistan. We used fire anomalies, which has captured by VIIRS 375m on board the Suomi NPP satellite data from August 28, 2018 to November 30, 2018. The maximum concentration of stubble burning is recorded in the State of Punjab, though extended to the adjoining districts of Haryana, Rajasthan and adjoining districts of Pakistan. The last few days of October and first half of November records maximum cases of stubble burning. The stubble burning is a compulsion due to the technological changes in agricultural, and can be controlled either by changing the cropping pattern or by proper disposal of the stubble.

Key words :- Stubble burning, Crop residue, Visible Infrared Imaging Radiometer Suite (VIIRS), Fire Information for Resource Management System (FIRMS).

1. Introduction :- Introduction: India is traditionally an agricultural country where the socio-economic activities of more than half the population are dependent on agriculture. The application of modern technology precipitated revolutionary changes in the agriculture sector. Production increased manifold and the country became self-reliant in terms of food grain production. The need for physical labour of both man and beast was reduced. Historically domesticated animals were the backbone of Indian agriculture as the main activity of ploughing was dependent on them. But mechanization has replaced them causing sudden disappearance of bullocks and milch cattle from villages.

Latest machines used by the farmers use combine harvesters to harvest the paddy crop, which leaves a considerable amount of stubble either standing in the field or spread over left by the machine. Combine harvesting technologies, which have become common in RWS (rice–wheat system) in India, leave behind large quantities of straw in the field for open burning of residue (Gupta, et al., 2004). The stubble or crop residues collected and used for several purposes during the inter-crop time are now of no use in modern-day and therefore are dumped as waste. The time duration between paddy harvesting and preparation of the field for wheat crop is very short in the "wheat bowl" of India. The increasing pressure for sowing wheat crop within short duration leads farmers to the only quick resort available i.e. to burning the stubble to get rid of it. There is no doubt that smoke from burning of crop residues affects people's health, road safety and the environment. In addition to this, the physical, chemical and biological properties of the soil also get destroyed in one or another way (Yadav et el., 2018). Stubble burning is not limited to India, it is practiced in other rice growing countries also and responsible for air pollution in nearby areas. Open burning of straw is a common practice in India, Thailand and the Philippines (Gadde et al., 2009). This stubble burning from Pakistan to Delhi has resulted in generation of smoke and other poisonous gases. Due to prevailing winds in September, October and November, often the air quality in Delhi becomes hazardous. Sometimes, it has resulted in complete blackout for 2 to 3 days

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Spatio–Temporal analysis of Procurement of Major Crops in India

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Abstract

Procurement of crops is an integral part of Government of India's economic development policies to provide guaranteed price and the markets to farmers. Through it, poor are provided food grains by the Public Distribution System (PDS) as they are not able to purchase it from the open market. It has wider implications for the economy in terms of maintaining stability in the prices of crops. It has been identified by United Nation as a means to achieve sustainable goals particularly eradication of hunger and poverty. But in India, the main crops procured are not grown in all states or the quantity produced is not adequate to be procured. As a result, some states are able to take more benefit of this policy while others left out. The present paper attempts to analyse the spatial and temporal patterns of crops procurement from different states the country. Data generated by the Ministry of Agriculture has been used. The study also explores the association between quantity of procurements and various variables using statistical techniques. Significant positive correlation has been found between procurement of paddy crops and area under cultivation and production of paddy. Level of significance has been determined using Student's t-test. Some conclusions have been drawn through hypothesis testing.

Key wards: Procurement, minimum support price, correlates of procurement, Minimum support price, public distribution system

1. Introduction: With the post-independent development, the income level differences increased and the industrial development led to increase in the prices of the consumer goods. The Indian government directly intervened by purchasing food grains and other commodities from the market and distributed at lower prices to ensure adequate availability of these items with all sections of the society. It was decided to purchase wheat, rice (paddy), pulses, oilseeds and other agriculture products at minimum support prices (MSP) and to supply to the target group of population at the fixed prices through Public Distribution System (PDS). The procurement provided a fixed return to the farmers, as a result, the farmers start giving preference to produce such crops. The farmers growing such crops get benefitted from the system of procurement of crops. This led to resentment among the farmers of the other states that are growing other crops which are not procured at pre-determined prices and started public movement at different point of times. In this background, the present paper attempts to highlight

Agricultural Development And Land Holding Characteristics: A Case Study Of Bibipur Village, Haryana

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Abstract:

Since ancient times, agriculture has been the main human occupation. It continues to be a significant endeavour on a global scale. The agricultural standard has altered significantly from antiquity to the present. Because of the world's rising population and rising food consumption, agriculture is the most demanding industry. In addition to giving producers employment, agriculture also supplies many businesses with raw materials. Each year, hundreds of studies are conducted at the agricultural level to determine what factors influence an area's ability to produce food, how an area can be improved as an agricultural location, and how productivity can be increased. The agricultural landscape has altered since the start of the Green Revolution, and this has had a significant impact on India, particularly in the states of Haryana, Punjab, and western U.P. Any town, area, or nation's agricultural level relies on a number of variables, including the land's surface, the soil´s type and condition, the water's availability, the drainage pattern, irrigation, agricultural practices, the degree of automation, and the use of chemical fertilizers, insecticides, and pesticides, among others. All of these elements influence farming development wherever it occurs. A case study has been conducted to learn more about the characteristics and degree of agriculture in the hamlet of Bibipur based on these variables.

Keywords: Agriculture Production, Agricultural Level, Green Revolution, Drainage Pattern, Mechanization

1. Introduction

The extent of land holdings and its effects on farming output, fertile land, irrigation issues, and plough issues are a global issue. In comparison to other countries, Nigeria's rice farming area is very tiny, which has a negative effect on rice productivity and inhibits the practise of rice framing. (Benchendo et al ., 2014). Technology-related elements influencing the state of Andhra Pradesh's land use system (Reedy, 1991). The earth, biotic elements, and water are all natural resources that are part of land. All of these natural resources offer various services for the upkeep and operation of systems that sustain life, as well as for the productivity of the land and environmental safety. An effective land holding is a crucial factor and contributes significantly to overall output. (Desai, 1997). Land is a major natural resource, and understanding how it is used and how different societies have developed historically is crucial at all educational levels. (Kaur, 1991). For both humans and agricultural production, soil is a crucial natural resource. The farming output and crop yield of a region are determined by its character and fertility. It is an important natural factor for people as well. (Singh, 2008). In terms of farmland, Haryana is one of India's most forward-thinking regions. Since the adoption of new farming technology in 1965–1966, Haryana has seen significant changes in the area, output, and yield of different commodities, especially in the choice of cropping pattern. (Dhindsa and Sharma, 1995). Numerous writers concur that the

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SPATIAL DISTRIBUTION OF START-UP CITIES OF INDIA

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An Abstract : Cities are centers of very high density of population, mainly engaged in non-agricultural activities. The population is usually well educated, trained, highly technical and innovative. Cities with such population are vibrant and energetic and lead the country in different sectors of socio-cultural-economy of the country. Historically cities led the society in trade and commerce, administration, education and industrial activities. In economic development planning cities acted as the Growth Pole or Growth foci through which the development trickle down to smaller settlements. The Information and communication technology brought a new entity named startups in highly technical cities. Initially startups were heard in the Silicon Valley of United States of America, concentration of technology based companies. Later on with the dispersion of technology, outsourcing of processing component of these big companies and economic compulsions, these big companies start operating from different parts of the world. This led to emergence of startups even in developing countries like India. Our prime minister said, "I see startups, technology and innovation as exciting and effective instrument for India's transformation". Indian Government is considering startups as new engine of employment generation and growth. Startups are making news nowadays and in gaining popularity in India. Their number is increasing day by day. Some of the successful startups are financed or take over by big companies. These startups are highly concentrated in cities. Startup is a new dimension added to the characteristics of cities. The economists are writing number of articles on number, type, investment and different aspects of startups. We geographer are not able to take note of these. It is necessary to analyse the geographical dimensions of startups. Therefore, this paper attempts to trace out the spatial distribution and types of these startup cities in India using secondary data extracted from angel list of startups up to March 2016.

Key words: startup cities, innovation, ICT, GIS, QGIS, techies, open source software

Introduction:

There is a noise of the word "startup" nowadays. Everyone is talking about this word. The print media especially economic ones are full of articles related to startups. The new generation of students passing out of IIT's, IIIT's, IIM's and other technological and management institutes loves to associate themselves with this word. These management and technical students working on their project work sometimes hit some idea of doing something in a different manner using technology and management skills. These new ideas or innovation brought a revolutionary change in the manner business is done or commerce is done or payment is made or products and services are supplied to customers using information and communication technology. New companies are formed to use these innovative ideas and earned millions. Facebook, Google, Amazon.com etc. present day big companies were started as startups. The term gain popularity during the dot.com bubble when number of dot.com companies formed. Those who provided these innovative ideas also become partners in these companies and become millioner's over the night. Big companies, big banks and venture capitalists run after these newly formed companies either to take over or to finance these. The students are encouraged to develop more and more such innovative ideas by financial and other support. These newly established entities, now termed as startups are now hot cakes of the day in India. The startups are coming up in metropolitan cities of India. Cities are centers of very high density of population, mainly engaged in non-agricultural activities. The population is usually well educated, trained, highly technical and innovative. Cities with such population are vibrant and energetic and lead the country in different sectors of socio-cultural-economy of the country. Historically cities led the society in trade and commerce, administration, education and industrial activities. In economic

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डॉ0 भीमराव अंबेडकर का राजनीतिक चिन्तन

डॉ0 शलग्न चिकारा
एसोसिएट प्रोफेसर, इतिहास विभाग, स्वामी श्रद्धानन्द कॉलेज (दिल्ली विश्वविद्यालय), दिल्ली

डॉ0 भीमराव अम्बेडकर जब राजनीति में आए उस समय भारत में अंग्रेजों का राज्य था। एक तरह से भारत ब्रिटेन का साम्राज्यवादी राजतंत्र था। उस समय प्रथम विश्व युद्ध हो चुका था। सत्य है कि युद्ध का परिणाम विनाशकारी होती है, पर युद्ध के कुछ क्रांतिकारी पहलू भी होते हैं। कुछ सकारात्मक परिणाम भी आते हैं। इस युद्ध से सैन्य–असैन्य माध्यमों से जनता का संपर्क विश्व के दूसरे लोगों से हुआ, परिणाम एक नवीन चेतना आई और यह चेतना थी समता की, समरूपता की और एकता की। बात जहाँ तक भारत की की जाए तो यहाँ पर एक वर्ग दूसरे वर्ग द्वारा शोषण झेल रहा था और वह समाज के निम्नतम कार्य करने को बाध्य किया जा रहा था। समाज में उसका स्थान सबसे नीचे था (हर तरह से)। स्वतंत्रता मानव का जन्मसिद्ध अधिकार है यह वाक्य उस समय जनता और राष्ट्र की आवाज बन गया था। उस समय कांग्रेस की स्थापना हो चुकी थी। गाँधी जी भारत आ गए थे। गाँधी जी के नए प्रयोग सत्य, अहिंसा थे। अंग्रेज सरकार भी इस नवीन उत्साह चेतना को देख रही थी। इसी माहौल में डॉ0 अम्बेडकर का उदय भारत के राजनीतिक परिवेश में होता है जो कि भारत के पढ़े लिखे लोगों में आई चेतना के दलित प्रतीक थे। डॉ0 अम्बेडकर एक राजनेता थे जो जीवन को हर तरह से समुन्नत बनाना चाहते थे। उनकी राजनीति मानवतावादी आधार पर आधारित थी। वे दलित समाज के अगुआ थे। उनकी राजनीत मुख्यतः मानव भलाई की नीति थी। वह पूरे समाज को समता स्वतंत्रता और भ्रातृत्व भावनात्मक समाज देना चाहते थे।[1] अंबेडकर जी जनतांत्रिक व्यवस्था के समर्थक थे। सामान्यतः जनतंत्र बहुसंख्यक के मतों पर निर्णय लेता है और इसमें सामान्यतः निम्न लोगों को स्थान नहीं मिलता। उन्होंने दलितों को उनका अधिकार दिलाने के लिए उन्होंने हिस्सेदारी की मांग की। डॉ0 अम्बेडकर ने समाज के ऐसे वर्ग को उसका अधिकार दिलाने के लिए जो आंदोलन किए वह अपने आप में एक महान कार्य है। डॉ0 अम्बेडकर का मानना था कि जब तक व्यक्ति को राजनीत में हिस्सेदारी प्राप्त नहीं होगी तब तक उन्हें उनके अधिकार प्राप्त नहीं हो सकते हैं।[2] अम्बेडकर ने समाज के वंचित समुदाय के लिए जो कार्य किया, उनके समाज की मुख्यधारा में शामिल करने हेतु जो दर्शन प्रस्तुत किया है, वह जाति या वर्ग तक सीमित नहीं है। वे सामान्यतः एक ऐसी राजनीतिक व्यवस्था चाहते थे, जिसमें धर्म, राज्य सत्ता, पूंजीवाद, प्राचीन वर्ण व्यवस्था द्वारा सभी मानव प्राणी का शोषण समाप्त हो जाए।[3]

डॉ0 अम्बेडकर का समस्त राजनीतिक विचार मनुष्य केन्द्रित है। उनका कहना था कि समाज में ऐसा कोई बंधन ना हो जो उसकी आजादी उससे छीने। सामान्यतः मनुष्य का जीवन सामाजिक, राजनीतिक और आर्थिक क्षेत्र से ही जुड़ा होता है और यही वह फैक्टर है जो मनुष्य के विकास में बाधक बनते हैं अगर इनका उचित वितरण समाज के सभी लोगों में एक समान ना हो। डॉ0 अम्बेडकर मनुष्य की स्वतंत्रता को नष्ट करने वाले इन बंधनों के विरोध में अपने विचार प्रस्तुत करते हैं। डॉ0 अम्बेडकर का राजनीतिक दर्शन मानव समाज के परस्पर संबंधों से एक दूसरे के अनुभव और एहसास के साथ जुड़ा है।

किसी भी जाति या समुदाय के लोग अपनी जाति एवं समुदाय की प्रगति में जितना योगदान दे सकते हैं शायद उतना कोई इतना न दे सके, क्योंकि इनका उससे प्रत्यक्ष संबंध होता है। दलित भी इसके अपवाद नहीं हो सकते अतः वे उनसे अपेक्षा करते हैं कि वे उनके विकास में सहायक सिद्ध हो।[4]

डॉ0 भीमराव अम्बेडकर दलितों में काफी पढ़े–लिखे व सम्मानित थे। वह उच्च शिक्षित, कठिन परिस्थितियों से गुजरकर सफल हुए हैं। अतः समाज में अंबेडकर जी का प्रभाव भी उनके अपने लोगों के बीच अलग तरह का था। सामान्यतः यही होता आया है कि जो लोग अपने लोगों के बीच काफी सफल हो जाते हैं वह आगे चलकर उन्हीं लोगों को भूज जाते हैं लेकिन अंम्बेडकर पर यह बात लागू नहीं होती। वह जिस दलित समुदाय से जुड़े थे ताउम्र उसके विकास में अपनी पूरी जिंदगी लगा दी। डॉ0 अम्बेडकर

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Non-perturbative multiphoton excitation studies in an excitonic coupled quantum well system using high-intensity THz laser fields

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Multiphoton excitations and nonlinear optical properties of exciton states in GaAs/Al$_x$Ga$_{1-x}$As coupled quantum well structure have been theoretically investigated under the influence of a time-varying high-intensity terahertz (THz) laser field. Non-perturbative Floquet theory is employed to solve the time-dependent equation of motion for the laser-driven excitonic quantum well system. The response to the field parameters, such as intensity and frequency of the laser electric field on the state populations, can be used in various optical semiconductor device applications, such as photodetectors, sensors, all-optical switches, and terahertz emitters.

Keywords: quantum well, excitons, terahertz, non-perturbative, multiphoton, laser, Floquet

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1. Introduction

The terahertz (THz) regime of the electromagnetic spectrum is commonly recognized by the frequency range of 0.1 THz–30 THz.[1] In the last few decades, progressive growth of various experimental techniques to control the dimensions and complexity of nanostructures as well as the development of various THz sources such as free electron lasers,[2,3] quantum cascade lasers,[4] and the accelerator-based THz light sources that can emit radiation with peak power in the megawatt region[5] has led to the expansion of interest of researchers to study the optical properties of quantum nanostructures. Immense literature work has been devoted to the optical studies of quantum nanostructures using THz sources that have profound utilization in the fields of pharmaceutical and biomedical,[6] industrial, environmental and meteorological applications,[7] security systems,[8] detecting explosive agents,[9] *etc.* Notably, semiconductor quantum wells have been probed for the terahertz detection using intersubband transitions in GaAs/AlGaAs quantum wells, which has led to the evolvement of new devices operating in the infrared and far infrared regions such as far-infrared photo-detectors,[10] all-optical switches,[11] high-speed electro-optical modulators,[12] and infrared lasers.[13]

The structure parameters of the quantum structures, especially the shape of the quantum well and potential specifics, are important criteria to study the optoelectronic properties covering a wide spectral range.[14–19] In quantum wells structures, light irradiation creates the electrons and holes in the quantum well, which are often bound to form neutral excitons. The suitability of THz laser devices to study excitonic interactions can be asserted on the fact that intraexcitonic energy spacing between exciton states is comparable to the wavelength range in which the THz laser devices operate. At present, there are various experimental techniques that may be used to investigate the excitonic optical properties, such as photoluminescence (PL) spectroscopy, near-infrared (NIR) absorption spectroscopy, *etc.*, using THz light sources. The analysis has many practical applications. For instance, Wagner *et al.* observed the near-infrared transmission of a semiconductor multiple quantum well probed under intense terahertz illumination and provided a scheme for an ultrafast, normal-incidence optical modulator.[20] Galbraith *et al.* experimentally studied PL and terahertz absorption spectra of a GaAs multiple quantum well, indicating the experimental detection of a population of bound exciton.[21] Rice *et al.* experimentally studied exciton transitions mediated by Coulomb interactions in photoexcited semiconductor quantum wells. The experimental evidence of the PL emission acted as a good fingerprint to identify excitonic populations.[22] Su *et al.* demonstrated the use of THz driven gated double quantum well for voltage-controllable wavelength converter.[23]

In this paper, we introduce a four-level excitonic quantum well (EQW) system made by two GaAs/Al$_x$Ga$_{1-x}$As quantum wells, and study the multiphoton transitions using a periodic laser field and static electric field. Perturbative methods have been used to study the interaction of high-intensity lasers with EQW under the influence of dc electric field as well.[24,25] The perturbation theory has the disadvantage that it declines when the radiation intensity is too large or when the radiation frequency is close to one of the eigenfrequencies. Further, the

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Valuing water provisioning service of Broadleaf and Chir Pine forests in the Himalayan region

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ABSTRACT

Inhabitants of the upper Himalayan regions entertain a belief that the Chir Pine trees are ingressing the Broadleaf forest areas and that these areas are gradually turning into water stressed regions as Chir Pines adversely influence water recharge and water availability. This paper examines whether and to what extent the Chir Pine forest areas are water stressed compared to Broadleaf forest areas by studying the household coping cost in relation to water stress. We use the coping cost differences thereafter to value the relative water provisioning services of forest types. We conduct multiple focus group discussions, a questionnaire survey and statistical analyses to derive the results. Results show all households, except the ones living near Deodar forest, to face water stress in summer but the Chir Pine areas are the most water-stressed. Both comparison of mean and multivariate regressions of water collection time and other coping costs show that the villagers surrounded by Deodar, Deodar mix pine, Broadleaf mix bush or Broadleaf mix pine forests spend much less time for water collection and spend less on water treatment and storage compared to the villagers surrounded by Chir Pine forest irrespective of elevation, aspect or model used. These differences in water collection time amount to a wage income loss between USD 31 and USD 318 in India, and between USD 23 and USD 238 in Nepal per year per household, in Chir Pine areas compared to other forest areas.

1. Introduction

Forests are considered contributors to hydrological services. Their ecological role in promoting infiltration increases soil moisture content and groundwater recharge, which contribute to the gradual release of water (Calder, 2002; Bruijnzeel, 2004). The role of forests in reducing surface runoff and maintaining soil stability and thereby improving the water quality in terms of sediment loading has been established (Ilstedt et al., 2007; Lele, 2009; Vincent et al., 2016). Forested watersheds are considered to be stable hydrological systems (FAO, 2007) and the biophysical process of forest-water interaction has been established by researchers (see Bonell and Bruijnzeel, 2005). A review of scientific studies of the hydrology of the Indian Himalayan region shows that forested land loses smaller quantities of both soil and water compared to other land use types such as slash-and-burn agriculture and grassland (Negi, 2002). In addition, forest covers have a perceptible positive effect on water yield, especially on a micro-scale (Bruijnzeel and Bremmer, 1989). However, the biophysical condition of the area works as a strong modifier in the water provisioning services of forests (Calder, 2002, 2007; Negi and Joshi, 2004). However, while there is agreement on 'the role of the upstream forest cover in ensuring the delivery of high-quality water', there is far less consensus on observations like 'the upstream forest cover having a positive effect on the downstream annual and seasonal flows' as they have been found to be context-dependant, especially in arid or semi-arid ecosystems (Malagnoux et al., 2007; Van Dijk and Keenan, 2007; Tobella et al., 2014; Ilstedt et al., 2016). In Carvalho-Santos et al. (2014) can be found a summary of the extensive literature on the forest-water nexus.

However, the nexus between the species composition of the forest, i.e., Chir Pine vs. Broadleaf or native vs. exotic and water availability is less studied, which this paper tries to address. Though there is general evidence-based understanding that the relationship between the two phenomena, i.e., species composition and water availability, could work both ways (Espinosa et al., 2011; Sarvade et al., 2016), local communities in the Himalayas strongly believe that native Broadleaf forests provide better water provisioning services compared to the planted Chir Pine or Chir Pine monoculture forests (Rai et al., 2015). Usually, the rural community evaluates plant species based on how

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ORIGINAL ARTICLE

Multi-attribute dependent bug severity and fix time prediction modeling

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Abstract A software bug is characterized by many features/attributes out of which some are entered during the time of bug reporting whereas others are entered during the bug fixing. Severity is an important bug attribute and critical factor in deciding how soon it needs to be fixed. During the initial period of bug reporting, its severity changes and get stabilizes over a period of time. Severity identification is a major task of triagers, whose success affects the bug fix time. The prediction of bug fix time will help in estimating the maintenance efforts and better software project management. We investigated the association among the bug attributes and built multi-attribute based classification and regression models for bug severity and fix time prediction. Bug severity and fix time prediction models have been built using the combinations of different independent bug attributes. We have used different classification and regression techniques, namely Support Vector Machine (SVM), Naïve Bayes (NB), k-Nearest Neighbors (k-NN), Ordinal Regression (OR), Fuzzy Linear Regression (FLR), Fuzzy Multi Linear Regression (FMLR), Multiple Linear Regression (MLR), Support Vector Regression (SVR) and k-Nearest Neighbors Regression (k-NNR) to build the models. Our models are tested on the real world datasets from famous open source project: Mozilla. k-NN gives better performance than NB and SVM in terms of precision and f-measure for bug severity prediction. In terms of goodness of fit, SVR is better than MLR and k-NNR for bug fix time prediction. The proposed mechanism is able to predict severity and fix time for newly reported bugs. Empirical results reveal that the multi-attribute based classification and regression models work well for bug severity and fix time prediction. The two newly derived attributes Summary weight and Bug age are found to be good predictors of severity across all the used techniques. In case of bug fix time prediction, Bug age is found to be a good predictor.

Keywords Prediction model · Bug severity · Bug fix time · Summary weight · Bug age

1 Introduction

In the software maintenance process, bug resolution is an important activity. Software projects adopt bug tracking systems to track and manage the huge information about the reported bugs that appear in the software development process. Bug reports provide the detailed information about the reported bugs which is used by developers to fix the corresponding bugs (Herraiz et al. 2008). A bug report may contain all basic information about the bug, such as summary, number of comments, number of attachments, reporter, assignee (fixer), severity, priority, resolution, status, dependencies, CC list, component and product (Sharma et al. 2013). During bug reporting some of these bug attributes may not be entered by the reporter. Bug

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Persistent currents and induced magnetization in presence of external magnetic field and transition probabilities in presence of combined laser pulse and external magnetic field for a confined hydrogen atom

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ABSTRACT

In this work we propose to study an atom confined in a potential which consists of a Hulthén potential plus a ring-shaped potential. The atom is further subjected to a spherical confinement. The time-independent Schrödinger equation (TISE) of the system is solved numerically. Exact energy levels are obtained. The persistent current and induced magnetic field of such a confined atom is evaluated. Finally, the atomic system in this potential and confinement is subjected to short electromagnetic pulses, which are shown to induce enormous currents.

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1. Introduction

In recent years there has been a surge in the research in the field of modified potentials. The modified potentials are combination of potentials which may or may not have angular dependence [1]. However, exact analytical solutions of such potentials are difficult to find. Most of the studies, based on these potentials, are done with some approximations. Although a pure Hulthén potential has been a subject of study for many decades now and analytical solutions for this potential for $l = 0$ states are exact and known, for $l \neq 0$, solutions are usually obtained by expanding the $\frac{1}{r}$ term, under some approximation, and thus obtaining energy eigenvalues and eigenfunctions. The modified potentials listed in the literature are numerous [2–4]. But recently, combinations of a radial potential with the ring-shaped potential have been studied. Cheng and Dai [5] studied the ring-shaped potential with the Kratzer potential. The ring-shaped potential introduced by Hartmann and Schuch [6] has revolutionized the theoretical studies, related to atomic, molecular and interdisciplinary physics [7–9].

The potential taken in this study is a Hulthén plus ring-shaped potential. The potential in the context of nuclear physics has been successfully used to predict the energy levels of some heavy nuclei [10]. The TISE for an atom confined in a Hulthén plus ring-shaped potential, under spherical confinement is solved numerically. The nine-point finite difference method was used to find the energy levels and eigenfunctions of both the radial and the angular equations of motion. The finite difference method has successfully been used in many studies. It may be mentioned that the numerical solutions for the Schrödinger equation obtained in the present study have not been worked out earlier.

During the last few years, intensive research has been devoted to the generation and control of persistent currents and the magnetic fields generated by such currents, since they have many applications of interdisciplinary nature [11–15]. The generation and control of persistent currents and magnetism has been recently studied using twisted lights, where the interaction of orbital angular momentum with the spatial mode of the electromagnetic field is exploited. Various groups have successfully shown that such twisted light beams can alter and generate large per-

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Research article

Mycorrhizal symbiosis down-regulates or does not change root aquaporin expression in trifoliate orange under drought stress

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ABSTRACT

Arbuscular mycorrhizas absorb water from soil to host plants, while the relationship between mycorrhizas and aquaporins (AQPs, membrane water channel proteins, which function in water transport) in mycorrhizal plants is unclear. In this study, *Funneliformis mosseae*-colonized trifoliate orange (*Poncirus trifoliata*) seedlings were grown in pots fitted with 37-μm nylon meshes at the bottom of each pot to allow mycorrhizal hyphae absorb water from an outer beaker. The expression of seven plasma membrane intrinsic proteins (PIPs) genes, six tonoplast intrinsic proteins (TIPs) genes, and four nodulin-26 like intrinsic proteins (NIPs) genes were analyzed in roots of both well-watered (WW) and drought stressed (DS) plants. The six-week DS plants dramatically increased hyphal water absorption rate by 1.4 times, as compared with WW plants. Mycorrhizal plants exhibited greater plant growth performance, leaf water status (water potential and relative water content), and gas exchange under both WW and DS conditions. Mycorrhizal inoculation induced diverse expression patterns in these *AQPs* under WW: up-regulation of *PtNIP1;1*, *PtPIP2;1*, and *PtPIP2;5*, down-regulation of *PtNIP1;2*, *PtNIP6;1*, *PtPIP1;2*, *PtPIP1;5*, *PtPIP2;8*, *PtTIP1;1*, *PtTIP1;2*, *PtTIP1;3*, and *PtTIP5;1*, and no changes in other *AQPs*. However, the expression of *PtPIPs* and *PtNIPs* was down-regulated by mycorrhizal inoculation under DS, and *PtTIPs* was not induced by mycorrhizal colonization under DS. The expression pattern of AQPs in response to mycorrhizas under DS is a way of mycorrhizal plants to minimize water loss.

1. Introduction

Drought stress (DS) is one of the main environmental stresses severely limiting crop productivity and ultimately the food security (Fahad et al., 2017). The frequency, duration, and spatial extent of drought has further increased in recent years (Finnessey et al., 2016; Nie et al., 2018); therefore, it is indeed an urgent task to understand increasing drought tolerance in crop plants, to overcome this situation. Arbuscular mycorrhizal fungi (AMF) predominantly reside in the rhizosphere and can colonize roots of majority of terrestrial plants to establish mycorrhizal symbiosis (Smith and Read, 2008), in which host plants supply sugars and lipids for spore proliferation and subsequent completion of their life cycle (Keymer and Gutjahr, 2018), and AMF improves nutrient and water absorption of host plants (Cavagnaro et al., 2015; Basu et al., 2018). Earlier studies had confirmed a positive effect of AMF on enhancing drought tolerance of host plants by means of morphological adaptation, physiological responses in osmotic adjustment, nutrient and water uptake, antioxidant defense systems, and the molecular regulation of aquaporins (*AQPs*) genes, 14-3-3 genes, a binding protein, late embryogenesis, etc. (Allen, 2007; Birhane et al., 2012; Marshad and Puthur, 2017; Xu et al., 2018; Zhang et al., 2018, 2019; He et al., 2019; Wu et al., 2019).

Extraradical hyphae of mycorrhizas on root surface can extend many-fold and thus proliferate beyond the rhizosphere nutrient- and water-depletion zones around plant roots (Cavagnaro et al., 2015). Zhang et al. (2018) estimated that water absorption rate of extraradical hyphae was 0.126–1.973 mg H_2O/h/mm, and DS treatment increased the hyphal water absorption rate by 2.3–6.6 times, indicating higher efficiency of mycorrhizal hyphae under dried soils than under saturated soils. Therefore, mycorrhizal hyphae act as highways with a direct pathway for water flow in arid soils (Allen, 2007). However, it is not clear whether under the condition of such water absorption of mycorrhizal hyphae, mycorrhizas affect *AQPs* expression levels in mycorrhizal plants subjected to DS.

Plant AQPs are cell membrane intrinsic proteins, which belong to a major intrinsic protein family, mainly including nodulin-26 like

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तांत्रिक विद्या का प्राचीन विश्वविद्यालय विक्रमशिला

डॉ० लाल बहादुर स्वर्णकार

प्रोफेसर, इतिहास विभाग, स्वामी श्रद्धानन्द कॉलेज (दिल्ली विश्वविद्यालय) नई दिल्ली।

भारतीय संस्कृति तथा साधना के उज्ज्वल इतिहास में विक्रमशिला विश्वविद्यालय संबंधा है। पर्याप्त प्रामाणिकता और प्रतिबद्ध राष्ट्रीयता के अभाव में विक्रमशिला विश्व-विद्यालय भी अपने स्थल, निर्माण काल और निर्माता के साथ अपनी मौलिक भूमिका को प्रकाशित करने में वर्षों तक विवादास्पद बना रहा। किन्तु अब विवादों के बादल छँट गये है। भारतीय विद्वान हर प्रसाद शास्त्री, प्रबोधचन्द्र बागची, विनयतोष महाचार्या, राहुल सांकृत्यायन, हजारी प्रसाद द्विवेदी आदि ने अपने खोजपूर्ण अध्ययनों द्वारा विक्रमशिला की महान गौरव गाथा को स्पंदित कर दिया है। फलस्वरूप पूर्वांचल धरती की मंत्रपूत सिद्धभूमि विक्रमशिला विश्व- विद्यालय समस्त विश्व के समक्ष बौद्ध धर्म की महायान शाखा के दार्शनिक कवियों की सिद्ध बाणियों को मुखरित करने लगा है। विक्रमशिला का सम्भवत: समुचित नाम विक्रमशील है। इस ओर पुरातत्व तथा भारतीय भाषा-विकास के तथ्य सकेत करते हैं। सिद्धों की वाणियों के प्राप्त तिब्बती अनुवादों में कई स्थानों पर विक्रमपुर, मित्रमलपुरी आदि नगरबोधक नाम आये है। 'शील' बौद्ध धर्म के एक अत्यन्त महत्वपूर्ण आचार-विचार की उच्चतर भावभूमि का बोधक शब्द है। जो इस 'शील' के स्तर पर पूवर्ती साधकों का विशेष रूप से क्रमण करता है, वही विक्रमशील है। निश्चयपूर्वक बिहार प्रांत के भागलपुर जिले के पूर्वी क्षेत्र स्थित कहलगांव के समीप गंगा के तट पर स्थित विक्रमशील विश्व-विद्यालय महासुस, निर्वाण और बोधिसत्त्व की आध्यात्मिक स्थितियों की साधना का अवगाहन और अभिव्यक्ति 'शील' के सन्दर्भ में अधिकाधिक करता रहा होगा। विद्वानों ने उपलब्ध आलेखों के आधार पर यह माना है कि आठवीं पाताब्दी से लेकर बार शताब्दी तक साधना के साहित्य रचने वाले मुप्रसिद्ध चौरासी सिद्धों में आधे से अधिक बिहार के निवासी थे और इनमें अधिकांश विक्रमशील विश्वविद्यालय से सम्बद्ध थे। कुछ सिद्धों की मातृभूमि तो विक्रमशील के पाश्ववर्ती क्षेत्र हैं और कुछेक के जन्म स्थान सहोर (आधुनिक नाम सबौर), मंगलपुर (आधुनिक नाम भागलपुर) और चम्पा (आधुनिक नाथनगर क्षेत्र) माने जाते हैं। इनमें सरहपा, लूईपा, शबरपा, मदेपा, चर्पटीपा, धामपा, बीणापा, दीपंकर श्रीज्ञान, नारोपा, शांतीपा, चम्पपा, चेलुकपा, विनयश्री आदि सिद्धगण विक्रमशील शिक्षक और अंग गौरव शिष्य इन तीनों रूपों में से किसी-न-किसी प्रसंग में विक्रमशील के महान सस्कारों के संवाहक सिद्ध होते हैं। विक्रमशिला तांत्रिक विद्या का प्राचीन भारतीय विश्वविद्यालय था, जिसका प्रभाव लगभग आठवी से बारहवीं शताब्दी तक भारतीय साधना की धारा पर रहा तांत्रिक साधना और चर्यारों की रचना इस विश्वविद्यालय की देन है। राजा धर्मपाल ने इस विश्वविद्यालय की स्थापना संभवत: आठवीं शताब्दी में की थी राजा धर्मपाल बंगाल के प्रथम पाल राजा गोपाल के पुत्र थे। विक्रपजिला की स्थापना चाहे जब कमी हुई हो, किन्तु यह तो बिलकुल प्रमाणित तथ्य है कि इस विश्वविद्यालय का अस्तित्व लगभग चार सौ वर्षों तक रहा। इन चार सौ वर्षों के बीच विक्रमशिला शिक्षा का, तंत्र साधना और साहित्य का एक प्रमुख केन्द्र रहा। ठीक इसी विश्वबिद्यालय के समकालीन यहाँ से पश्चिम में नालन्दा विश्वविद्यालय भी इसी प्रकार का कार्य कर रहा था। विक्रमशिला ने देश-विदेश के विद्वानों को प्रभावित किया, जिनमें तिब्बयों का सम्बन्ध इस सिद्धपीठ से बड़ा पुराना रहा। बौद्ध संसार के प्राय: सभी केन्द्रों से इसका सम्बन्ध था। नालन्दा की तरह यह महायान बौद्धशाखा का केन्द्र था उकी महायान शाखा के विकास ने कालान्तर में तन्त्र साधन को जन्म दिया, जिनमें यजमान और फलत: तन्त्र साधना के कई रूप उमरे, जिनमें कालचक्रवान शाखा लगभग दसवीं शती में फैले। वाममार्ग की जड़ विक्रमशिला में गहरी जमी गत कई वर्षो से हुई खुवाई में प्राप्त खण्डहरों की दीवारों पर इन गिद्धों के उत्कीर्ण चित्र मिले हैं। विक्रमशिला के निकट शबरी देवी का स्थान मी है, जहाँ बलि प्रदान

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INDIA'S NPA CRISIS AND NEW RBI POLICY AND FRDI BILL

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ABSTRACT

Banks are the most important financial institutions in a country. They contribute to economic development through the process of financial intermediation. Non Performing Assets (NPAs) and banking frauds tend to reduce the efficacy of the banking sector. According to Financial Stability Report 2017, India's gross NPA stands at 9.6%. It is a large figure when compared to other Asian economies. The basic metal and cement industries contribute to the largest share of NPAs. Public sector banks in India have the largest amount of NPAs in their balance sheets. This paper has taken into consideration the secondary data available from various research papers and article downloaded from SSRN, JSTOR, and Research Gate to analyze possible reforms to resolve the NPA problem of the economy. FRDI bill which attempted to reform the resolution mechanism has been discussed. The paper also emphasizes on certain reforms for public sector banks, RBI's governance mechanism and the overall banking sector that can help to clean up the balance sheets of Indian banks and make them more efficient in their core functions. The paper also throws light on the recent banking frauds that wiped out billions of rupees from the banking system and discusses the steps that RBI has taken to prevent such frauds in the future.

KEYWORDS: *Non Performing Assets, Public Sector Banks, Recapitalization, Private Banks, RBI.*

Introduction

One of the biggest challenges in the Indian financial system is the poor health of its banking sector. Indian banks are plagued with Non-Performing Assets (NPAs). As defined by RBI, An asset, including a leased asset, becomes non-performing when it ceases to generate income for the bank. A 'non-performing asset' (NPA) is defined as a credit facility in respect of which the interest and/ or installment of principal has remained 'past due' for a specified period of time. The specified period has been reduced in a phased manner. Currently, the specified period is of 90 days. As per Financial Stability Report 2017, India's gross NPA stands at 9.6%. It is a grave situation because an increase in the total size of NPAs means lower revenue stream for banks. It then leads to lower credit creation in the economy. High NPAs also mean lower confidence in the market and increased the cost of credit. This severely affects total investment and consumption expenditure in the economy. A lower overall demand is the ultimate result and thus a setback in GDP growth figures. This paper attempts to focus on various aspects of the NPA problem of our banks, compares the size of our NPAs with other global economies, highlight which industries and which banks are most affected. It also throws light on various steps taken by the government to combat this disease of Indian banking system with a major focus on FRDI bill. Some of the major themes as brought out by recent roundtable organized by Brookings India on NPA resolution have been deliberated upon. In the end, the recent banking frauds have been summarized along with the steps taken by RBI to prevent such frauds.

Objectives of the Study

- To understand the meaning of NPAs
- To understand how the government has reacted to the NPA problem

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Computational prediction of interaction and pharmacokinetics profile study for polyamino-polycarboxylic ligands on binding with human serum albumin†

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Human serum albumin (HSA) is one of the most abundant plasma proteins available in blood and responsible for transport of fatty acids, drugs and metabolites at its two primary binding sites (site 1 and site 2). The interaction of drug molecules with HSA is important and attention-grabbing in the field of science, chemistry and clinical medicine since it affects drug stability and toxicity during therapeutic processes. Hence, the detailed investigation of HSA–drug interactions is required to understand the pharmacodynamics and pharmacokinetics profile of a drug. A drug molecule with effective pharmacological properties can be designed by studying the HSA binding, which acts as a reservoir for a long duration of action and ultimately affects the ADMET (absorption, distribution, metabolism, excretion and toxicity) properties of the drug molecules. Here in the present work a computational investigation including a binding analysis and interaction study of polyamino-polycarboxylic ligands with HSA was conducted. The *in silico* analysis has been implemented at HSA drug binding sites, site 1 and site 2, *via* docking studies, prime-MM-GBSA analysis (molecular mechanics energies with generalized Born and surface area continuum solvation), and multiple linear regression analysis with ADMET descriptors and quantitative estimation of $\log K_{HSA}$ for the respective molecules. These descriptors described the relevant pharmacokinetics and pharmacodynamics of these ligands for gadolinium-based MRI agents (GBCA). Finally, a complete picture and correlation tell about the primary aspect for the selection of vehicles for magnetic resonance and lanthanide ion-based optical imaging probes.

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Introduction

In pharmaceutical research prediction of ADME of drug molecules is of great importance. After a time consuming and expensive process of new drug discovery, the rate of drug development failures is nearly 40% due to poor pharmacokinetic properties of drug molecules. Hence, most attention goes to the prediction of ADME profiles of molecules for the better description of required pharmacokinetics parameters. These ways lead to improvement in quality of lead molecules which may enter drug development phases later on. Computationally, ADME profiles of molecules are often estimated by the determination of physicochemical properties including evaluation of blood brain barrier, oral bioavailability, aqueous solubility and many more, and thus correlating with QSAR. Due to advancement in molecular pharmacology various important proteins have been characterized that outline the pharmacokinetics profiles of molecules. In this regard, a computational methodology of molecular docking is an approach to predict the interactions between molecules and their binding protein and hence providing information regarding binding affinity and specificity of molecules. Interestingly, these interactions of molecules and pharmacokinetically important proteins may provide pharmacokinetics profiles of the respective molecules.

Among ADME properties of molecules, one of most important is plasma-protein binding which affects transport and release of molecules. Several drug molecules bind to three types of plasma protein: HSA, α-1 glycoprotein and lipoproteins. HSA, the most abundant plasma protein, accounts for 60% of total blood plasma.[1] HSA is the major transporter of fatty acids as well as

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Original scientific paper

Entropy based Software Reliability Growth Modelling for Open Source Software Evolution

Abhishek TANDON, Meera SHARMA, Madhu KUMARI, V. B. SINGH

Abstract: During Open Source Software (OSS) development, users submit "new features (NFs)", "feature improvements (IMPs)" and bugs to fix. A proportion of these issues get fixed before the next software release. During the introduction of NFs and IMPs, the source code files change. A proportion of these source code changes may result in generation of bugs. We have developed calendar time and entropy-dependent mathematical models to represent the growth of OSS based on the rate at which NFs are added, IMPs are added, and bugs introduction rate.The empirical validation has been conducted on five products, namely "Avro, Pig, Hive, jUDDI and Whirr" of the Apache open source project. We compared the proposed models with eminent reliability growth models Goel and Okumoto (1979) and Yamada et al. (1983) and found that the proposed models exhibit better goodness of fit.

Keywords: entropy; feature improvement; new feature; open source software

1 INTRODUCTION

OSS evolution is based on the bug triaging process where different reports about the issues are filed. The various attributes related to the issues are also filed during the reporting. The reported issues are assigned to different developers for fixing. The issues which are reported by the users are mainly NFs, IMPs and bugs [28].

In line with the OSS architecture model proposed in [1], we expanded it by incorporating requests, namely feature improvements shown as green colour boxes in Fig. 1. Fig. 1 shows that to fix different issues, developers modify the source code which may result in bugs. In order to fix the issues a lot of changes must be made in the source code. These modifications to the source code were quantified using measurement dependent upon entropy called the "complexity of code changes" [2, 3]. Code changes are quantified based on Shannon entropy [6]. Cobb-Douglas based two dimensional and three dimensional models have been proposed to predict the entropy of software systems by considering bugs, NFs and IMPs [13].

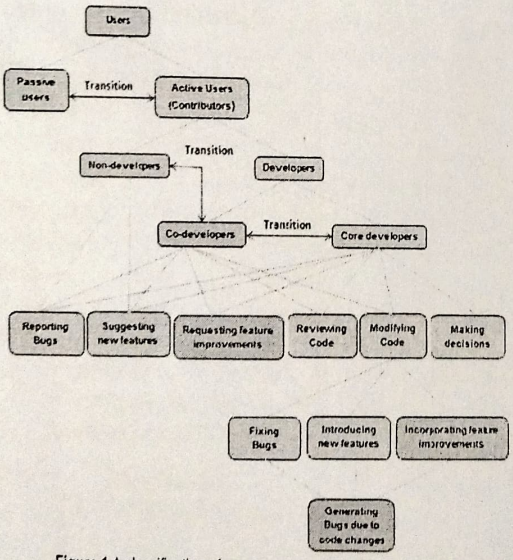

Figure 1 A classification of open source users and developers [1]

In this paper, we proposed calendar time and entropy based models for a software product to estimate the number of issues fixed and to predict the leftover issues which need to be fixed over a long run. The models consider different rates at which different issues are fixed and the rate at which bugs are generated during fixing of these issues.

We have taken into consideration two existing SRGMs [11, 12] to compare with our proposed models. The existing and proposed models have been validated using data collected from the various products of Apache open source project. Results show that the proposed models exhibit better goodness of fit.

In this paper, we have extended the work proposed in [28]. The authors presented a model to represent the OSS growth using the IMPs rate due to fixing of NFs and IMPs. The proposed models have been validated on five products, namely "Avro, Pig, Hive, jUDDI and Whirr" of Apache project.

The remaining part of the paper has been divided into 5 sections. A review of the available literature related to the proposed work in the paper has been presented in section 2. In section 3, the data collection and the mathematical formulation to embody the OSS development have been proposed. Experimental setup has been presented in section 4. The numerical illustrations to validate the proposed models presented in section 5. The paper has been concluded in sections 6.

2 RELATED WORK

Many current OSS quality models come from the standard scheme ISO 9126 [29, 30]. Many different models of open source efficiency and maturity, and their comparative analysis is available in [31].

In a study [32] it was reported that a majority of OSS quality assurance models primarily concentrate on data-dominant software evaluations. A study proposed a framework of process to address the challenges for the evaluation and selection of OSS [33]. The evolution of OSS is characterized by the number of issues that are reported or requests made for their enhancements. The major requests made by users are for the NFs and IMPs in addition to the bugs reports. Therefore, when to release open source software depends not only on the bugs fixed, but also on NFs and IMPs implementation. In OSS

Cosmetics: A Dark Fantasy And Their Potential Substitutes

Pradeep Pratap Singh[1] and Ambika[2]*

Abstract

Cosmetics is a term used for substances applied to the human body for cleansing, beautifying, and to enhance the appearance. Various chemicals with potential health hazards such as heavy metals, dyes, preservatives, etc are employed for the formulation of most of the commercially available cosmetic products. These toxic chemicals on exposure may pose adverse effects on human body. Thus, there is an urgent need of some alternatives which can be used to prepare safe and healthy cosmetic products. Herbs does not have any side effects on the human body and these herbal remedies enrich the body with nutrients and other useful minerals. In this review, the harmful aspects of the different commercially available cosmetic products and their remediation have been discussed.

Keywords: Cosmetics, herbal, sunscreen, lipstick, hair colour.

1. Introduction

Cosmetics are scientifically compounded substances employed to cleanse, beautify, and enhance attractiveness of the human body, which have been used since Vedic times. Worldwide, millions of consumers use cosmetic products and their ingredients on daily basis. Various illicit substances are added to the cosmetic products to enhance their short-term effectiveness and to reduce the cost of production (Desmedt, et. al., 2014). Some of the common harmful additives which are added in cosmetic products include antibiotics (e.g., metronidazole), corticosteroids (e.g., clobetasol), sexual hormone (e.g., estrogen), prohibited preservatives (e.g., parabens), whitening agents (e.g., hydroquinone), phthalates (e.g., diethyl phthalate) and nitromusk fragrances (e.g., musk xylene) and methyl-dibromoglutaronitrile (**Figure 1.,** Jin, et. al., 2009; Fiori, et. al., 2014; De, et. al., 2009; Yang, et. al., 2010; Sheliya, et. al., 2014; Pellegrini, et. al, 2011; Sanchez-Prado, et. al., 2011). .Their long-term exposure may cause adverse effects such as skin irritation, allergic reactions, and antibiotic resistance (Ma, et. al., 2016; Nohynek, et. al., 2010). Thus, there is an urgent need of some alternates which can be used to prepare safe cosmetic products.

Recently, the herbal cosmetics have attracted the attention of researchers due to their good activity and comparatively lesser side effects as compared to their synthetic analogues. The natural contents of the herbs enrich the body with nutrients and other useful minerals (Gediya, et. al., 2011). However, scientific research has demonstrated that plants possess a vast and complex arsenal of active constituents which have the ability to calm or smooth the skin. The natural pigments are also widely used in industries such as, dyeing, printing, food, textile, pharmaceutical and cosmetic industries (Mansour, 2018). They possess different biological activities, like antioxidant, antimicrobial and food preserving capability (Singh, et. al., 2013; 2011; 2009; Ambika, et. al., 2014). Therefore the utilization of herbs in cosmetics can provide a safe and effective alternate to the existing commercially available cosmetics. In this review, the harmful aspects of the different commercially available cosmetic products and their remediation have been discussed.

2. Classification of cosmetics

Cosmetics can be classified according to the exposure framework:

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सूची

०१. सेक्स इन लिटरेचर

०२. न्यू मौरेलिटी

०३. राजकमल चौधरी रचनावली, (खण्ड–६) संपा–देवशंकर नवीन, पृष्ठ संख्या–५८

०४. वही, पृष्ठ संख्या–६८

०५. वही, पृष्ठ संख्या–६४

०६. मछली मरी हुई–राजकमल चौधरी, पृष्ठ संख्या–१३४

०७. ताश के पत्तों का शहर–राजकमल चौधरी, पृष्ठ संख्या–११२

०८. राजकमल चौधरी : पूँजीवादी लोकतंत्र का प्रतिपक्षी उपन्यासकार–डॉ. सुभाषचन्द्र गुप्त, पृष्ठ संख्या–२०९–२१०

०९. राजकमल चौधरी रचनावली, (खण्ड–६) संपा. देवशंकर नवीन, पृष्ठ संख्या–३७–३८

१०. राजकमल चौधरी रचनावली, (खण्ड–५) संपा.–देवशंकर नवीन, पृष्ठ संख्या–२०७

११. वही, पृष्ठ संख्या–३२०–३२१

१२. राजकमल चौधरी रचनावली, (खण्ड–६), संपा.–देवशंकर नवीन, पृष्ठ संख्या–२५१

१३ राजकमल चौधरी रचनावली, (खण्ड–५), संपा.–देवशंकर नवीन, पृष्ठ संख्या–१९

१४. कृति राजकमल, संपा–प्रो. आनन्द मिश्र, डॉ मोहन भारद्वाज पृष्ठ संख्या–१५४–५५१

१५. वही, पृष्ठ संख्या–१६०

१६. राजकमल चौधरी रचनावली, (खण्ड–५), संपा.–देवशंकर नवीन, पृष्ठ संख्या–१२५.

१७. वही, पृष्ठ संख्या–१२५

□□□

23

वैदिक काल और स्त्रियों की शिक्षा का दौर

डॉ. साधना कुशवाहा

असिस्टेंट प्रोफेसर,

स्वामी श्रद्धानन्द कॉलेज दिल्ली विश्वविद्यालय, दिल्ली

****

वैदिक काल में स्त्रियों को शिक्षा का पूरा अधिकार था तथा समाज में उनका विशिष्ट स्थान था। स्त्रियां कृषि कार्यों और युद्ध अस्त्रों के निर्माण का कार्य भी करती थी, वे अपने पतियों के साथ युद्ध में भाग लेती थीं व धनुर्वेद और अश्वसंचालन में निपुण थी, उन्हें भी पुराणों को अभ्यास करने, मंत्रों का उच्चारण करने व वेदों का अध्ययन करने की पूरी स्वतंत्रता थी। उस वसमय कुछ स्त्रियां ऋषि भी थीं व वेद मंत्रों की शिक्षा भी देती थीं, वे पुरुषों के साथ वाद–विवाद भी करती थीं, उस समय की विदुषी नारियों में इंद्राणी, मैत्रेयी, गार्गी, लोपमुद्रा, सर्पज्ञानी आदि के नाम लिये जा सकते हैं, लड़कियों को उपनयन और यज्ञोपवीत की उपाधि दी जाती थी। स्त्रियाँ अर्धांगिनी कहलाती थी और यज्ञादि कर्मों में भाग लेती थीं।

कन्या विद्यार्थियों को दो वर्गों में बांटा गया था : ब्रह्मवादिनी और सद्यवधु, ब्रह्मवादिनी वेद, वेदांग और उपनिषदों का पूरे समय अध्ययन करती थीं। उनमें से कुछ जीवन भर भी ब्रह्मचारिणी रहती थीं। लेकिन ज्यादातर समान पद व स्थिति के ऋषि के साथ विवाह कर लेती थी, सद्यवधु अपनी शिक्षा बीच में छोड़ देती थीं और १८ या २० वर्ष की आयु में विवाह कर लेती थीं। स्त्रियों की शिक्षा में घर की देखभाल करने के लिए आवश्यक सभी उपयोगी कलाओं का विशिष्ट स्थान था। उन्हें संगीत, नृत्य, कढ़ाई, पाककला, बुनाई, सिलाई, चित्रकारी, पेंटिंग, पशुपालन और दुध दुहना आदि सिखाया जाता था, उन्हें अनाजों का संग्रहण,

Row No. 105

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IMPACT OF COVID-19 ON INDIAN SOCIETY

Dr. Mahendra Pal Singh*

ABSTRACT

Coronavirus (COVOD-19) got affected day by day which slowed down the Indian economy considerably. The pandemic dominates millions of people who are either ill and have died from the disease, a new virus born who affecting the human body for the first time in the year 2019-2020, due to an outbreak of coronavirus. Till now there is no medicine for the prevention of this disease, but scientists are busy making medicines and some countries have made different types of medicine, which is under trial. The virus is spreading rapidly in every state and territory of India and all over the world. To prevent this virus, there has been a complete lockout in India and a lockout abroad. Due to this virus, the agriculture sector, employment sector, education, every urban and rural area have been completely affected financially.

KEYWORDS: *COVOD-19, Coronavirus, Agriculture, Education, Employment.*

Introduction

Coronavirus has emerged in a large group that can cause disease in animals or humans. Coronavirus in humans is believed to be the cause of respiratory infections from common cold to more serious diseases such as the Middle East respiratory syndrome and severe acute respiratory syndrome etc. The most recently discovered coronavirus disease is also known as COVID 19.

Coronavirus is an infectious disease caused by the recently discovered coronavirus. Because of this new type of virus originating from Wuhan province of China in December 2019, not only China is spreading all over the world. Coronavirus is now a worldwide pandemic affecting many countries. Coronavirus seems to be slowing down the speed of the economy affecting almost everyone's routine, this disease has engulfed almost all humans and animals. This disease causes sore throat, fever, dry cough and pain and heaviness in the head and feels as if the winter coughs but the cough is wet but there is a lot of happiness in this disease due to which the whole body sometimes. Sometimes there is pain and difficulty in breathing. Like a common disease, it has symptoms that take time to identify whether it is a coronavirus or a common disease. Coronaviruses are very large spread viruses which may cause illness in animals or humans. In human, several coronaviruses are known as to cause respiratory infections ranging from the common cold to more severe diseases such as the Middle East respiratory syndrome and severe acute respiratory syndrome. This disease is such that if we come in contact with someone, it is more likely to spread the disease, which affects a person of any age, whether children or old. If an animal succumbs to this disease, it can also get the disease. If a person has any type of disease such as high blood pressure, cancer, lungs, etc., if a person is first, that person or animal may be more likely to be infected. The outbreak of this disease can also lead to death. If a person or animal does not already have any type of disease, it is likely to survive.

The disease is spreading rapidly not only in India but all over the world, which is destroying the economy in every way. Due to coronavirus affecting the health of human beings, life's difficult watches of crises. The government is giving priority as responsible for saving the lives of the people suffering due to this disease. The priority of the government is to keep everyone healthy. When people are healthy, then only they will be able to do their work smoothly. The epidemic has led to cuts in agriculture, health,

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row 110 link

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QUANTUM CHEMISTRY WILEY

Shannon-information entropy sum in the confined hydrogenic atom

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Abstract

The appearance of critical points in the Shannon entropy sum as a function of confinement radius, in ground and excited state confined hydrogenic systems, is discussed. We illustrate that the Coulomb potential in tandem with the hard sphere confinement are responsible for these points. The positions of these points are observed to vary with the intensity of the potential. The effects of the Coulomb potential on the system are further probed, by examining the differences between the densities of the confined atom and those of the particle confined in a spherical box, for the same confinement radius. These differences are quantified by using Kullback-Leibler and cumulative residual Kullback-Leibler distance measures from information theory. These measures detect that the effects of the Coulomb potential are squeezed out of the system as the confinement radius decreases. That is, the confined atom densities resemble the particle in a box ones, for smaller confinement radii. Furthermore, the critical points in the entropy sum lie in the same regions where there are changes in the distance measures, as the atom behaves more particle in a spherical box-like. The analysis is further complemented by examination of the derivative of the entropy sum with respect to confinement radius. This study illustrates the inhomogeneity in the magnitudes of the derivatives of the entropy sum components and their dependence on the Coulomb potential. A link between the derivative and the entropic force is also illustrated and discussed. Similar behaviors are observed when the virial ratio is compared to the entropic power one, as a function of confinement radius.

KEYWORDS
confined hydrogen atom, Kullback-Leibler distance measures, quantum uncertainties, Shannon entropy sum

1 | INTRODUCTION

In recent years, there has been an increased application of information theoretical ideas to address quantum phenomena that are prevalent in a large variety of systems. One reason for such an interest is that the Heisenberg uncertainty principle (HUP) can be formulated in terms of quantities that are known as entropies which measure the uncertainties in the underlying distributions. The Shannon entropies[1] are perhaps the most well known.

Entropic uncertainty relations based on the Shannon entropies have been formulated[2–5] as

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Particle confined in modified ring-shaped potential

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Abstract

The spectrum of a particle confined in Hulthén plus ring-shaped potential is obtained by solving the time-independent Schrödinger equation numerically. The effect of potential parameters on various properties of the particle have been investigated in detail. The energy levels, radial matrix elements, oscillator strengths and polarizabilities of the particle have been found to show strong dependence on the confining potential parameters. The presence of the ring potential is found to appreciably alter the angular part of dipole matrix elements. Also, it is shown that the comparison theorem of Quantum Mechanics for energy eigenvalues for four different potentials, viz., Coulomb, Hulthén, Yukawa and Hulthén2 is independent of the presence of ring potential.

Keywords: Hulthén potential, ring-shaped potential, comparison theorem, oscillator strength, polarizability

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

1. Introduction

The Hulthén potential [1, 2] is one of the most important short-range potentials in physics and is extensively used to describe the bound and continuum states of the atomic interaction systems. It belongs to the class of screened Coulomb potentials [3–6] and has applications in a number of branches of Physics such as nuclear and particle physics, atomic physics, condensed matter physics, chemical physics and high energy physics ([7, 8] and references therein). This potential is very similar to Yukawa potential [9] as it assumes the form of Coulomb potential for small r and decays exponentially to zero for large r. The quantum mechanical equations with the Hulthén potential have been dealt with by a number of authors either analytically or numerically [7, 10–16].

The representative potentials for realistic physical systems may often deviate from the conventional spherical models like Coulomb, Yukava or Hulthén potentials [17–21]. Thus, angle-dependent potentials which refine such potentials serve as a new class of potentials. Such potentials are employed in the study of non-spherically symmetric problems that often occur in chemistry. A number of articles have been devoted to the study of non-central potentials [22–37].

Chen and Dong [31] introduced a new ring-shaped potential and solved the Schrödinger equation for the Coulomb plus the new ring-shaped potential analytically. This potential was further combined with Kratzer potential by Cheng and Dai [38] to propose a new potential. Also, approximate bound-state solutions with Hulthén plus ring potential for non-zero orbital angular momentum have been obtained by the conventional Nikiforov-Uvarov method [39]. The energy eigenvalues and the corresponding wave functions have been obtained by solving non-relativistic Schrödinger equation for Hulthén–Yukawa plus angle dependent potential using the generalized parametric form of Nikiforov-Uvarov method [32]. Analytical solutions of Schrödinger equation with the generalized Hulthén potential plus a new ring shaped potential have been obtained by Ikot *et al* [40].

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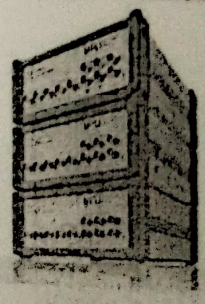

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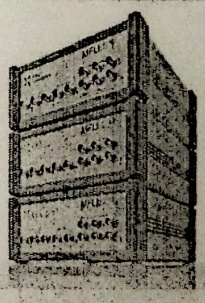

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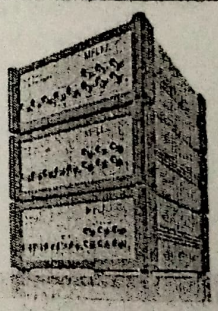

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ORIGINAL ARTICLE

Does mangrove plantation reduce coastal erosion? Assessment from the west coast of India

Saudamini Das[1]

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Abstract
Mangroves are believed to stabilize the coastlines by controlling erosion and facilitating sediment deposition. Coastal managers often plant mangroves to counter coastal erosion. The state of Gujarat in West India has planted thousands of hectares of mangroves over the years, and control of coastal erosion has been one of the prime reasons of plantation. This study performed a statistical assessment of the effect of the planted mangroves on the coastline changes in the state from 1990 to 2013. The study utilized geographic information system and remote sensing data to demarcate the areas under erosion and accretion during this period, and then compared these changes with the change in mangrove cover using statistical models. This cross-sectional analysis was conducted at the level of a *tehsil*, an administrative unit below a district. The results show that mangrove plantation did not decrease erosion, not even after normalizing the coastline changes by the length of the coastline and using controls for physical and anthropogenic features of the *tehsils*. *Tehsils* with increased mangrove cover witnessed both increased erosion and accretion, although the latter was much higher. The geophysical features of the area appeared to be the main determinants of coastline changes in Gujarat.

Keywords Planted mangroves · Erosion · Accretion · Coastline change · Coastal protection · Gujarat

Introduction

The mangrove ecosystem provides coastal protection services in different forms, e.g., protection during extreme events by influencing storm surge and wind (Das and Crépin 2013; McIvor et al. 2012; Das and Vincent 2009), protection of coastal assets such as bunds by influencing wave activity (Othman 1994), and coastline stabilization by reducing erosion through wave reduction and sediment accretion (Winterwerp et al. 2005; Mazda et al. 2002; Furukawa et al. 1997; Mazda et al. 1997).[1] A meta-analysis of wave attenuation data has shown that mangroves provide context-dependent but effective protection from erosion and waves (Gedan et al. 2011); they act as a strong wall that breaks high waves and prevents the water from entering the land area at high velocity and washing away the soil. Seafront mangroves species, especially those belonging to the genus *Rhizophora*, have deep, twisted roots that spread over the coast like a net and trap soil. This can prevent soil erosion and help in further deposition given an adequate supply of allochthonous sediment (Besset et al. 2019). Using remote sensing techniques, Thampanya et al. (2006) showed strong evidence of reduced erosion in the Gulf of Thailand with mangroves, whereas Besset et al. (2019) observed no such significant relation for the Mekong Delta in Vietnam. There are studies that assign value to the erosion control services of mangroves or conduct meta-analysis on such mangrove valuation (Brander et al. 2012; de Groot et al. 2012; Malik et al. 2015; Cooper et al. 2009; Samonte-Tan et al. 2007; Sathirathai and Barbier 2001). These studies are mostly based on cost-based methods (e.g., replacement cost, avoided cost) with the underlying assumption that mangroves provide protection from erosion. Only a few studies have examined erosion control and sediment accretion by planted mangroves by examining the coast with increased mangrove cover.

[1] For a detailed discussion on the role of coastal forest on coastline erosion, see http://www.fao.org/docrep/010/ag127e/AG127E09.htm, accessed on 16 March 2020.

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Electronic supplementary material The online version of this article (https://doi.org/10.1007/s10113-020-01637-2) contains supplementary material, which is available to authorized users.

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A STRUCTURAL EQUATION MODEL OF FINANCIAL ACCOUNTING PRACTICES AND USE OF IT IMPACTING MSMES PERFORMANCE: MODERATION BY ENTREPRENEURIAL SKILLS

Anupriya Pandey* Rekha Gupta**

In order to remain creditworthy and investable, the entrepreneurs should be able to produce high quality and standardised financial information on a regular basis. This information can be fed further into formal business plans in order to optimise management decisions and improve business processes. The critical question that needs to be answered is: Do the entrepreneurs possess adequate financial literacycompetencies, to gather and utilize the financial information, to achieve their business objectives? Does their level of financial literacy significantly explain their use of information technology for gaining competitive advantage? With the introduction of GST, there has been a change in the accounting environment of business through increased usage of computerised accounting systems (CAS) and heavy reliance on accountants for this purpose. This paper specifically aims to assess the financial literacy skills of MSME entrepreneurs in creation and utilisation of financial information using CAS and digital skills, to achieve better financial management and control over business activities. The structural model developed in this paper confirmed the positive association of financial accounting practices and use of IT with the business performance of MSMEs. Since entrepreneurial skills are intended to complement the financial literacy competencies of entrepreneurs, the paper also examined and confirmed the moderating effect of entrepreneurial skills on financial accounting practices and business performance relationship.

Keywords: Financial Literacy, Financial Accounting, Business Performance, Entrepreneurial Skills

JEL Classification: G53

The entrepreneurs are constantly involved in the decision-making process regarding acquisition, allocation and utilization of resources for business purpose. These decisions have financial implications and in order to be effective, the entrepreneurs need to be financially literate. According to the Working Group on Access to Finance for Agribusiness (2015), the key building blocks of SME financial literacy include *(i)* basic management competencies; *(ii)*knowledge and effective use of financial services and products;*(iii)* efficient management of different types of funding; *(iv)* understanding of basic accounting principles and formal financial record keeping; *(v)*Separation of personal and firm assets and liabilities; and *(vi)* financial risk management skills. Thus, an important aspect of financial literacy of an entrepreneur is the ability to keep a track of financial transactions of business through formal record keeping and understanding the measurements in the form of financial statements. Dahmen& Rodriguez (2014) defined small-business financial literacy as, "the ability to understand and use business financial statements to generate key financial ratios to evaluate and manage a business" (p. 2). The OECD International Network on Financial Education (OECD/INFE), 2018 provided a core competencies framework of financial literacy of MSMEs and potential entrepreneurs, wherein 'keeping records and accounting' has been identified as a core competency for financial and business management and planning. Accountants and bookkeepers can compensate for a lack of record keeping knowledge on the part of the entrepreneur but only up to a point. At the end of the day, it is the knowledge that entrepreneurs themselves have that remainsimportant when it comes to making financial decisions (Lentz and Others, 2016).On similar lines, Brown and Others (2006) cited that "financial literacy for small business owners must contemplate the ability to read and understand fundamental financial statements, as well as, the ability with numbers, in order to make informed judgments and to make effective decisions regarding the use and management of money". Accounting is the language of business and an aid to management.Entrepreneurs who do not keep proper financial records, and fail to provide transparent and standard financial statements and information, make it

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Row No. 185

UNDERSTANDING DRINKING WATER QUALITYPROBLEMS INSHAHADRA REGION OF DELHI

Mr. H. Kumar[1], Dr. S. Anand[1], Dr. U. Kaur[2]and Mrs. U. Rani[1]
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Abstract:

India possesses vast and rich diversity of natural resources, water being one of them. It is universal solvent that has been utilized by mankind since time immemorial. The total amount of global water, only 2.4 per cent is dispersed on the main land of which only a small portion can be utilized as fresh water. This study has been done to try and relate the quality of drinking water, and the health of the people. The different sources of water in these areas include piped water supply from Delhi Jal Board, hand pump water, bore well water (both DJB and private bore wells), as well as tankers. This study is indicative, and there is a need to carry out a more detailed study, with a larger number of samples being taken. The methodology adopted in the study is both quantitative as well as qualitative in nature. About 168 households living in Shahadra over different location in study area were interviewed. This study concludes by clarifying the main actions required to ensure a sustainable development of water resources in study area.

Keywords: Drinking water, Sanitation, Human health, Water quality, Water pollution

1. Introduction

Water is a vital component for supporting the survival of all living being over the earth. Ground water plays important role in the absence of fresh surface water and contaminated surface water. Water is not only one of the most essential commodities of our day to day life, but the development of this natural resources also plays a crucial role in economics and social development process. While the amount of water available over the earth is limited or constant that is adequate to fulfill the demand of mankind. The quality and distribution of water resources is uneven over the earth therefore the problem of scarcity has been faced by most of the nations. Being a capital city Delhi does not have sources to maintain high quality of water availability to their people. The quality of water in Delhi has either polluted or not available to the people in right way (CPCB, 2006). In 90 per cent of the land in Delhi fresh water is available up to 60 m

Row No. - 127

बाल मन पर आधारित हिंदी सिनेमा

डॉ. विनीता कुमारी

हिंदी सिनेमा में बच्चों की भी एक दुनिया शामिल है। बाल मन बड़ा ही भावुक और संवेदनशील होता है। इस अवस्था में उसकी अपनी एक काल्पनिक दुनिया होती है, जो यथार्थ से कहीं दूर होती है। उसका यह काल्पनिक संसार बड़ा ही जादुई, रोमांचक और इंद्रधनुषी होता है। बाल मन सदैव इस जादुई आकर्षण के पीछे मतवाला रहता है। बाल मन कोरी स्लेट की तरह होता है। उन्हें जैसी शिक्षा प्रदान की जाती है, जैसे संस्कार दिए जाते हैं, जैसा परिवेश मिलता है, वे उसी रूप में ढल जाते हैं। बच्चों की इसी मानसिकता को देखते हुए बच्चों को मूल्य आधारित मनोरंजन देने के लिए भारत के प्रथम प्रधानमंत्री जवाहरलाल नेहरू द्वारा 11 मई, 1955 को बाल चित्र समिति की स्थापना की गई। यह भारत सरकार की एक नोडल संस्था है जो बच्चों के लिए उनके मनोरंजन के अधिकार को न्यायपूर्ण मानते हुए फिल्म और टेलीविजन के माध्यम से संपूर्ण मनोरंजन करती है। केवल बच्चों का मनोरंजन करना ही इस संस्था का उद्देश्य नहीं है। वह ऐसी बाल फिल्मों का निर्माण करती है, जो मनोरंजन के साथ-साथ संदेश एवं शिक्षा भी प्रदान करती हैं। सूचना एवं प्रसारण मंत्रालय के अंतर्गत यह एक स्वायत्त संस्था है। इसका मुख्य ऑफिस मुंबई में है। दिल्ली और चेन्नई में इसकी शाखाएँ हैं। इस संस्था द्वारा 260 बाल फिल्में देश की 15 प्रांतीय भाषाओं में बनाई गई।

बच्चों के लिए बच्चों की इसी मानसिकता को देखते हुए मुख्य धारा की फिल्मों के साथ-साथ बॉलीवुड ने बच्चों के लिए भी फिल्में बनाई। एक ओर जहाँ बॉलीवुड में बच्चों को [illegible] फिल्में 'अलादीन का चिराग', 'नानी [illegible] डाबरा', 'जादू', 'करामाती कोट', 'जुगनाथ' आदि जादुई, तिलस्मी, परीलोक [illegible] डायन, भूत-प्रेतों से संबंधित फिल्में [illegible] और बच्चों की सामाजिक, आर्थिक, [illegible] समस्याओं से जुड़ी फिल्में भी बनाई [illegible] बच्चों के लिए मनोरंजक होती हैं [illegible] का उत्साहवर्धन भी होता है, उनमें [illegible] होता है, संवेदनशीलता आती है, [illegible] आगे बढ़ने एवं जीवन में कुछ नया एवं [illegible] की प्रेरणा भी जागृत करती हैं। मिथक [illegible] 'गणेश', 'माइ फ्रेंड गणेशा', 'घटोत्कच', [illegible] भी बनाई गई और बच्चों को अंधविश्वासों [illegible] चंद्रमा, तारे आदि की वैज्ञानिक जानकारी [illegible] 'धूमकेतु' जैसी फिल्में भी बनाई गई।

हिंदी सिनेमा जगत में राजकपूर से [illegible] खान तक ने बच्चों के मनोविज्ञान को [illegible] फिल्मों का निर्माण किया। ये फिल्में सिर्फ [illegible] नहीं करती अपितु बच्चों की अनेक समस्याएं भी समाज का ध्यान आकर्षित करती हैं। [illegible] आधारित फिल्मों में मानवीय संबंधों और [illegible] समस्याओं को विविधतापूर्ण एवं मनोवैज्ञानिक [illegible] पर फिल्माया गया है। सन् 1954 में [illegible] 'जागृति' फिल्म बनी, जिसमें बच्चों को [illegible] से पढ़ाई करने के तरीके से हटकर [illegible] आधार पर पढ़ने की एक नई सोच विकसित

Row No.-128

डॉ. विनीता कुमारी

संस्कृत काव्यशास्त्र के अनुवादक : केशवदास

हिंदी साहित्य में भक्तिकाल के अंतिम चरण में उत्पन्न, अगाधाराण प्रतिभा से संपन्न, संस्कृत के प्रकांड विद्वान, आचार्यत्व के गुणों से युक्त, स्वतंत्र चिंतक केशवदास रीतिकाल के प्रवर्तक के रूप में प्रतिष्ठित हैं। कवि कर्म के साथ-साथ आचार्य कर्म की महती साधना करने वाले रीतिसिद्ध में इनका स्थान सर्वोपरि है। काव्य-रचना और काव्य-रीति दोनों में ही सिद्धहस्त केशवदास सफल और सचेष्ट रचनाकार थे। संस्कृत की साहित्यिक एवं शास्त्रीय परंपराओं का पोषण और संवर्धन तो किया ही, साथ-साथ उन्होंने काव्य-रचना की नवीन परंपराओं को भी प्रस्तुत किया।

केशवदास का जन्म बुंदेलखंड के ओरछा नगर में सनाढ्य ब्राह्मण परिवार में हुआ था। उनके पितामह, पिता, भाई संस्कृतज्ञ थे। उनके पितामह कृष्णदत्त मिश्र को आश्रयदाता राजा चंदप्रताप से पुराण वृत्ति प्राप्त हुई थी। पिता काशीनाथ भी राजा मधुकर शाह द्वारा सम्मानित किए गए थे। इनका अपना जीवन भी राजदरबारों के ऐश्वर्य और विलासितापूर्ण परिवेश में सम्मानपूर्वक व्यतीत हुआ। केशव स्वयं 'कविप्रिया' में यह स्वीकार करते हैं कि इनके कुल के दास भी संस्कृत बोलते हैं। यह स्वयं संस्कृतज्ञ थे परंतु उन्होंने जनहित को ध्यान में रखते हुए भाषा (ब्रज) में काव्य-रचना की। स्वभाव से ही स्वाभिमानी वृत्ति के केशवदास की वाणी में कहीं भी दैन्य का भाव दिखाई नहीं देता। उन्हें अपने पांडित्य पर अभिमान भी था। इसीलिए वह स्वयं को 'केशव कवि सिरमौर' और 'विदित जहान' कहते थे।

केशव ने काव्यशास्त्रीय दृष्टि से 'रसिकप्रिया', 'कविप्रिया' और 'छंदमाला' की रचना की। 'वीरसिंहदेव चरित', 'रतनबावनी' और 'जहाँगीरजस चंद्रिका' इनकी प्रशस्तिपरक रचनाएँ हैं, जिनमें उन्होंने अपने आश्रयदाता राजाओं की वीरता और राजदरबारों के ऐश्वर्यपूर्ण वातावरण के चित्र भी प्रस्तुत किए हैं। 'रामचंद्रिका' उनके पांडित्य एवं कवित्व शक्ति की परिचायक महाकाव्यात्मक रचना है। परंपरागत रामकथा को इस प्रकार कलात्मक ढंग से प्रस्तुत किया गया है कि वह सर्वथा रोचक, नवीन एवं विविध भाव-भंगिमाओं से युक्त होकर पाठकों को रसविभोर कर देती है। दार्शनिक दृष्टि से कवि ने 'विज्ञानगीता' की रचना की। माना जाता है कि यह रचना इनके वैराग्य काल की है। इस रचना के कथ्य पर श्रीमद्भगवद्गीता का और शैली पर संस्कृत की रचना 'प्रबोध चंद्रोदय' का प्रभाव प्रतीत होता है।

रसिकप्रिया : यह काव्यशास्त्रीय ग्रंथ है। रस-निरूपण हेतु इसकी रचना की गई है। इसमें सोलह प्रकाश हैं, जिनमें से प्रथम तेरह में शृंगार रस का वर्णन है। शृंगार रस के भेदों,

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Generation of charge currents and magnetic pulses

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Abstract

The generation of charge currents and hence induced magnetic field in a spherically bound hydrogen atom by an ultrafast right circularly polarized laser pulse has been studied. The atom is assumed to be under the effect of a Hulthén plus a ring-shaped potential. The simultaneous effect of pulse parameters such as E_0, t_p and ω_0, the cavity radius, r_0, and parameters related to the non-central potential has been investigated. These parameters have been found to significantly affect the magnitude of generated current as well as the magnetic field and thus play an important role in determining the response of the system to external laser. The laser pulse is found to produce femtosecond magnetic pulses. Such magnetic pulses have many biomedical applications. Hulthén screening or ring deformation potential reduces the magnitude of current and induced magnetic field for an unbounded atom. On the other hand, for the bounded case, the potential parameters are found to have a positive impact on these quantities.

Keywords: Hulthén potential, ring-shaped potential, charge current, magnetic pulses

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

1. Introduction

The application of circularly polarized laser pulses to induce electric currents and magnetic-field-pulse generation in ring-shaped molecules or molecular ions has been well studied [1–5]. Electric ring currents and associated induced magnetic fields in atomic orbitals by the application of circularly polarized π laser pulses have been studied by Barth and Manz [6] and the largest ring currents and fields obtained for $2p_{\pm1}$ orbitals. A few femtosecond circularly polarized and π laser pulses have also been applied to generate unidirectional current in oriented molecules [7, 8]. The currents and associated induced magnetic fields have been found to be much larger than those generated by static magnetic fields. The generation of attosecond electron currents and intense ultrafast magnetic pulses induced by circularly polarized attosecond pulses have been discussed in detail in the review [5]. Kanno *et al* [9, 10] have shown that rotation of π-electrons along the ring of a chiral aromatic molecule can be manipulated using a linearly polarized laser pulse. Mineo *et al* [11] have studied probing molecular chirality by subjecting the molecule to strong non-resonant linearly polarized UV lasers, which resulted in generation of currents leading to production of strong magnetic fields. Recently, Yuan *et al* [4] have worked upon generation of ultrafast magnetic fields by circularly polarized attosecond ultraviolet laser pulses in molecular media. They have studied time evolution of induced magnetic field at the molecular centre. The possibility of manipulation of an aromatic ring current and induced magnetic field by changing the frequency of the circularly polarized and twisted light beams has been studied in detail [12].

Generation and control of strong ultrashort magnetic pulses is important for fundamental solid-state physics as well as for technological applications such as magnetic data recording, materials characterization, terahertz radiation generation, data storage and femtosecond opto-magnetism [13, 14]. The

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Thermal behaviour of hindered rotor in static electric and laser field

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ABSTRACT

We solve exactly the time independent Schrödinger equation (TISE) for hindered rotor confined in well shaped potential. Afterwards, the confined system is subjected to interact with laser and static electric field. TISE for the dressed confined rotor is solved using standard numerical method to get energy spectrum and eigenfunctions. Dependence of orientation and alignment parameters on static electric field and confining potential is studied. We also compute thermal properties like entropy and heat capacity of the system under consideration using canonical partition within statistical thermodynamic formalism. We have also studied the effect of external field parameters, confinement strength and temperature on these thermal properties.

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1. Introduction

Basic Problems of physics such as Hydrogen atom, Coulomb Potential and Kepler problem for which Schrödinger equation can be solved exactly form a platform to understand the molecular systems in constrained environment under different suitable conditions [1]. Morse-, Harmonic Oscillator-, Hulthen potentials are used to study vibrational spectra of molecular systems [2,3]. Many particle systems are well described in terms of Pöschl-Teller potentials [4]. Wood Saxon potentials are important for studying many problems in nuclear physics. Other constrained potentials have also been used to understand the problem of the interest [5–7]. For all above potentials Schroedinger equation has been solved exactly.

The confining environment for a particular molecular system can be modelled in a number of ways depending on the surface or factors, such studies are included in the references [8–31]. Rotational Dynamics of molecules in confined environment has paved a way to new nanoscale machines such as rotors, molecular switches and many other devices important for many biological applications [32–35]. Molecular rotors confined in a suitable environment show interesting behaviour in external fields. Both static and laser fields can be judiciously used to control the rotation of such hindered molecules [36–38].

Thermodynamics of confined systems is of great importance, especially in catalysis physics, electro catalysis and in film growth techniques, which are basis of fabricating modern low dimensional devices. Also, theoretical models for technical advancements depend on precise understanding of thermal properties. Hence, many experimental and theoretical investigations have been done to understand thermal behaviour of confined systems [39–42].

In Molecular physics hindered rotor model is the simplest model to understand thermal behaviour of confined molecules. Sprowl et al. [43] have developed hindered translator and hindered Rotor models for adsorbates like methane, ethane, propane and methanol. To discuss thermodynamics of the systems they have modelled potential energy surfaces using density functional theory. Using these potential energy surfaces they have calculated partition functions of the systems and hence the entropies. They have discussed ideal behaviour of the adsorbed species in which adsorbate–adsorbate interactions are neglected. However these interactions impact thermodynamics of the system largely, so cannot be ignored and many studies have been done which takes into account these interactions [44–48]. Li et al. [49] have discussed the thermodynamics of some molecules using uncoupled mode approximations. For internal motions they have designed full one dimensional potential energy surface by summing all unconstrained one dimensional potentials. Piccni and Sauer [50] have studied the effect of anharmonicity on thermal properties of methane adsorbed in acidic chabazite (H-CHA) and MgO(001) surface. They have calculated *ab initio* enthalpies, entropies and free energies by inclusion of anharmonic corrections and have observed a noticeable

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Repurposing Potential of Diminazene Aceturate as an Inhibitor of the *E. coli* DNA Gyrase B

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ABSTRACT

Drug-resistant *Escherichia coli* (*E. coli*) has overburdened the healthcare facilities in recent years and is getting hard to combat, mandating search for novel therapeutics with a broad antibacterial spectrum and high chemotherapeutic index. The 24 kDa domain of DNA gyrase B that is involved in the ATPase activity has been reported to be a promising target for inhibitors. A PDB structure (1KZN) of the 24kD domain of gyrase B with the co-crystallized ligand clorobiocin was used for the docking studies to explore a library of 2924 FDA approved drugs from www.zinc.docking.org. FlexX docking module from Biosolve IT was used for receptor preparation and *in silico* docking experiments. Docking studies on the pocket created around the reference ligand clorobiocin revealed the best score with diminazene aceturate and it also demonstrated interactions with the crucial amino acids present within the pocket. Diminazene aceturate has been conventionally been used as an antiparasitic molecule in animals and it has also been demonstrated to exhibit repurposing potential in the treatment of disorders triggered due to overproduction of inflammatory cytokines, pulmonary hypertension, ischemia-induced cardiac pathophysiology, etc. among others. Findings from this study indicate the possibility of repurposing the age-old molecule diminazene aceturate into a DNA gyrase B antagonist to combat not just the drug-resistant *E. coli* but also other gram-negative ESKAPE pathogens. It may also aid in alleviating the inflammatory response induced in the body of the patients suffering from septicemia caused by a variety of Gram-negative bacterial pathogens.

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- DNA gyrase B
- NDM

ABBREVIATIONS

ADME: Absorption Distribution Metabolism and Excretion; ESBL: Extended Spectrum β-Lactamase; ESBL-Ec: ESBL producing *E coli*; CADD: Computer-Aided Drug Discovery; MDR: Multiple Drug Resistance; NDM: New Delhi Metallo-Beta-Lactamase; UTI: Urinary Tract Infection

INTRODUCTION

E. coli is a gram negative bacterium, normally a commensal inhabiting the human colon, and has indeed proved to be a great experimental organism of choice for all microbiology as well as gene cloning experiments for long. However, quite a few of its strains are known to cause various intestinal as well as extraintestinal diseases, owing to possession of a handful of virulence factors in some of its serotypes, which influence a number of metabolic processes [1]. Some of the problems caused by

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In silico Screening of Approved Drugs to Describe Novel *E. coli* DNA Gyrase A Antagonists

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ABSTRACT

The alarming multiple drug resistance developed by *Escherichia coli* towards the routine conventional antibiotics owing to their non-judicious usage is fast becoming a tough menace. This necessitates the urgent unleashing of novel and diverse strategies and antibacterial compounds. Since finding a new antibiotic from the scratch, followed by endless clinical trials is exceedingly time-consuming, a powerful alternate strategy of CADD coupled with repurposing the available drugs could save precious time and money. DNA gyrases (topoisomerase II) of *E. coli* are among the promising new drug targets. The interface between the N-terminal domain of gyrA and C-terminal domain of gyrB which is targeted by most of the available inhibitory drugs, is of particular interest. Crucial active site residues within the N-terminal domain of gyrA were delineated through a literature search. FDA approved drugs were docked using FlexX on the receptors created around the co-crystallized reference ligand. Based on the docking scores and interactions with crucial residues, 12 leads were shortlisted, namely ceforanide, tetrahydrofolic acid, azlocillin, cefazolin, adenosine triphosphate, cefixime, dihydronicotinamide adenine dinucleotide, moxalactam, leucal, cromoglicic acid, cefotetan, and cedax. Surprisingly quinolones, which are approved inhibitors of gyrases were not picked up in the top leads, rather, the most dominant class of molecules that docked successfully was cephalosporin. Our results indicated that these cephalosporins, as well as the other shortlisted leads, could be further optimized and validated through *in-vitro* experiments for their potential as gyrase A antagonists. Hence the present study holds immense promise in combating MDR of human bacterial pathogens.

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- *Escherichia coli*
- Antibiotics
- Anti-microbial resistance
- Docking
- Drug repurposing
- DNA gyrase A
- Cephalosporins

ABBREVIATIONS

ADME: Absorption, Distribution, Metabolism, and Excretion; CADD: Computer-Aided Drug Discovery; ESBL: Extended Spectrum β-Lactamase; ESBL-Ec: ESBL Producing *E. coli*; MDR: Multiple Drug Resistance; NDM: New Delhi Metallo-β-Lactamase; SD8: Simocyclinone D8, UTI: Urinary Tract Infections

INTRODUCTION

Escherichia coli, a common intestinal pathogen, is known to cause gastroenteritis and a variety of extra-intestinal diseases, such as Urinary Tract Infections (UTIs), meningitis among newborns, colisepticemia, and skin and soft tissue infections [1,2]. *E. coli* infection is also reported to be responsible for several post-operative abscesses and other complications such as neonatal sepsis [3,4]. It has been developing more and more resistance towards the available antibiotics. Extended-

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Assessment of Reverse Migration during First Wave of COVID-19: A Case Study of Hilly Districts of Uttarakhand

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ABSTRACT

The scare of corona pandemic which began in December 2019 had forced people to act in an unexpected manner as never seen before. India imposed nationwide lockdown on 25th March 2020 that led to an unprecedented migration of workers with their families to their hometowns. An economy which was still grappling with the pandemic was suddenly alarmed by a new crisis with workplaces shutting down, no means of transportation allowed and millions of stranded workers without any source of income to support them. This led to food shortages and many were forced to leave their shanty living places thus triggering a huge wave of reversed migration back to their native regions.

Most of these migrants from rural areas worked as domestic help, in construction sites, factories, industries and a large number of unorganised sectors. It had been a practice for many years to move to larger cities in search of employment, better wages and improved standard of living. Although it did not make appreciable impact on their lives but provided a source of regular incomes for their families back home.

The coronavirus pandemic has triggered the worst domestic migration crisis in the Indian sub-continent since partition. The major consequence of the lockdown imposed during first wave of Covid-19 was returning of this workforce to their native places due to the uncertainties and fear of life. The sought-after city life suddenly became a living nightmare where they feared that they would never be able to see their families again if they stayed back. This lockdown

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Online versus offline shopping behavior of young consumers for branded apparel: A comparison based on demographic profile

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Abstract -We're heading towards a world where online and offline shopping experiences are melding. Major and smaller brick-and-mortar retailers have an online presence, while "traditional" Internet-based companies are dipping their toe offline.All major stores are online, providing an alternative experience for their customers. Retailers need to stop seeing online shopping and offline shopping as an "either/or" scenario. Users expect both experiences to be equally pleasant, and companies need to cater to both worlds. Online and offline shopping are both here to stay. The objective of this research is to compare the difference in the consumer behaviour for online versus offline shopping for branded apparel category based on demographic profile to enable marketers devise suitable marketing strategies to attract the consumers based on variables (gender, income). The study conducted is primary research based on specially designed parameters to test the above variables based on 200 respondents collected using random sampling technique. The analysis and findings are based on interpretations using SPSS software.

*Key Words:*consumer behaviour, branded apparel, young consumers, online shopping, offline shopping

1. INTRODUCTION

1.1 WHAT IS ONLINE SHOPPING?

"Online shopping is the process of buying goods and services from merchants over the Internet."

Since the emergence of the World Wide Web, merchants have sought to sell their products to people who spend time online. Shoppers can visit online stores from the comfort of their homes and shop as they sit in front of the computer. Consumers can buy a huge variety of items from online stores, and just about anything can be purchased from companies that provide their products online. Books, clothing, household appliances, toys, hardware, software, and health insurance are just some of the hundreds of products consumers can buy from an online store. Online shopping sites makes shopping one of the easiest tasks possible. Example Myntra.com, Amazon.com.

Many people choose to shop online because of the convenience. For example, when a person shops at a store, he has to drive to the store, find a parking place, and walk throughout the store until he locates the products he needs. After finding the items he wants to purchase, he may often need to stand in long lines at the cash counter.

1.2 WHAT IS OFFLINE SHOPPING?

It means sales of goods and services from single point (malls, markets, departmental stores) directly to the consumer in small quantities for his use. Example Big Bazar, Reliance Trends, Pantaloons)

1.3 YOUNG CONSUMERS?

The young people's marketplace is fast-moving and characterized by an increasingly sophisticated and brand-aware audience. Young Consumers (YC) offers ideas, insights and information on key issues across the whole youth market, from the initial stages of preparing for parenthood to kids, tweenies, teenagers and young people up to the age of 34.

1.4 CONSUMER BEHAVIOUR?

"Consumer behaviour is the study of how people make decisions about what they buy, want, need, or act in regards to a product, service, or company."

It is critical to understand consumer behaviour to know how potential customers will respond to a new product or service. It also helps companies identify opportunities that are not currently met. Understanding consumer behaviour allowed the pro-active companies to increase their market share by anticipating the shift in consumer wants.

1.5 CONCEPT OF BRANDING

If being fashionable or up to date with fashion has become the order of the day it is not only because of the ladies. Men who were not very dress conscious till a few decades back have suddenly become fashion conscious. Gone are the days of purchasing material and having it stitched from tailors.

Today readymade garments have made their way into almost every male wardrobe. With the increasing fashion trends in the global scenario Indian men are also becoming increasingly stylish. India is home to numerous top clothing brands that are both domestic and international (Nike, H&M, Adidas, Zara, Gucci, Tommy Hilfiger, Louis Phillipe, Van Heusen, Pantaloons, Levi's, Forever 21 amongst many more.)

Brand is a "name, term, sign, symbol or design, or a combination of them intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of other sellers." [The American Marketing Association (AMA)]It is often important to refer back (or forward) to specific sections. Such references are made by indicating the section number, for example, "In Sec. 2 we showed..." or "Section 2.1 contained a description...." If the word Section, Reference, Equation, or Figure starts a sentence, it is spelled out. When occurring in the middle of a sentence, these words are abbreviated Sec., Ref., Eq., and Fig.

At the first occurrence of an acronym, spell it out followed by the acronym in parentheses, e.g., charge-coupled diode (CCD).

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Projected Level of Pollution in Future on Ramganga River : A Case Study

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Abstract

Khoh River, Fica River, Gagan River, Kosi River, Dhela River, Bhakara River, East and West Begul Rivers and Deoha are the tributaries of Ramganga and Ramganga is the tributary of River Ganga. Priority drains which are carrying domestic, treated and partially treated effluent discharged into Ramganga are the point sources of pollution. However, trend concentration of DO and BOD in River from 2014 to 2018, water quality criteria suggested River water quality is improving.

Keywords: Future, Pollutants, Ramganga and Water Quality.

Introduction

Doodhatoli ranges with high altitude of 800 to 900meters in the district of Pauri Garhwal; Uttarakhand is the origin of River Ramganga. It is a tributary of River Ganga and flows to south west from Kumaun Himalaya range. River Ramganga descends upon the plains from the Jim Corbett National Park near RamnagarNainital district and flows through the towns of Kalagarh, Harewali, Sahajahanpur, Aizalgarh, Moradabad, Rampur and Bareilly and finally discharge into River Ganga near Kannauj in Uttar Pradesh after travelling about 596 Kms. The catchment area of the River Ramganga basin is about 32,493 Sq. Km. In the course of River from its origin to Kannauj, Khoh River (originating from Anmol Nagar, Juyal Gaon, Palansa, Pawash and Jogiyana), Fica River (originating from Gadla Lake and Milak Sipkal), Gagan River, Kosi River (originating from Almora), Dhela River, Bhakara River, East and West BegulRivers and Deoha (Gorra) are merging intoRiver Ramganga.

Domestic sewage, treated and partially treated effluent generating from cities and industries such as Sugar, Slaughter House, Distillery, Agro and waste paper based Pulp and Paper industries located in its catchments are discharging into River Ramganga through drains. Sources of pollution contributing into River needs to be controlled for restoration of water quality of River Ramganga.

Material and Methodology

One River water sample from Ramganga at Kannauj before confluence and twenty-four priority drains samples were collected from River Ramganga front towns from Seohara, Rampur, Moradabad and Bareilly (Figures 1) and analysed following Standard Method (American Public Health Association and approved protocols under National Accreditation Board for Laboratories). The samples were preserved for Heavy Metals and Pesticides prior to their transportation to laboratory for analysis through AAS and GC. For sample collection, polyethylene bottles of different size with inner cap were used, For each sample, details of location, coordinate, pH, temperature, odors, color and surrounding environmental conditions etc. were recorded and appropriately labeled, sealed and transported to the laboratory on the same day.

The sampling locations were selected before confluence of River and drain without having impact of back flow.

संस्कृत अभिलेखों में भारत-नेपाल का पारस्परिक संबंध और वर्तमान परिदृश्य

डॉ. अखिलेश कुमार दुबे
अध्यक्ष, संस्कृत विभाग
स्वामी श्रद्धानंद महाविद्यालय
दिल्ली विश्वविद्यालय

ROW 145

भूमिका

भारत-नेपाल के धार्मिक और सांस्कृतिक स्वरूप को जानने के लिए अभिलेख अमूल्य निधि है। इतिहासकारों और पुरातत्त्ववेत्ताओं ने प्राचीन इतिहास की सही जानकारी के लिए अभिलेखों को मुख्य साक्ष्य स्वीकार किया है। अभिलेखों के बारे में कहा जाता है कि 'अभिलक्ष्यः लेखः अभिलेखः' अर्थात् किसी उद्देश्य विशेष से लिखा गया लेख ही अभिलेख कहलाता है, जिसकी एक आधारभूत सामग्री होती है। भारत-नेपाल के धार्मिक और सांस्कृतिक महत्त्व का इतिहास अत्यन्त व्यापक एवं समृद्ध है, जो प्राचीन काल से आज तक अध्येताओं के अध्ययन का रोचक विषय रहा है। अभी सबसे पुराने अभिलेख हड़प्पा संस्कृति के अस्पष्ट रहस्यात्मक लेख मुहरों पर प्राप्त हुए हैं, जिनका अभी उद्ववाचन नहीं हो सका है। सबसे पुराने अभिलेख जो पढ़े जा चुके हैं, वे ई.पू. तीसरी सदी के अशोक के शिलालेख हैं, जिसे सर्वप्रथम 1837 ई. में जेम्स प्रिंसेप ने पढ़ा, जिससे भारत के प्रचीन इतिहास लेखन में सुविधा हुई। शिलालेखों, लघु शिलालेखों, स्तम्भ लेखों, ताम्रपत्रों, प्रतिमा अभिलेखों आदि के माध्यम से भारत-नेपाल के अतिरिक्त कम्बोडिया, बोर्नियो, सुमात्रा, जावा आदि देशों के धार्मिक, सांस्कृतिक, सामाजिक एवं ऐतिहासिक संबंधों का विस्तृत विवरण प्राप्त होता है।

भारत-नेपाल की ऐतिहासिक यात्रा

भारत-नेपाल का ऐतिहासिक एवं पौराणिक ग्रंथों में बिहंगम विवरण प्राप्त होता है। नेपाल के लिच्छवि राजाओं के संस्कृत, अभिलेख चौथी से आठवीं शताब्दी के बीच भारत भारत-नेपाल के सांस्कृतिक सम्बन्धों पर विशेष प्रकाश डालते हैं। नेपाल और भारत में हिंदू और बौद्ध धर्म के आपसी संदर्भ प्रशंसनीय है। ज्ञात है कि बुद्ध का जन्मस्थान लुम्बिनी नेपाल में है तथा उनका निर्वाण कुशीनगर भारत में अवस्थित है। प्राचीन ऐतिहासिक दृष्टि से ज्ञात होता है कि सम्राट अशोक के समय तीसरी शताब्दी ई.पू. में नेपाल मौर्यवंश के आधिपत्य में था। सम्राट समुद्रगुप्त का साम्राज्य चौथी शताब्दी में नेपाल तक स्थापित था, जिसका प्रमाण अभिलेख में मिलता है, जो समुद्रगुप्त के प्रयाग प्रशस्ति में उल्लेखित है-

"समतट डवाक कामरूप नेपाल कर्तृपुरादि प्रत्यन्त"

प्रयाग प्रशस्ति में समुद्रगुप्त को लिच्छवि दुहिता पुत्र भी कहा गया है-

'श्री चन्द्रगुप्त पुत्रस्य लिच्छवि दौहित्रस्य महादेव्यां
कुमारदेव्यामुत्पन्नस्य महाराजाधिराज श्री समुद्रगुप्तस्य'

ज्ञात है कि ईसा की चौथी शताब्दी से आठवीं शताब्दी तक लिच्छवि नेपाल के सर्वप्रमुख राजवंश के रूप में अभिलेखीय प्रमाणों के द्वारा प्रमाणित होते हैं, जिसका इतिहास समृद्ध एवं व्यापक है।

प्राचीन भारतीय वाङ्मय के साक्ष्यों के आधार पर भी इन दोनों देशों के आपसी सौहार्दपूर्ण सांस्कृतिक, सामाजिक, धार्मिक प्रवृत्तियों की सूचना मिलती है। महाभारत के वनपर्व में कर्ण के विजय अभियान के दौरान

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Dependence of nonlinear optical properties on electrostatic interaction in an excitonic parabolic quantum dot in a static magnetic field

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ABSTRACT

The linear and the third-order nonlinear optical properties of an exciton confined in a three-dimensional quantum dot with a parabolic potential are studied in a static magnetic field. Eigenvalues, wave functions, dipole matrix elements and selection rules are calculated analytically. Based on the calculated energies and wave functions, within the effective mass approximation, a compact-density matrix approach is employed to analyse the absorption coefficients and refractive index changes. The study is first of its kind since the excitonic effects are studied in a static magnetic field considering both the confinement potential and the electrostatic interaction between the electron-hole pair. An important finding of our research is the dependence of the magnitude of absorption coefficients on the radius of the quantum dot, the result that may have broad implications in future device designing.

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KEYWORDS
Quantum dot; exciton; magnetic field; nonlinear effects; optical absorption coefficient; refractive index changes

1. Introduction

There has been continued focus of the researchers in the study of ultra-small semiconductor heterostructures where the quantum confinement effects become apparent in all the spatial directions. These structures are commonly referred to as quantum dots. Microfabrication methods such as molecular beam epitaxy, etching techniques and nano-lithography have made it possible to grow semiconductor heterostructures, especially quantum dots of various shapes, sizes and confinement potential. Extensive research is being carried out to study the physics of novel physical phenomena in such confined structures. Specifically, the linear and the nonlinear optical properties of quasi-zero-dimensional quantum dots have found enormous utility in the realization of many semiconductors optoelectronic devices such as infrared and THz photodetectors [1,2], quantum dot lasers [3,4], biological imaging devices [5,6], quantum dot light-emitting diodes (LED) [7,8], quantum dot solar cells [9,10], spintronics [11] and ultrafast quantum computers.

The quantum confinement radically alters the electronic and optical properties of spherical quantum dots. Various confining potentials have been employed to study the optical properties of low-dimensional heterostructures such as Tietz [12], modified Kratzer [13], Gaussian [14], modified Gaussian [15], Rosen-Morse [16] and other potentials. Earlier experiments have indicated that the confinement potential in a quantum dot is mainly parabolic. The parabolic confinement is more appropriate when the quantum dots are fabricated by an etching process, ion implantation or by application of electrostatic gates. The parabolic confinement potential can admit various resonances, due to the constant spacing of the energy levels which results in extensive enhancement of the nonlinear susceptibilities and hence absorption. Subsequently, various optical studies have been carried out in parabolic and semi-parabolic potential quantum dots [17–20].

In quantum dots, confined excitons illustrate a motivating model for studying nonlinear optical properties [21,22]. An exciton is a bound electron-hole pair that is formed by the Coulomb interaction (electrostatic interaction) between the electron and hole. Theoretically, this system is similar to the hydrogen atom and also has discrete eigen-energies. An exciton is made up of an electron and a hole with more closely matched effective masses and confinement of charge carriers leads to the higher value of exciton binding energy in low-dimensional systems. The transitions between confined exciton states generally fall in the meV range that can easily get manipulated with the fields [23,24]. The excitons, therefore, illustrate a motivating model for studying nonlinear optical properties in quantum dots and can have great applicability in optical devices [25].

The core study of our paper is the analysis of the linear and third-order nonlinear optical properties of an

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Good Corporate Governance: A Tool for Preventing Accounting Errors and Frauds

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Abstract

Various kinds of frauds and scandals are increasing daily in the corporate world; therefore, there is a need of the hour to have Good Corporate Governance. The policies and strategies designed to decide the company's directions and performance are known as corporate governance. Good Corporate Governance helps to reduce financial risks. As there is a need to follow good corporate governance practices, the paper aims to discuss the importance of corporate governance. An effort has been made to discuss theguiding principles to be followed for good corporate governance. For this purpose, thesecondary source of data collection is used.

Keywords: Corporate Governance, Ethics, Transparency, Accountability.

Introduction

The linking amongst ownership and management has become the basis of recent corporations in current years. Corporate governance essentially establishes the outline for creating long-term beliefs between businesses and their various stakeholders. Transparency of corporate structures and operations, management and board liability to shareholders and corporate responsibility to stakeholders are essential aspects of good corporate governance. Companies worldwide recognize that better corporate governance improves their operational performance significantly; however, countries still need to improve their corporate governance standards and address flaws.

Corporate governance, international governance, national governance, and local governance are all examples of governance. The way in which organizations are governed is referred to as corporate governance. Good corporate governance means that the organization prioritizes the interests and trust of its stakeholders. Good corporate governance protects the interests of the company's minority and majority shareholders. As a multidisciplinary area of study, corporate

A study of Impact of Motivational Factors on the Job Commitment of Colleges and Universities Professors during COVID 19 Pandemic in India

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Abstract

Teaching is a smart teaching activity in which both students and professors participate. The education sector faces many problems regarding education structure, such as quality, cost planning, moderation in education, and even today, academic behaviour is severely hampered by the pandemic. However, the education and teaching framework in India has adopted online education as the preferred educational framework during this pandemic to continue the teaching process. This method was initially adopted to secure the teaching process of colleges and universities students, and after that, it was implemented in all levels of education. However, many students find it difficult to find and search for online courses because they show many limitations that affect student performance from different angles, for example, physically and intellectually, rather than motivating students to lead individual lessons. According to this study, there are significant commitments of professors based on the pedagogical teaching method. The motivation factors that encourage professors will help colleges and universities students in a teaching-teaching approach that incorporates multiple teaching strategies to improve the online teaching experience. This study examines the commitments and motivation of intrinsic and extrinsic motivational factors of various Indian colleges and universities professors to make online education effective and make the teaching experience useful and interesting to students.

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Research Article

Life Behind The Monolith Culture of the Chakhesang Community

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ABSTRACT

The Nagas depend on their history through oral narration due to the unavailability of a written script. Like any other community in the world, they have their own way of preserving their tradition, that is, verbal narration and erecting monoliths. The Naga people believe that the monolith they have erected will be the living proof of the glory and their living history to the coming generations. The monoliths that are found among the communities of the Nagas have distinct features. They are rough, shapeless with engravings or scripts being absent on them. The purpose of erecting monoliths among the Nagas may differ from one community to another community. Some communities erect monoliths for rituals, some to show prosperity and get recognition from society, some to signify death and birth etc. Whatever may be the reason, the monoliths that survive for ages and are seen till today are a living tale to tell the people about their ancestry. The monolith reflects the past life of the community This article is intended to study how monoliths play a pivotal role in (re) discovering and (re) structuring their past. The article is based on the personal fieldwork undertaken for the research purpose.

Keywords: Monoliths, Community, Oral Tradition, The Feast of Merit

Introduction

The Chakhesang community once live in an age where stones were considered as a status symbol just as the crown gives entitlement to a king. Different stones from different generations show the specific period of how and when the community started or where the idea of using stones as a sign of their social life started, link up with the oral tradition of the society. There is no written script found on the stones erected in this community. They are rough and of different shape, though with the passage of time, the shape of the stones changed due to weather and natural forces. Jelle J. P Wouter in his experience with the social lives of stones of Phugwumi village also called Kikruma village pointed out "The local command of monoliths lies in their robustness. They withstand and endure, unlike wood that rots, clay that dissembles, and unlike humans who decompose".[1] Supporting his personal experience, he further asserted, "A study of the social lives of such stones can provide a window into the past, casting rays of light on a history that has gone largely unwritten and undocumented, although not, of course, unremembered as rich repertoires of oral history flourish from one Naga village to the next".[2] Whenever one crosses any village of the Chakhesang community, one finds the stone being erected outside the village boundaries, some single, some

[1]J.P. Jelle Wouter. "Feast of Merit, Election Feasts or No Feasts? On the Politics of Wining and Dining in Nagaland" in Northeast India in The South Asianist, Vol.3:2. p. 22
[2]Ibid,p. 21

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ORAL NARRATIVES OF THE CHAKHESANG NAGAS AND ITS PORTRAYAL OF THE COMMUNITY LIFE THEREIN

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Abstract

Oral narratives like folksongs and folktales play a vital role in the oral community life of the Chakhesang Nagas. Due to the absence of a written script, the people find their way to relate the past through a different kind of oral transmission of folksongs and folktales. Since the oral narration solely depends on one's memory, with time, it slowly changes as the folksongs are been sung by different singers or the folktales narrated by different narrators. The flexible nature of the oral narration, it keeps on with the changing need of time and no one can stop the flow of change. No matter what consequences the changes is taking place, everything is recorded through folksongs and folktales which help the young generation to know about the social life of the past to some extent. Had it not folksongs and folktales existed or the creativity of the people fails to implore the importance of folksongs and folktales, then the community would have lost its contact with their past. But, with the creativity of the people in composing folksongs and narrating folktales, it bridges the gap of the past and the present generation. The present paper aims to study how oral narratives play an important role in helping the community to preserve their history, and how people use as a means to transmit their history from one generation to the next generation. It will also focus on how oral narration is accepted by the community in the present generation. The paper is based on the data collected during the personal fieldwork undertaken as part of the research.

Keyword: Oral Narratives, folksongs, folktales, community life

1.INTRODUCTION

The Chakhesang Nagas is one of the sixteen communities inhabiting in Nagaland. The absence of a written script in the community makes them rely on the spoken story of people through oral narration to past down the knowledge of the community from one generation to the next generation. Oral narrations in the form of folktales and folksongs of the communities in India have their own beauty suiting to the environment and the people around. The people living in the hills and the plains have variation in traditions, food habits, culture etc. For instance, the people living by the seashore depends their food on fish, while on the hillside, according to nature providence, they are prompt to depend on meat. Even in oral traditions, the folktales of the plains romanticised the sea, the moon, fisherman or the daily life happening by the seaside, while the people living on the side of the hill tend to romanticise the beauty of nature, flower, trees, the greenery of the hills, and the daily activities of the people.

The traditional dresses differentiate the people from the hills and the plains. The plain people have the availability of gold, iron, silver or brass, thus according they decorate themselves with it, while one finds the beak of birds or its feather, the tusk of the animals, dresses or ornaments representing flowers or nature among the hill people. The miseries, happiness and the past glory of the people are reflected through folksongs and folktales. One finds that they are the sole source to contact the past with the present. Both young and old learn them through listening or practising in the gathering sitting around the fire, especially during the festival period. People celebrate festivals after festivals following the agricultural cycle. When people were busy penning down their emotions and feelings in other parts of the world, the oral narrative is the only means to the community of the Chakhesangs due to absent of script and late arrival of education within the community. The

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AIPROAJ

AN ANALYTICAL STUDY OF MÜTÜLÜ AND KAMHILÜ WITH REFERENCE TO CHAKHESANG COMMUNITY'S BELIEF AND MENENO VAMUZO RAKHO'S WORK *KHAWHIMUTULU* IN NAGA HERITAGE: *PEOPLE STORIES, VOL.1*

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ABSTRACT

The paper intend to analyse the traditional common belief of the Chakhesang Naga community inspite of the variation of languages spoken within the community and how people. The community believed that Khawhimütülü also known as Mütülü and Kamhilü belong to each other, one in spirit and the other in body. Khawi is the human form while Mütülü is the spirit form. People sometimes address them like there are two beings, while sometimes they are narrated as though they are connected to one body and soul. No matter how vague the concept of the story is passed down amongst the community, they still believe that their ancestor once lived with a God sent spirit being. Every village has their own version of Khawhimütülü also known as Mütülü and Kamhilü story. The paper does not try to justify or distort the belief of the people, nor try to analyse which version is authentic and which version is not authentic, but tries to bring in the concept of the community's belief in one spirit being inspite of the variation in their interpretation and how they still believe the existence of Khawhimütülü in their community. Every village of the Chakhesang community has their own belief and rituals to follow, however this does not separate or divided them, but rather bring them closer by respecting each other belief. The paper will also bring out as to how the community interpret Khawhimütülü as myth or legend in their own version. The data is collected base on the personal fieldwork for the ongoing research.

Keywords: *Mütülu/ Kamhilü*, Belief, Community, Oral Narrations

Introduction

The Chakhesang Nagas is one of the sixteenth indigenous communities of Nalagand, known for their diversities in culture and languages. It is also known as the land of tradition for their adherence to their traditions inspite of the advent of Christianity and modernisation. Even if they have given up their traditional religious practices, they still hold on to their oral tradition. The practice of transmitting traditions orally or by word of mouth helps them to preserve many folktales, myth, legends, folksongs, etc. Although some of them got lost or changes along the process of transmission due to the complete dependence on collective memory. Khawhimütülü also known as Mütülü and Kamhilü's stories are also passed down

Trans-phobia and the Contemporary Mainstream Hindi Cinema

Kuhu Sharma Chanana

Indeed with the introduction of the "Rights of Transgender Per sons Bill 2014"as initiated by Tiruchi Siva, there has been an assurance in terms of providing the equal rights and entitlements to transgenders and assigning the status of an equal citizen to them. This bill categorically and in very strong words talks about equality and non-discrimination; protection of the rights of the transgender children, rights to life and personal liberty, right to live in community, protection from abuse, violence and exploitation, rights to home and family and freedom of speech. It also lays emphasis on the constitution of The National Commission for Transgender Persons and special transgender rights courts. The Transgender Persons (Protection of Rights) Bill, 2016 was introduced in Lok Sabha on August 2, 2016 by the Minister for Social Justice and Empowerment, Mr. Thaawarchand Gehlot. However the problem in this bill is that it has not given a very inclusive and fluid definition of a transgender person: "The Bill defines a transgender person as one who is (i) neither wholly female or male; (ii) a combination of female and male; or (iii) neither female nor male. Such a person's gender does not match the gender assigned at birth, and includes trans-men and trans-women, persons with intersex variations and gender-queers"(http://www.prsindia.org/uploads/media/Transgender/Bill% 20Summary%20-Transgender%20Bill%202016.pdf). There has been an outcry regarding the issue of self identification and the definition of transgender person which indeed is not as expansive as the trans-activists might like it to be as the cultural connotations and multiple convoluted trans identities that are all pervasive within the transgender communities do not find the space within the ambit of this definition.

But despite these counter arguments it is safe to assume that the Supreme court's recent judgment, because of which transgenders are now recognized as third gender and they should be able to

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assert their citizenship rights, is a path-breaking judgment in terms of transsexual revolution. But as Steven Sideman affirms that the citizenship right definitely provides state protection but as every right is fraught with responsibilities, it will be interesting to excavate as what will be the expectations of the state vis-a-vis transgenders' contribution towards the nation. But can this affirmative stance taken by the state mitigate the social and cultural stigma attached with hijras because in the cultural memory of people hijras are associated with criminality due to the imposition of The Criminal Tribes Act of 1871 (now abolished). This act was amended in 1897 and was subtitled as 'An Act for the Registration of Criminal Tribes and Eunuchs'. However despite its abolishment, the cultural and social implications of this act can be seen even in today's time as Mahesh Dattani asserts in *Seven Steps around the Fire:*"The two events in mainstream Hindu culture where their presence is acceptable—marriage and birth—ironically, are the very same privileges denied to them by man and nature. Not for them the seven rounds witnessed by the Fire God, eternally binding man and woman in matrimony, or the blessings of 'May you be the mother of a hundred sons'"(239-240). Significantly it is not a matter of great surprise that Manevendra Singh, the first open gay from a royal family who has fought incessantly for the rights of the queers, narrates how the queers in a royal family have been most derogatorily called hijras instead of gays or lesbians as being a hijra is considered the worst and the most marginalized identity even within the queer community. To quote his words: "Growing up in royal family has made me come across many royal members who have been lesbians and gays but termed as hijras by my own family members and I use to wonder as how can Maharaja (the ultimate symbol of 'ultra male') be a hijra"(in an unpublished interview given to me).

This paper attempts to build the linkages between the art and trans politics and how this mutually symbiotic relationship can be helpful in making important interventions in policy making. Apropos of the issue of the role of art in social activism , Revathi made a pertinent observation. The protests through writings against the unfair treatment meted out to gender queers have been an integral part of the queer activism and Revathi in her latest autobiography, *A Life in Trans Activism* has in fact clearly affirmed that after spending so many years in NGOs she has realized that art is a much more powerful vehicle for social change. To quote from the text: "Their reactions touched me. I feel humbled. De-

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Categorisation of Drain on the Basis of Biochemical Oxygen Demand : A Novel Approach

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Abstract

Drains are categorized as red, orange, pink and green on the basis of BOD concentration. It helps in easily detecting the status and characteristics of drains. This novel approaches are mainly considered in categorizing and characterizing as well as on trend analysis of drains on the basis of BOD before and during and lockdown period. BOD values of drains ranged from BDL to 100 mg/l with an average of 30 mg/l during lockdown period and it is observed to be ten times reducing from earlier corresponding seasons of 2018 and 2019. Total flow of 3999 MLD with an average of 348 MLD was found during the lockdown period supporting less BOD due to high flow in all seasons. Twelve red and seven orange categories of drains were improved into pink categories due to their BOD < 40 mg/l during lockdown period. Except for a drain, all red and orange categories of drains with their BOD values were reduced by 50% during lockdown compared to earlier seasons of 2018 and 2019. Nine pink and thirteen green drains were increased into thirteen and nineteen respectively. Most of the drains with their BOD values were reduced by 50% during lockdown. It shows that the drain water quality has improved positively during the lockdown period. Average COD concentration during lockdown period was reduced by more than 50% compared to pre monsoon, 2018 & 2019 where COD & BOD was directly proportional to every category of drain suggesting reduced inorganic and organic pollutants from domestic, industrial and agricultural runoff. NH_3-N concentration in drains ranged from BDL to 28 mg/l with average of 9 mg/l in lockdown period and it was decreased four and two times compared to earlier pre and post monsoons data's in 2018 and 2019 respectively.

Keywords: Categorisation, Characteristics, Drains, Ganga and Lockdown.

Trend analysis of Common Mixed Priority Drains of Ganga

Introduction

A channel or pipe carrying liquid waste is known as sewerage or sewer or drain and it may be natural or artificial. Most of the drains discharge into sea, river, lake, pond and wetland etc. with or without any treatment. Unplanned water consumption and release of untreated and partially treated sewage by industries, ashrams, hotels, apartments and other activities are the major sources of water pollution which threaten the surface water and groundwater in India. Habitually, aquatic ecosystems at many places are used as the dumping grounds for domestic, healthcare centers and industrial solid and liquid waste. Many of the rivers, lakes and wetland etc. across India have received so much of liquid waste that they are virtually converted into drains in terms of water quality (Jiban *et al.*, 2016).

Drain monitoring is very important for impact assessment on surface water and groundwater regime pollution status and abatement as it carries various industrial effluents. Due to rapid urbanization and industrialization the flow of drains also increases. These priority drains are interconnected with a number of drain networks and finally they discharge into rivers and lakes and affect the water quality and the ecosystem.

Therefore, as per Hon'ble National Green Tribunal (NGT) order dated 11.09.2019 in 06/2012 Manoj vs Union of India and Organisation directed

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Taxation of Advance Income Tax in India.

Dr. Renu Sobti,[1] Dr. Jagbir Singh Kadyan [2]

Abstract:

This paper reviews the system and procedure of payment of advance income tax in India. It highlights the incomes and the assessees who are chargeable to pay the advance income tax in India under the existing Income tax Act 1961. The various due dates and the penalties associated with the payment of advance tax are discussed along with the procedure of payment of advance tax electronically.

Interpretation and analysis has been done with reference to the amount of direct tax revenue collection by the government of India under five different heads, viz., Advance Tax, TDS- Tax Deductions at Source, Self-Assessment Tax, Regular-Assessment Tax and Other Direct Tax Receipts. The collection of advance tax and its year to year growth and its contribution to the total direct tax collection revenue has been critically analysed.

The duration of this study comprises of eighteen years starting from the year 2001-02 and ending on the year 2017-18. Secondary data has been collected from the government of India's websites. MS office - excel has been extensively used for the data tabulation, interpretation and analysis to arrive at conclusions.

Key words:

Direct Tax, Assessees, Advance Income Tax, Due date, e- payment, Penalties & Assessments.

1. Introduction:

The Central Government of India has been empowered by Entry no. 82 of the Union List of Schedule VII of the Constitution of India to levy tax on all income other than agricultural income (subject to Section 10(1). The Income Tax Law comprises The Income Tax Act 1961, Income Tax Rules 1962, Notifications and Circulars issued by Central Board of Direct Taxes (CBDT), Annual Finance Acts and Judicial pronouncements by Supreme Court and High Courts.

The Indian Income Tax Department is governed by Central Board of Direct Taxation (CBDT) and is part of the Department of Revenue under the Ministry of Finance, Government of India. Income tax is one of the key sources of revenues that the government uses to fund its various activities and serve the public.

Income tax is levy on the taxable income of the assessee. Section 2 (31) of income tax act 1961 defines an assessee as a persons, which includes Individuals, Hindu Undivided Families (HUFs), Companies, Firms, Limited Liability Partnership (LLP), Association of persons (AOPs), Body of Individuals (BOI), local Authority and any other Artificial Judicial Person.

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HINDUISM AND SCIENCE

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ABSTRACT:

Now the West wants to know about the Hindu way of life, ancient Hindu art of living, its wisdom and philosophy to enjoy a better future. It is no wonder now that the West has of late become more curious and interested about our Vedic riches. On the one hand Hinduism is the highest religion on the land and on the other, it is highest form of life and science. Hinduism is more a higher way of life than a religion. It is not an esoteric religion designed for and followed by the specially initiated, put a popular philosophy of life. Millions and millions of people for centuries have found comfort in this great religion. Hinduism is not just a religion; it is a scientific way of life. Supreme Court of India in one of its judgments has accepted this reality and ruled, "Hinduism is a way of life." Echoing the same idea noted scholar of Hinduism and the author of Hindu-Joy of life, Utpal Kumar Banerjee says, "Hinduism is a philosophy, a way of life and its celebration. It is a religious and cultural tradition where the enormous variety of beliefs and practices can ultimately be interpreted as a common view of the world." Not only spiritually, but Hindu scholars have also set forth precise and penetrating words for the scientists and researchers which are not contingent on ill-founded facts, unscientific dogmas or arbitrary fancies.

Keywords: 1-Hindu, 2- Microbiology, 3- religious, 4- *Gaomutra,5- Ayurvastra,6-* NASA,7- *yoga, 8-meditation, 9- Karma, 10- tilak, 11- Sanskars*, 12- *Ramayan.*

There are several phenomena, which the world perceives as being uniquely Hindu, which are far more widespread worldwide. The most notable example concerns a thirst quencher. Ancient Hindus used to store drinking water in a brass vessel for good health has been now proved scientifically by researchers. Microbiologists say that "water stored in brass containers can help combat many water-borne diseases....." | Rob Reed worked for this

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Regular Article - Topical Issue

Static multipole polarizabilites of H-atom in modified ring-shaped potentials

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Abstract. The time-independent Schrödinger equation (TISE) is solved to evaluate energy eigenvalues and eigenfunctions of H-atom confined by one of the radial potentials, which is modified by a ring-shaped potential and further encaged in a spherical boundary. We have considered the following four radial potentials i.e., Debye, Exponential Cosine Screened Coulomb (ECSC), Hulthén(α), and Hulthén(2α). Static 2^l-pole polarizability of H-atom in different modified ring confinement potential is evaluated for a range of screening parameter (α). Repulsive ring-shaped potential affects multipole polarizabilities and reduces the critical screening parameter in different modified ring confinement potentials. The confinement parameters α and β considerably affect the amplitude of multipole polarizabilities. Size of the spherical boundary (r_0) crucially affects multipole polarizabilities and overweighs the effect of α and β. The results prove that as the screening parameter increases the polarizabilities corresponding to various radial potentials become almost equal, i.e., the response due to the different radial potentials becomes indistinguishable after a particular value of the screening parameter.

1 Introduction

Confined systems are useful quantum mechanical model to understand and simulate the effect of external conditions on any enclosed atom. The atom embedded in an environment can be modeled through different confinement potentials. Radial potentials belonging to the class of screened Coulomb potentials are generally employed for this purpose. Debye-Hückel (Debye/Yukawa) potential is used to study the effect of classical plasma environment whereas ECSC potential is generally used to model quantum plasma. The Hulthén potential behaves like Coulomb potential for short range of r and decreases exponentially for long range of r. The Hulthén potential has been used in different areas of physics, such as in solid-state physics, nuclear and particle physics, atomic physics, and chemical physics, and investigated with various techniques [1].

The potentials are expected to alter the behaviour of a system in response to external stimulations. One of the physically important property to be investigated is the polarizability since it is a key parameter in determining the electronic structure of atoms or molecules. Atomic polarization invades a number of processes and areas in physics. Multipole polarizabilities for an atom describe the quantitative distortion in electronic charge distribution due to an external electromagnetic field. The macroscopic properties like refractive index, dielectric constant can be determined by using dipole polarizability [2]. Polarizabilities play an important role in the determination of many physical properties and modeling aspects, such as optical response, and atomic and molecular interactions [3].

For the first time in 1937, Michels et al. [4] gave a model to study the variation of static dipole polarizability of H-atom confined within the surface of a sphere, confinement being modeled by an infinite potential at the surface of sphere. Dalgarno obtained approximate values of dipole polarizabilities for alkali atoms by using first few terms of the summation series [5]. Langhoff and Hurst in 1965, calculated multipole polarizabilitites and shielding factors for multielectron atoms and ions. They used variational methods and uncoupled Hartree-Fock approximations [6]. Tanner and Thakker [7] in 1983, calculated multipole polarizabilitites and shielding factors of H-atom. They also estimated discrete and continuum state contribution to them.

Saha et al. [8] calculated static dipole polarizability of H-atom confined in both Debye plasma and an impenetrable spherical box at different screening parameters. They found that the polarizability would increase at large screening parameters. In 2002, Sen et al. [9] considered H-atom with $Z = N/3$ confined in a spherical box and studied the variation of quadrupole polarizability with decreasing box radius. In 2004, Laughlin [10] estimated dipole polarizability of a hydrogen-like atom that was confined in an impenetrable spher-

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Environment, diseases and Indian history

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ABSTRACT

One can state that in studying environmental change, it is true that most human activities have environmental consequences, and that change in the natural systems, whether induced by humans or by nature itself, almost inevitably affects human beings. Environmental history is a multidisciplinary subject that draws widely on both the human influences and nature. There are many components of it, i.e., physical impact of human on earth, human and their exploitation of the nature, settlements and colonial expansion etc. Many of these components of environmental history examine the circumstances that produce the environmental problems. Apart from it there is separate line of study which is more cantered around historical perspectives and is specific toward environment and its impact on historical change.

KEY WORDS

Environment, Ecological imperialism, Catastrophe, Diseases, Pandemic

Environment and History

Environment and History is an interdisciplinary subject which brings environmental science and humanities close together with a deliberate intension of bringing ideas and believes related to their connection. Environment always had its impact on history sometimes for transition and sometimes for realisations. Human beings utilized it to fulfil their biological need but, till they were prudent in using resources it reciprocated in their development and as they become prodigal, the nature had its own course of action to rebuilt itself. The purpose of this article is to study those catastrophes which are considered responsible for the problematic conditions or was there something else working in against the mankind. On this perspective the book 'Late Victorian Holocausts' is of immense importance because Mike Davis in this book has related human problems with cruel climatic conditions in the late nineteenth century. On the question that whether famine is caused due to decline in availability of food, we get an answer that it may can happen in the isolated hunter-gatherer ecologies but not in the large-scale society. The climatic change may can have short term impact but whether it was associated with larger impact is not true. Their impact is not permanent and fades with the passage of time but what remains is the

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Research Article

Regional history in literature, narratives and performances in Bengal and Santhal Pargana

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ABSTRACT

This is an attempt to study the regional history of Bengal with the help of literature and narratives and unheard past of Santhal Pargana through narrative performances. Since, the history was written for the ruling and aristocracy class which gives an understanding of the past from above and it hardly talks about the history of lower strata. There is a massive need of history writing pertaining to local areas. The knowledge of the local people is acquired through qualitative research because the indigenous knowledge is transferred from one generation to another and because of the west centric knowledge, the indigenous knowledge is marginalised which will even vanish after some time. Similar is the situation of the knowledge of spiritual and religious past. The hagiographical literature of this region is considered as an important source to understand the socio- religious outlook. Beneath these literatures, there were several proto socio- religious outlooks that exercised a profound impact on people at lower level. In process to study these, one has to depend upon the oral history available in its surroundings.

KEY WORDS

Dharma Thakur, Charyapada, Sunyabad, Parakiya, Chaupahara, Bhagat

Introduction

Poetic framework and historical details are the two most important aspects which are followed by literature in any language and society. Similarly, narrative poem is an integral part of literature which tells stories and it is formed out of characters and plots. In its definition it is said that, it does not necessarily need a rhyming pattern, but it follows a syllabic pattern and it has a clear objective of influencing a specific audience. These are basically derived out of oral narrations which include old narratives and ballads. On this basis, when we define Bengali early literature and narrative poems and compare it with other literature, we find that Bengali narrative poems have something to deliver when it justifies and teach worship of one or another deity. In process of understanding history of texts, we need to work on the beginning and transition of textuality.[1] In Bengal this is clearly visible in fragments from the early medieval literature which consisted of aphorisms, handbooks of mystic doctrines, ballads and songs in honour of contemporary rulers, hymns in praise of Dharma Thakur and genealogical accounts of aristocratic families.[2]

The Bengali narrative poetry initially was composed during the period of eleventh century and were meant to recite and performed to produce some good.[3] These poems were used in performances for an audience which has implications for a historian. The manuscripts of these narratives preserve traces of an ancient Bengali oral and folk literature, formed over centuries in an intimate and natural relation between village singers and their audiences. At regional level the languages are still in its colloquial form which is far from outside influence. In regional language there are writings used in narrative

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Regional history in literature, narratives and performances in Bengal and Santhal Pargana

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ABSTRACT

This is an attempt to study the regional history of Bengal with the help of literature and narratives and unheard past of Santhal Pargana through narrative performances. Since, the history was written for the ruling and aristocracy class which gives an understanding of the past from above and it hardly talks about the history of lower strata. There is a massive need of history writing pertaining to local areas. The knowledge of the local people is acquired through qualitative research because the indigenous knowledge is transferred from one generation to another and because of the west centric knowledge, the indigenous knowledge is marginalised which will even vanish after some time. Similar is the situation of the knowledge of spiritual and religious past. The hagiographical literature of this region is considered as an important source to understand the socio- religious outlook. Beneath these literatures, there were several proto socio- religious outlooks that exercised a profound impact on people at lower level. In process to study these, one has to depend upon the oral history available in its surroundings.

KEY WORDS

Dharma Thakur, Charyapada, Sunyabad, Parakiya, Chaupahara, Bhagat

Introduction

Poetic framework and historical details are the two most important aspects which are followed by literature in any language and society. Similarly, narrative poem is an integral part of literature which tells stories and It is formed out of characters and plots. In its definition it is said that, it does not necessarily need a rhyming pattern, but it follows a syllabic pattern and it has a clear objective of influencing a specific audience. These are basically derived out of oral narrations which include old narratives and ballads. On this basis, when we define Bengali early literature and narrative poems and compare it with other literature, we find that Bengali narrative poems have something to deliver when it justifies and teach worship of one or another deity. In process of understanding history of texts, we need to work on the beginning and transition of textuality.[1] In Bengal this is clearly visible in fragments from the early medieval literature which consisted of aphorisms, handbooks of mystic doctrines, ballads and songs in honour of contemporary rulers, hymns in praise of Dharma Thakur and genealogical accounts of aristocratic families.[2]

The Bengali narrative poetry initially was composed during the period of eleventh century and were meant to recite and performed to produce some good,[3] These poems were used in performances for an audience which has implications for a historian. The manuscripts of these narratives preserve traces of an ancient Bengali oral and folk literature, formed over centuries in an intimate and natural relation between village singers and their audiences. At regional level the languages are still in its colloquial form which is far from outside influence. In regional language there are writings used in narrative

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7040 157

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Health Scenario in Delhi – Status and Recent Trends of Vector Borne and Water Borne Diseases in NCT of Delhi

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Abstract

There are strong linkages between population, health and development. India's healthchallenges are huge in magnitude due to its large population, diversity, inequality, lack ofproper and clean drinking water and proper hygiene. Many environmental concerns arise due to poor water quality, open drains in some areas, open garbage disposal as well as the contamination of the surface water in Delhi. Water related diseases are the most common cause of death. The lack of clean water for domestic use has led to the increase in the number of deaths due to water borne diseases in both urban and rural parts of Delhi. The adverse health effects related to water can be organized as water borne; water based and water related vector diseases; and water scarce diseases. This paper studies the occurrence and trend of various vector borne diseases and water borne diseases in the NCT of Delhi in the last decade.

Keywords: *Disease, Health, Vector Borne Diseases, Water Borne Diseases, Sewage, Sanitation, Water Pollution, Virus and Hygiene.*

Acronyms

BOD	Biological Oxygen Demand
CPCB	Centre Pollution Control Board
CSE	Centre for Science and Environment
DJB	Delhi Jal Board
GOI	Government of India
GPCD	Gallon per Capita per day
JE	Japanese Encephalitis

An Empirical Study on the Consumer Buying Behaviour towards Electronic Goods.

Dr. Renu Sobti [1] Dr. Leena Jenefa*[2] Dr. Jagbir Singh Kadyan [3] Dr. Prakash Vadavadagi [4]

ABSTRACT

The study of consumer buying behaviour towards electronic goods is an essential task in this completive world. This helps the retailer to make decisions and making competitive advantages towards the current scenario. Indian retail industry plays an important role in Indian economy. The consumer wants and demand use to vary from individual perceptive. Their consumption pattern used to be different and influencing factor makes an important role. This research paper gives more insisting towards the factor influencing buying behaviour. It is a empirical study and 421 samples were selected using convenience sampling method. The data were collected and analysed using IBM SPSS software 20. Relevant hypothesis were framed and identified the relationship between the dependent and independent variable.

Key words:

Consumer, Buying Behaviour, Consumption pattern & Electronic goods.

INTRODUCTION

Consumer buying behaviour refers to the purchase of the products and services for their needs and wants. There is various procedure involved while buying the products. Internal and external environment influenced the consumer to decide to buy the products.

A purchase decision makes an important role. It may be daily or weekly or monthly based on the products. The consumer wants and demand use to vary from individual perceptive. Their consumption pattern used to be different and influencing factor makes an important role. Indian retail industry is the largest and well versed throughout the country. In today's consumer market there is a lot of competition especially in electronic goods. There is a high demand from the customer. The retail organisation must to know their consumers in a better way in order to earn more profit.

REVIEW OF LITERATURE

Leena Jenefa, (2017) "Social media marketing gave more influenced and makes the consumer to buy the products in an easy mode. It attracts the working people and young generation. The

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1000 158 Link

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Analytical Review of Direct Taxation in India.

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Abstract:
Income tax is levied on the taxable income of an assessee. Direct taxation is a tax that an assessee pays directly to the entity that imposes it. Direct taxes cannot be passed on by an assessee to a different person or entity. The assessee on whom the tax is levied is mainly responsible for paying it. Some of the major examples of direct tax include income tax and corporate tax. This research paper attempts to make an analytical review of Direct Taxation in India and accordingly three major research questions are raised. What is the quantum of direct tax collection? What is the contribution of direct tax collection towards the total tax revenue collection? And what is the cost of direct tax collection incurred by the government of India? This research is primarily based on secondary data and the duration for this research works is for a period of five years starting from the year 2013-14 to 2017-18. Analytical review has been made to understand the quantum of direct tax collection, the relationship between direct tax collection with the total tax revenue collection and the cost of direct tax collection in India.

Key Words:
Tax Revenue, Direct Taxation, Cost of Tax Collection, Income Tax Act 1961.

Introduction:

Income Tax Act was introduced in India by the British Empire in the month of February 1860. It was introduced through Income Tax Act number xxxi of 1860, which was passed by the legislative council of India and received the assent of the Governor General on 24th July 1860, (Priyabrata Panda et al, YEAR). Ever since then, income tax act has gone through numerous changes within its structure and design. Numerous amendments have been made from years to years to reach its present form of Income Tax Act 1961. In this research paper we shall be making analytical review of direct taxation in India.

Direct taxation is a tax that a person pays directly to the entity that imposes it. Direct taxes cannot be passed on by a person to a different person or an entity. The person on whom the tax is levied is responsible for paying it. Some of the major examples of direct tax are income tax and corporate tax. Direct tax is levied on the total income of person who is classified into the following seven categories as per Income Tax Act 1961. A person could be -

i. An Individual
ii. A Hindu Undivided Family (HUF)
iii. A Company

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Impact of Consumer intention and new revolution towards Online Consumer Buying Behaviour during Covid-19 Pandemic.

Dr. Leena Jenefa [1] Dr. Renu Sobti*[2] Dr Jagbir Singh Kadyan [3] Dr. M. Abu Naser [4]

Abstract:

Today's consumers are highly influenced and attracted towards e-marketing rather than the traditional purchase. Social media marketing helps companies to sell the product in the digital platform and the customer can able to identify the different variety of products at a single click. In a single platform, the marketer can attract mass customers. The customers are able to buy or search the products at their own convenience. Due to Globalization, Privatization and Liberalization of the world economies along with the rapid development and expansion of business and consumer centric information technologies has changed the entire marketing scenario during the Covid-19 pandemic. The restrictions imposed on the trade and commerce due to Covid-19 pandemic and the lockdowns in different parts of the world has completely changed the world market and as a result a new mode of buying and selling have emerged in different parts of the world. Consumers' intention, their buying behavior and their levels of satisfaction has undergone a huge change in various cities of the world during the Covid-19 pandemic. This study was conducted in the Chennai metropolitan city of India. It is an empirical study and sample selected for this research were 320, based on the convenient sampling method. The variables of the study were tested using Chi square and cross tabulation analysis. The primary data collected was computed and analysed using IBM SPSS v25 and conclusions are drawn accordingly.

Keywords: Covid-19, Online Buying, Consumer Intention, Information Technology Consumer Buying Behaviour.

Introduction:

Globalization, Privatization and Liberalization phenomena changed the entire scenario into new platform called as Covid era. The Covid-19 pandemic changed the world history into digital world and all the products people are interested to buy through digital commerce via high speed of internet and flexible payment etc. The electronic commerce helps or rule over the people in major role in all aspects of life. The online shopping behaviour in Chennai city is growing every day. The customers have many benefits for using online shopping like time saving, access from everywhere, convenience to use the product, able to compare the price of the competitor product, availability to use 24 hours a day, variety of products, various options to buy the products, able to save the selected items. The consumers are interested to buy all the durable consumer products like furniture, kitchen utensils, garments, electronic products, pet items, bed sheets, vegetables and groceries through online .The

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REVIEW

Interaction between Earthworms and Arbuscular Mycorrhizal Fungi in Plants: A Review

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ABSTRACT

Different kinds of soil animals and microorganisms inhabit the plant rhizosphere, which function closely to plant roots. Of them, arbuscular mycorrhizal fungi (AMF) and earthworms play a critical role in sustaining the soil-plant health. Earthworms and AMF belong to the soil community and are soil beneficial organisms at different trophic levels. Both of them improve soil fertility and structural development, collectively promoting plant growth and nutrient acquisition capacity. Earthworm activities redistribute mycorrhizal fungi spores and give diversified effects on root mycorrhizal fungal colonization. Dual inoculation with both earthworms and AMF strongly magnifies the response on plant growth through increased soil enzyme activities and changes in soil nutrient availability, collectively mitigating the negative effects of heavy metal pollution in plants and soils. This thus enhances phytoremediation and plant disease resistance. This review simply outlines the effects of earthworms and AMF on the soil-plant relationship. The effects of earthworms on root AMF colonization and activities are also analyzed. This paper also summarizes the interaction between earthworms and AMF on plants along with suggested future research.

KEYWORDS

Earthworm; nutrient; mycorrhiza; soil enzyme; stress; symbiosis

1 Introduction

Earthworms are terrestrial invertebrates of the subclass Oligochaete of the phylum Annelidae. In general, earthworms are an important part of soil ecosystems, playing the role of consumers, disintegrators and regulators. The activities of earthworms promote the formation of soil aggregates by modifying the aggregate structures, thus modulating soil porosity and structure [1,2]. The excretion of earthworms has certain visible impacts on the soil carbon (C) cycle, nutrient content, and organic matter, and (2) microbial load, biomass and activity [3,4]. Earthworms affect the physical, chemical, and

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INDIA'S FOREIGN TRADE WITH U.S.A. & CHINA: A STUDY BASED ON TRADE INTENSITY APPROACH

Suneel Kumar*
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ABSTRACT

Trade is crucial to promoting the economic growth of the country. With the development of national infrastructure and communications every year, it becomes more and more important to go beyond the ground. As a reason, policymakers must be able to measure a country's trade intensity in order to determine market potential. A simple ratio of trade activities exports to imports reveals imbalanced traits, which lead to scaling, proportionality, and symmetry problems with current Trade Intensity (TI) metrics. As a result, due to biased and skewed characteristics, the analysis could be incorrect. Additionally, existing TI metrics are focused on two-sided trade actions amongst nations and do not clearly report the countries marketplace potential component for changing export openings. Thus we introduce the "TI Index," an advanced and innovative measure of trade intensity that focuses on correctness trading among nations import and export items. The similarity is very consistent and corresponds to the average change of all products in all global markets. The focus of this article is to design and build a new TI infrastructure to measure the potential of the internal market. New Trade Intensity (T'I) indexes provide ratings that make it easy to measure, compare, and understand changes in global products/countries/regions.

Keywords: *Trade Intensity Index, Export, Import, World, China, USA, India.*

Introduction

Global economic, political, socio-cultural, and strategic bonding is of utmost significance for the holistic development of any nation. Keeping in view the share and size of economies, ongoing trade war among India, China, and the United States to become a world power. As a result of their steady triangular connectivity in the 21st century, not just in Asia-Pacific, but around the world, economic and infrastructure growth, peace and prosperity will become the norm. (FICCI, 2011). Trade is one of the most important factors in a country's economic growth and development. Countries throughout the world engage in trade for a variety of reasons. A competitive advantage is one reason why some countries trade, although others do so to meet national market demands. Along the process, trade offers up new trade possibilities for nations and helps them expand their economies. Policymakers in a country that can recognise market potential in advance have an edge. Existing business solutions (using Balassa) TI browsing, such as Cho and Doblas-Madrid (2014), World Bank Integrated Trade Solutions Program (WITS), Asia Pacific Trade Research and Education Network (ARTNet), Sundar Raj and Ambrose (2014) A comparative system advantage (BRCA) is used to measure the distribution channels as an industry indicator. However, if the scale shifts and balances as the number and denominator plane changes, especially if the change is close to zero and large scales, the scale, ratio, and symmetry of this method are very important.

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8040 163

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India's Trade Relation with China and USA: Paradigm Shift Post Liberalization

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Abstract: Foreign trade has a metamorphic impact on the GDP performance and, therefore, on the future growth of an economy. It influences the technology, employment, and resource utilization. It is atruism that a country's economic standing depends upon the magnitude of its economic relations with other countries. Ultimately, it leads to worldwide cultural, social, and economic unification. Exports from India have increased slightly in comparison to those from China Protectionist. India's proportion in global merchandise exports is now 1.7%. However, China contributes 2.8% of world exports, indicating room for development. The United States has had the fastest increase. Over the previous decade, United States trade has expanded at a compound annual growth rate of around 8%, whereas world exports have grown at a CAGR of 1.9% between 2008 and 2018 (Paterson Stewart, 2019). India, the United States, and China are the subject of this paper's analysis. Results show that exports and imports to the United States are higher than those to China. It shows that imports are greater than exports inchina. India's trade balance with China and the USA affects the terms of trade and the exchange rates of the respective currencies directly.

Keywords: Foreign Trade, India, China, USA, Trade Intensity, WTO, USD, LPG

1. Introduction

International trade is a key driver of economic growth and progress, especially in emerging nations like India, where a fast-increasing population demands more

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900 165

REVISITING DECLINE OF INDUS CIVILIZATION: A STUDY OF ARCHEOLOGICAL EVIDENCES

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Abstract:

Every person would like to visit his/ her past at least once in their lifetimes. History is what connects us from person to person. Similarly, the history of the world connects us to our ancestors. History shows humans existed long before large civilizations were built. One of such civilizations is our very own Indus valley civilization. The civilization that flourished in the river beds of Indus valley, the cities that once flourished with traders, was suddenly just abandoned.

Years later in 1800 when the city was rediscovered, the rich culture was found and named Harappan Civilization. To understand why massive cities were abandoned, to understand why the civilization that grew and flourished so and in its best times why did it end so?

Anything that begins must end but each ending does have a root cause. Understanding the root cause for ending explains the thought process of those who ended it. Thus, knowing the cause of the end of such a great civilization is important. It not only gives us the last decision but also the form of how the decisions were made in those times. Now the question would be why is that necessary? Understanding the issues of those times and how they were dealt with gives us an insight into what we might do better if we were ever to face similar issues in future. Imagine a flood that would erase the whole of the earth similar to the one mentioned in the bible and Puranas. How would we protect ourselves unless we know why our ancestors failed to save their loved one?

Thus having knowledge of the past is much more important than any. Hence, the revisitation of the decline of the Indus Valley Civilization.

Keywords: Indus Valley Civilization (IVC), Harappan Civilization, Mohenjo-Daro, Harappa, Revisit, Decline, End of civilization, Indus River, life in Indus Valley Civilization, Harappan culture, Historical cities

1. INTRODUCTION

Spread across one of the most fertile lands, a culture that laid the foundation for Indian heritage, a group of traders built the most successful civilization back in the times, The Harappan civilization (also known as the Indus valley civilization). Considered as one of the world's first civilizations, the Indus valley civilization was established on the banks of the river Indus, hence it is commonly also referred to as Indus-Saraswati civilization. It was around 1829 CE, archaeologists discovered the city of Harappa, only to realise such a civilization existed in India. Hence, it can also be referred to as Harappan Civilization.

Indus valley civilization (IVC) was mainly divided into 3 categories namely,

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NATIONAL EDUCATION POLICY 2020 AND ITS ROLE IN GROWING INDIA'S FUTURE: AN ASSESSMENT

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Abstract:

The type of education a kid obtains determines his or her destiny. "Instruction begins at home," as the saying goes, but the education a kid receives at school is just as essential in shaping his or her lifestyle. Their job, psychology, attitude, and social connection are all influenced by the instruction they acquire in school. Albert Einstein said, "Education is what survives after one has deleted everything acquired in the classroom." The educational system has evolved significantly from times immemorial to the present. A well-defined and well-planned education strategy also contributes to a country's economic and social development. "Youth" are the future of the country. Such youth unless educated properly will lead the country to ruins. The burden of educating these youth fall on the country's government.

Over the last few years, the Indian education system was blamed to be a burden on students and their parents. Heavy books, huge syllabus. Some even compared the school bags of children to gunny bags that are used to carry food grains as they became so heavy due to the books being carried by the children. People have come to demand creative brains in recent decades, yet the nourishment necessary to develop bright talents is insufficient. Over time, the educational system has undergone several modifications. Regrettably, the reforms have been beneficial to the educational system but detrimental to the outcomes. The system provides the pupils with the essential data, but it does not allow them to apply it.

Today's youngsters have evolved into robots, carrying books to and from school and memorising the contents of the textbooks but ignoring their relevance. The weight of books on their heads appears to be greater than the gravity of knowledge. The goal of today's children and parents is to ensure that they emerge with medals, regardless of whether or not they have learned any important life skills. It is no longer important whether people acquire this graduation by byhearting or by striving to grasp the notion. Tutoring them to perfection is also a failure on the part of the teachers. Skills aren't promoted, but scores are, and in the professional world, scores aren't as important as talents.

Correcting these issues was a must. Whether to reduce the syllabus or not, whether to transform the education system or not, why was the previous system failing to produce a standard quality of citizens? What was lacking? What must be added to better the education system? If added, what would its effect be on the current education system? A country's education policy is determined by its culture, tradition, and social viewpoint. And, given the increase in our country's most valuable asset, intellectual young, adopting a new education strategy appears to be a progressive idea. This paper focuses on the National Education Policy of 2020 and its role in shaping India's future.

Keywords: NEP 2020, India's youth, India's Future, New education policy

Introduction:

In a person's life, education is very important. Education not only imparts wisdom, but it also teaches essential life principles. A child's education is a lifetime treasure chest from which one can draw facts and

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Climate Change and IndianAgriculture in the Present Scenario

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Abstract

The risk of change in climate is now considered as a well-knownreality and accepted as a common global problem. Recently (February, 2021), Chamoli glacier burst in Uttarakhand (India) once again highlighted the effect of environmental degradation and climate change. It is a well accepted fact that the climate change would impact the crop cultivation and allied activities as this is the most susceptible sector which will affect the livelihood of people globally. Though it is a global problem, a developing country like ours will have grave concern for the poor as they are the most exposed to food insecurity and hunger. It has been projected that changes in climate would decline crop yield levels in long run. Climate change brought the worst locust (tiddi dal) attack in decades to India sometime in May 2020.Thus, it would become more difficult to produce adequately, keeping in view the stress on natural resources in the changing climate scenario, as well as ensuring decline in degradation of resources and environment. In order to have sufficient crop production, there is a need to adopt the traditional practices and strategies to mitigate the changes in climate, need for capacity building, framing and adoption of suitable policies, intra and inter region-state-country cooperation and support, etc. There is a crucial requirement for synchronized efforts to build up the research

700 168

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CROSS-LISTING AND ITS LONG-TERM FINANCIAL BENEFITS TO CORPORATE SECTOR: LITERATURE REVIEW

Dr. T Venugopalan*
Meena Gayatri**

ABSTRACT

This research paper analyses how cross-listing is beneficial to companies in the long term. We were motivated to do a review of the literature because in December 2015 SEBI formed an expert committee to examine the various aspects of direct cross-listing of Indian companies on foreign stock exchanges and foreign companies on Indian stock exchanges. This study aims to investigate whether cross-listing, both direct and indirect listing is still beneficial for emerging nations and how cross-listing improves the corporate governance, disclosure norms, better investor protection, large investor base. This research is based on the review of literature on various dimensions of cross-listing. The results of the research paper conclude that countries from emerging economies take advantage of foreign listing in the form of increased liquidity, increased trading, a large investor base, better quality, analyst coverage, and decreased equity cost.

Keywords:- *Cross-listing, Direct listing, Corporate governance, ADRs- American Depository Receipts&GDRs- Global Depository Receipts.*

Introduction

The Balance of Payment crisis of 1990 paved the way for the Liberalization, globalization, and privatization of the Indian economy. With the open economy and emerging growth opportunities, the need for finance was also increasing, to meet that SEBI allowed companies to raise money through ADRs/GDRs from April 1992.

Cross-listing is, listing the stocks of a firm on an overseas exchange. Cross-listing is of two types –Direct Listing (Ordinary listing) and Indirect listing (Depository listing).Direct cross-listing is the one in which firms list equity stocks overseas. Indirect listing is done through depository listing consisting of American Depository Receipts (ADRs) and Global Depository Receipts (GDRs) mainly. There are various types of American Depository Receipts– Level I, Level II, Level III, and Rule 144A.

The trend of cross-listing has shown a steep decline, the reason being the combination of economic, political, institutional, and regulatory frameworks across the world. The lower cost of capital has been the major impetus to cross-list along with the segmentation of the world capital market, but cross-border barriers outweigh the benefits of the less capital cost. That's why the cross-listing ratio for the firms that can cross-list is very low. As the market progressed, different impetus arrived in cross-listing (Ghosh & He, 2015).

This paper comprises 5 sections. First, introduction consists of different theories of cross-listing and factors that outweigh the benefits of cross-listing. Second, the objectives of the study. Third, a brief review of literature. Fourth, the research methodology. Fifth, the conclusion of the study.

Different Theories of Cross-Listing

There are different theories on cross-listing, all the theories are based on the different motives to cross-list. The literature presents evidence in support and against these theories. These are divided into two parts -

i) Traditional motives

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AN ANALYSIS OF ISSUES AND CHALLENGES OF DRINKING WATER SUPPLY IN URBAN INDIA

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Abstract:

Worldwide, there is a scarcity of water due to the increasing population and climatic variance resulting from climate change. By 2025, 1.8 billion people would reside in regions with complete water shortage, according to estimates from the United Nations Environmental Programme (2002).Additionally, about two-thirdpopulation of the world's, mostly in developing countries, will experience moderate to severe water scarcity and almost half of the population will experience problems as a result of water scarcity.India's water supply becomes scarce in the summer.Since it only has 4% of thewater resources of the world compared to its 18% population, the country is among the most water-stressed nations in the world.A sizeable majority of Indians, according to the NITI Aayog, face high to acute water shortage. India's dependence on an increasingly unpredictable monsoon to fulfill its water demands exacerbates this problem. Climate change is expected to worsen this demand of water resources even as the nation faces more floods and droughts.A large portion of India falls under the category of physical water scarcity, meaning that the availability of natural water resources is insufficient to meet the country's future water needs. Urban areas where water availability is steadily declining will see a higher concentration of water-related issues. Potable water is a precious resource that is extremely delicate and susceptible to contamination and pollution. As a result, it needs to be handled very carefully. In order to guarantee that all urban settlement inhabitants have continual, clean and convenient access to drinking water supply, this paper focuses on concerns and challenges related to the supply of potable water in urban areas of India.

Key Words: Water Scarcity, Water Requirement and availability, Sustainability, water Security

Emerging Female Voices and Child Marriage Reforms in Early Twentieth Century

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ABSTRACT

Age long custom of Child Marriage could not be challenged in nineteenth century because neither reformer did have shastric evidences nor organized female voice opposed it, except sporadic cases. The main argument of this paper is that the first half of Twentieth century witnessed active participation of organized women of India, which raised their questions themselves and determined the enactment of the Child Marriage Restraint Act in 1929. Simultaneously, this paper also aims to contradict an idea that towards the end of Nineteenth century women's question was disappeared from agenda of public debates. I have used Government of India official papers, journals, contemporary books both in Hindi and English.

KEY WORDS

Women, Female Voices, Child Marriage, Nationalist, Feminist

In the beginning of twentieth century, India observed active participation of women in political and social life of the country through several women's organizations both at the provincial and national level which led to consolidation of Female Voices. In contrast to nineteenth century, these organizations raised the question of women from the stand-point of women and determined the enactment of the Child Marriage Restraint Act (Henceforth CMRA), popularly known as Sarda Act, in 1929. Moreover, the struggle and the collaboration with western feminists' interference particularly American and British strengthen the voice of Indian women which began to echo in the first half of twentieth century. Although, newly emergent women's movement in India dealt with the various wrongs of Indian womanhood like the Pardah, enforced widowhood, the Devdasi system, Women's education, and last but not the least the age long custom of Child Marriage, yet the passage of Sarda Act or the CMRA and its relationship with emerging Female Voice has not been fully developed.

Age long custom of Child Marriage was not challenged in nineteenth century because neither reformers did have evidences from shastras nor organized female voices opposed it, except sporadic cases. The famous case of RakhmaBai, towards the close of nineteenth century, was the grand act of defiance where a woman, married in childhood, challenged the basic patriarchal notion of subordination of a wife to her husband. She also, breached the notion of the sanctity of the Hindu marriage and role of a

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भारत में भाषाई विविधता और पारस्परिकता

भाषाई विविधता की दृष्टि से भारत विशाल बहुभाषी देश है। इससे पूर्व भी हिंदी तथा भारतीय भाषाओं के अंतर्संबंधों और विकास संभावनाओं, भाषा-समस्या और हिंदी की स्थिति पर काफी चर्चा होती रही है, इसके बावजूद इस विषय पर नए सिरे से चर्चा और पुनर्विचार करने की आवश्यकता है। उत्तर आधुनिकतावाद, भूमंडलीकरण, बाजारवाद आदि के बढ़ते वर्चस्व ने व्यापार तथा प्रौद्योगिकी को ही नहीं भाषा तथा संस्कृति के संसार को भी व्यापक रूप से प्रभावित किया है। अतः भारतीय भाषाओं की भाषायी, साहित्यिक एवं सांस्कृतिक पारस्परिकता पर पुनः चिंतन मनन करने की जरूरत बढ़ गई है।

भारतीय संविधान के अनुच्छेद (1) और अनुच्छेद 351 में आठवीं अनुसूची में बाईस भारतीय भाषाएँ हैं जो पुनः चार भाषा परिवार से संबद्ध हैं 1. भारोपीय परिवार 2. द्रविड़ परिवार 3. मुंडा या आस्ट्रिक परिवार 4. तिब्बती चीनी परिवार। सन् 1961 में हुई जनगणना के अनुसार भारत में चार भाषा परिवारों की 1652 भाषाएँ बोली जाती हैं। इनमें से 1455 भाषाएँ ऐसी हैं जिनके बोलने वालों की संख्या दस हजार से कम है। शेष 197 भाषाओं में से देश की बाईस भाषाओं को संविधान की आठवीं अनुसूची में रखा गया। इन भाषाओं में हिंदी राष्ट्रभाषा, राजभाषा और संपर्क भाषा बनी। इसके बोलने वालों की संख्या 42.88 प्रतिशत है। व्यापार, प्रशासन, राजनीति आदि दृष्टि से सभी भारतीय भाषाओं में हिंदी प्रतिनिधि भाषा मानी गई। अन्य भारतीय भाषाएँ अपने अपने क्षेत्रीय नामों से जानी जाती हैं जैसे गुजरात की गुजराती, पंजाब की पंजाबी, बंगाल की बंगला, असम की असमिया आदि वहीं हिंदी हिंदुस्तान की भाषा कही जाती है। किसी क्षेत्र विशेष के नाम से हिंदी भाषा का नाम नहीं जुड़ा। स्वतंत्रता प्राप्ति के पूर्वकाल से ही भारत में हिंदी भाषा के व्यापक तथा महत्व को पूर्णरूपेण स्वीकार कर लिया गया है। राजा राममोहनराय, स्वामी दयानंद सरस्वती, लोकमान्य तिलक, महात्मा गांधी से ऐसे अनेकानेक महापुरुष हुए हैं जिन्होंने हिंदी भाषा को भारतीय विचाराभिव्यक्ति, चिंतन मनन, भावनात्मक एकता और जन-विश्वास की भाषा के रूप में सम्मानित किया है।

भारत की अधिकांश आधुनिक भाषाएँ भले ही वे किसी भी भाषा परिवार से संबंधित हों, उनमें अद्भुत समानता है। यह समानता केवल संयोग न होकर उन भाषाओं के सांस्कृतिक, सामाजिक संबंधों की द्योतक है, जो उनकी बाहरी विभिन्नता और आंतरिक एकता को पुष्ट करती है। भारोपीय परिवार की भारतीय भाषाएँ अपने परिवार की अन्य भाषाओं से पर्याप्त भिन्न हैं जबकि वे भारत के दूसरे परिवार की भाषाओं से समानता रखती हैं। उदाहरण के लिए भारोपीय परिवार की हिंदी और द्रविड़ परिवार की तमिल में कई समानताएँ हैं जबकि भारोपीय परिवार की अंग्रेजी, जर्मन, फ्रैंच में वे समानताएँ नहीं हैं। भारतीय भाषाओं में ध्वनि, शब्द, वाक्य-संरचना तथा लिपि स्तर पर समानता दिखाई पड़ती है जो इन भाषाओं में सांस्कृतिक, सामाजिक संबंधों की द्योतक है, उनकी बाहरी विभिन्नता तथा आंतरिक एकता को पुष्ट करती है, उनकी पारस्परिकता को दर्शाती है।

ध्वनि के स्तर पर भारतीय भाषाओं में आंतरिक एकता

भारतीय भाषाओं के लिए प्रयुक्त वर्णमालाओं में भिन्नता होते हुए भी उनके स्रोत के आधार पर उन्हें तीन वर्गों में रखा जाता है-

1. ब्राह्मी लिपि पर आधारित वर्णमालाएँ - अधिकांश भारतीय भाषाओं की वर्णमालाएँ ब्राह्मी लिपि पर आधारित हैं। इन वर्णमालाओं का विकास दो प्रकार से हुआ। कुछ वर्णमालाओं का विकास 'नागरी' वर्णमाला के रूप में हुआ और कुछ का विकास 'नंदिनागरी' वर्णमाला के रूप में हुआ। नागरी वर्णमाला से हिंदी, मराठी, कोंकणी, गुजराती, पंजाबी, उड़िया, बंगला, मैथिली, असमिया आदि की लिपि का विकास हुआ। नंदिनागरी से द्रविड़ भाषाओं की लिपि का विकास हुआ।
2. अरबी लिपि पर आधारित वर्णमालाएँ - उर्दू, कश्मीरी और सिंधी की वर्णमालाएँ अरबी लिपि पर आधारित हैं। इन भाषाओं की वर्णमाला में वर्णों का क्रम अरबी लिपि के अनुसार है। इन वर्णमालाओं में स्वर और व्यंजन मिश्रित क्रम में आते हैं।
3. रोमन लिपि पर आधारित वर्णमालाएँ - आधुनिक भारतीय भाषाओं में से उत्तर-पूर्व की कुछ भाषाओं के लिए रोमन लिपि का प्रयोग होता है। तिब्बत-चीनी परिवार की भाषाएँ मिज़ो, बोडो, मणिपुरी आदि रोमन लिपि पर आधारित वर्णमालाएँ है। इन वर्णमालाओं में स्वर और व्यंजन मिश्रित क्रम में आते हैं।

भारतीय भाषाओं में कंठ (कवर्ग) से लेकर ओष्ठ (पवर्ग) तक के स्थानों से उच्चरित व्यंजनों का क्रम अधिक वैज्ञानिक है। 'टवर्ग' का उच्चारण भारतीय भाषाओं की विशेषता है, भारोपीय परिवार की अन्य किसी यूरोपीय भाषा में टवर्ग की ध्वनियों का उच्चारण नहीं होता, कुछ विद्वानों की धारणा है कि टवर्ग की ध्वनियाँ संस्कृत में तथा आधुनिक आर्यभाषाओं में द्रविड़ भाषा परिवार के प्रभाव से हुई।

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26

Hepatotoxic Effect on Freshwater Catfish *Clarias batrachus* Exposed to Silver Nanoparticles

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ABSTRACT

The increasing use of AgNPs in consumer products raises concerns regarding the environment exposure and impact of silver nanoparticles on natural aquatic environments. Therefore present investigations were taken on the effect of AgNPs administration on the liver histology in *Clarias batrachus*. The size of AgNPs were taken 10nm. Fish were divided into three groups. Experiment fish were exposed to concentration of 0.10 and 0.16 mgl^{-1} for 10 and 20 days. In the hepatic structure of treated fish with AgNPs should proliferation of hepatocytes, pyknotic nuclei (Pk) aggregation of melanomarophage (Mm) for 10 days and 20 days showed hepatic cells with decrease in cell size infiltration of the inflammatory cells (If) dilution in the blood vessels (DBV), therefore it is interfered that the harmful impact of silver dose and time dependent. The present result suggest that more alteration should be paid to prevent the accidental and intentional release of silver nonmaterial into freshwater aquatic environment.

Keywords: Silver nanoparticles, *Clarias batrachus*, Silver nanoparticles, Hepatotoxic

INTRODUCTION

The characterization of AgNPs is a very crucial step to evaluate the functional effect of synthesized particles. It has been documented in various studies that the biological activity of AgNPs depend on morphology structure, size, shape, charge and coating/ copping, chemical composition redox potential, particle dissolution ion release and degree of aggregation. Like all other NPs there parameters can be determined by using various analytics techniques, such as dynamic light scattering (DLS) zete potential and advanced microscopic techniques such as atomic force microscope (SEM) and transmission electron microscopy (Gliga *et al.*, 2014; Loze *et al.*, 2014).

In spite at several advantage of nanoscale material, their potential health hazards cannot be over looked due to their uncontrollable use discharge to the natural environment and potential toxic effects. Hence, nanotoxicology warrants intensive research studies in make the use of NMs include fulleremes carbon nenotubes (CNTs) silver nanoparticles (AgNPs), gold nanoparticles (Vance *et al.*, 2015), among these AgNPs have gained strong popularity among researches over the past few decades (Vance *et al.*, 2015). AgNPs are also known to have unique properties in term of toxicity. The major routes of entry of NPs are ingestion, inhalation dermal contact and directly in systematic circulation via interaperitoneal or intravenous injection. In the food industry AgNPs are used in packing and storage in order to increase the shelf life and quality of food (Gillet *et al.*, 2014). Moreover urban and industrial effluence enter the aquatic ecosystem and accumulate along trophic chains. Thus, the presence of AgNPs in dietary supplement, water contamination, or food fish and other aquatic organism provides the potential sources of oral exposures percent studies have also demonstrated that AgNPs incorporated in food packaging can migrate from packing into food under several usage conditions. Inhalation exposure during the manufacturing also unlimitedly leads to oral exposure, since particles cleared via the mucoliliary escalator are swallowed and cleared through the GIT. It is estimated that the amount of daily consumption of silver in humans by ingestion is around 20-80 µg (DeMatteis *et al.*, 2017). After GIT serves as mucosal barrier that selectively promotes the degradation and uptake of nutrients such inflammatory agents. Due to increase in application of silver nanoparticles, their bio accumulations. Toxicity fate and behaviour were different in freshwater and marine environments depending of the

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Mapping the Regional Imbalances of Demographic Profile: Case Study of Awadh and Middle Doab, 2011

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Introduction:

The major indicators of demography and its related phenomena were taken into consideration to make this paper. The indicators which were selected are population density, growth rate, literacy rate, sex ratio, urbanization rate and household size. These all indicators are thoroughly analysed, their spatial distribution and their location quotient were calculated, which were plotted on the digitised map of the region of Awadh and Middle Doab, which gives us a pectoral view and help in understanding the spatial distribution of various aspects of demographic indicators. Population density is a key demographic characteristic of any region or territory. It is a simple concept of relating population size to the land area with a view to assessing the crude pressure of population upon the resources of the area. The numerator in this case is population and the denominator is area, (Duncan, 1957). Population growth rate is the rate at which the number of individuals in a population increases in a given

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BLACK WOMAN AND NATURE : A STUDY OF GLORIA NAYLOR'S NOVELS

Dr. Saroj Bala*

ABSTRACT

The relationship of black women and Nature has been inherent and organic because of their close proximity with each other. Black people have a history of oppression and exploitation in the wake of slavery. They worked as slaves on large plantations owned by white masters. The oppression of black women was manifold because of race, class and gender. In other words, both blacks, especially women, and Nature were exploited commercially by their masters. This brought the exploited entities close to each other, thus creating a bonding. Nature became a source of inspiration and sustenance for them. Through her novels Gloria Naylor gives us a deep insight and understanding of this relationship of black women with Nature. The collective efforts of black women in her novels thwart attempt of white people who want to claim their lands and its resources in the name of development. They save nature and their community by seeing through the exploitative designs of seemingly uplifters of their race. But the consciousness of black women helps save themselves as well as nature and thus emerge as survivors.

Keywords : Black Women; Nature; Oppression; Exploitation; Proximity; Harmony; Consonance; Survival.

The changing patterns in the environment as a result of anthropogenic activities are a cause of concern for all. Literature does not remain untouched by this. I propose to focus on the novels of Gloria Naylor that reflect this concern very effectively. Gloria Naylor is an eminent African American feminist writer. A close study of her novels reveals that she has focused on the problems of racism and sexism faced by black women within and outside their communities. The relationship between self and family; self and community; self and environment are the major issues that Naylor has focused on. The various components of environment viz. land, trees, river, ocean etc. are not commodities to be exploited by human beings for their benefits. Rather, these form the bases of their cultural and traditional value system. In this paper, I have tried to highlight thatthe feeling of fellowship and love toward nature has not only proved beneficial to the development and enrichment of black woman's sense of self but also imparts to their spirit the ability to embrace the whole of life around them. Besides this, nature also strengthens her faith in the ultimate triumph of love and life over forces of hostility and destruction. In this sense it goes beyond the boundaries of theorization.

The co-existence and proximity between nature and blacks tend to develop positive qualities such as creativity, a generous and tolerant temperament and the joy of sharing. They feel comfortable in the company of nature. Women characters in her novels help and nurture each other with the help of bountiful nature. The all-round development of family and community along with land and environment makes their sense of self complete. Their creativity is revealed through their gardens and healing with the help of various elements of nature. There is nothing inanimate for them.

The harmonious and synchronized relationship is portrayed in *Mama Day (1988)*. Naylor presents the family history of Mama Day at one level and the relationship between the residents and environment at

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(LIS)

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REWRITING THE TRADITIONAL : RECLAIMING SELF THROUGH KITCHEN — A STUDY OF WOMEN CHARACTERS IN THE WORKS OF MANJU KAPUR

❒ Dr. Saroj Bala*

ABSTRACT

The role of women in patriarchal social system locates her within the house only and the work assigned to her is household chores. She is expected to accommodate and mould herself as per the requirements of family members especially male. This allows the system to exploit and oppress her. In the writings of women her struggle to deal with these problems is dealt with in detail. Manju Kapur's women characters navigate through these problems using the very tools of their oppression to their advantage and emerge as stronger and confident individuals.

Keywords : Gendered Roles; Domestic Sphere; Ignored Identities; Struggle; Rewriting; Consolidation.

Introduction :

Feminism emerged as an important force in the 1960s.There is no single definition that describes it. Feminism is a combination of awareness, ideology and revolt. Advanced Learner's Dictionary describes feminism as a movement for recognition of the claims of women for rights equal to those possessed by men. That means women have not enjoyed political, social and economic rights equal to men. Women have been conscious about the fact that society is patriarchal It is controlled, organized and conducted in such a way as to subordinate women to men in all domains: familial, social, political, economic, educational, legal and artistic. They had to struggle against all forms of patriarchal and sexist oppression. This struggle has emphasized the value of women as individuals because they are equally important.

In the 1960s feminists were active members of Civil Rights Movement and worked against the suppression of women in every field. But this does not mean that the earlier generations were not conscious about their status and oppression by men. The struggle for the recognition of women's cultural roles and for their social and political rights is apparent in works such as Mary Wollstonecraft's *A Vindication of Rights of Women* (1792), John Stuart Mill's *The Subjection of Women* (1869) and Simon de Beauvoir's *The Second Sex* (1949). These writers focused on the various aspects related to the suppression of women. In India also the streak of feminism can be seen in early autobiographical writings such as Rassundari Debi's *Amar Jiban* (1876) and Ramabai Ranade's *My Studies Begin* (1910).

These works clearly mention the problems faced by these writers in particular and women in general in order to learn reading and writing as education was considered an exclusive right of men. The primary duty of women was to take care of the household work like cooking, cleaning washing, taking care of children because of their subordinate position. Any attempt or even to show a desire to learn to read and write was considered an act of disrespect towards elders and male members of family as has been described in the writings of early Indian women writers mentioned above. Simone de Beauvoir has also asserted that women have always been considered as 'the other' in the society. She has pointed out," she is defined and differentiated with reference to man and not he with reference to her; she is the incidental and inessential. He is the subject, he is the

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Charge currents and induced magnetic fields in a bounded two-dimensional hydrogen atom

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Abstract. The present work involves solving the time-independent Schrodinger equation for a two-dimensional (2D) hydrogen atom under the combined effect of static electric field, magnetic field and circular confinement. A study of the influence of external fields as well as spatial confinement on charge currents and induced magnetic fields has been carried out. It has been found that applied magnetic field reduces Stark shifts. The presence of tight spatial confinement leads to increase in the magnitude of currents as well as induced magnetic fields. In fact, induced magnetic field of the order of 400 T has been observed in one of the cases. The results of the work may prove helpful in manipulating these currents and fields.

1 Introduction

The study of systems with reduced dimensionality has attracted a lot of interest due to the technological advancements in the field of nanofabrication technology leading to the creation of low-dimensional structures like quantum dots, quantum wires, carbon nanotubes, quantum wells and graphene. Electrons, hydrogenic impurities or excitons may be restricted to move in a quasi two-dimensional (2D) space. Excitons in low-dimensional quantum structures may be treated as hydrogenic systems [1]. The problem of dimensionally confined hydrogen atom is of interest in various branches of physics like semiconductor physics, material sciences, astrophysics, condensed matter physics, plasma physics and atomic and molecular physics [2]. Hydrogenic atoms confined in one and two dimensions have been well studied [1–11]. Historically, the 2D hydrogen problem was introduced as a leading approximation for the electron motion in a highly anisotropic crystal [12]. Also, the study of the 2D hydrogenic atom in a magnetic field has been a subject of considerable interest over the years [13–22]. Soylu and Boztosun have presented the energy eigenvalues of a two-dimensional hydrogenic donor in a magnetic field by using the asymptotic iteration method [23]. The energy spectrum of the ground state of a 2D Dirac electron in the presence of a Coulomb potential and a constant magnetic field perpendicular to the plane where the electron is confined has been computed with the help of a mixed-basis variational method by Villalba et al. [24].

The effects of the environment, like that of the semiconductor medium, on the confined hydrogen atom may be simulated by assuming it to be bounded in a small spatial region [2]. Depending on the nature of the neighbourhood of the atom, the bounding region may be considered to be of different shapes and sizes [6,10,25,26]. Some practical examples of 2D structures are ultrathin films, GaAs/AlGaAs nano-heterostructures and 2D atomic hydrogen gas compressed thermally at a small "cold spot" on the surface of superfluid helium [27]. Molinar-Tabares, et al. have studied an electron confined in a semiconductor deposited two-dimensionally with a variable concentration on a substrate, assuming the semiconductor structure to have a circular form with radius ρ_0 [26].

The presence of non-dissipative orbital currents is well known in atoms with incomplete p, d and f shells while in atoms with filled shells a full cancellation of "spontaneous" currents occurs [28]. Electric ring currents and associated magnetic fields induced by circularly polarized laser pulses in atomic orbitals and oriented molecules have been investigated in detail [29–32]. The effect of static high magnetic fields on the optical spectra of excitons confined in semiconductor quantum rings along with the magnetization associated with the persistent current in these excitons has been studied by Govorov et al. [33]. For a 2D Dirac quantum ring system, the disorder due to impurities and defects has been simulated by using localized random potential thus establishing the robustness of the per-

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REVIEW ARTICLE

miR-106b as an emerging therapeutic target in cancer

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KEYWORDS
Apoptosis;
Cancer;
Metastases;
miRNA;
Oncogene;
Tumor suppressor

Abstract MicroRNAs (miRNAs) comprise short non-coding RNAs that function in regulating the expression of tumor suppressors or oncogenes and modulate oncogenic signaling pathways in cancer. miRNAs expression alters significantly in several tumor tissues and cancer cell lines. For example, miR-106b functions as an oncogene and increases in multiple cancers. The miR-106b directly targets genes involved in tumorigenesis, proliferation, invasion, migration, and metastases. This review has focused on the miR-106b function and its downstream target in different cancers and provide perspective into how miR-106 regulates cancer cell proliferation, migration, invasion, and metastases by regulating the tumor suppressor genes. Since miRNAs-based therapies are currently being developed to enhance cancer therapy outcomes, miR-106b could be an attractive and prospective candidate in different cancer types for detection, diagnosis, and prognosis assessment in the tumor.
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Introduction

MicroRNAs (miRNAs) consists of short non-coding RNAs that control several gene expression. Recently, miRNAs have appeared as a potential molecular therapeutic approach for different diseases such as cancer.[1] In cancer cells, the aberrant miRNAs expression has been observed in different cancer and affects the hallmarks for tumor initiation and progression. Several miRNAs play essential roles in the resistance of malignant cells to many anti-cancer agents.[2,3] Most miRNAs are transcribed into primary miRNAs from DNA sequences and then processed into precursor miRNAs and mature miRNAs. Furthermore, miRNAs have been shown to bind with the target mRNAs to regulate the several genes involved in disease progression and cell death pathways.[4] miRNAs behave either as a tumor suppressor or oncogene based on their targets.[5]

miR-106b overexpression has been stated in multiple tumor types and controls cell proliferation, migration, invasion, and metastases. Aberrant miR-106b expression is linked with breast cancer (BCa), prostate cancer (PCa),

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RESEARCH ARTICLE

Isolation and HPLC assisted quantification of two iridoid glycoside compounds and molecular DNA fingerprinting in critically endangered medicinal *Picrorhiza kurroa* Royle ex Benth: implications for conservation

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Abstract *Picrorhiza kurroa* is a medicinally important, high altitude perennial herb, endemic to the Himalayas. It possesses strong hepato-protective bioactivity that is contributed by two iridoid picroside compounds viz Picroside-I (P-I) and Picroside-II (P-II). Commercially, many *P. kurroa* based hepato-stimulatory Ayurvedic drug brands that use different proportions of P-I and P-II are available in the market. To identify genetically heterozygous and high yielding genotypes for multiplication, sustained use and conservation, it is essential to assess genetic and phytochemical diversity and understand the population structure of *P. kurroa*. In the present study, isolation and HPLC based quantification of picrosides P-I and P-II and molecular DNA fingerprinting using RAPD, AFLP and ISSR markers have been undertaken in 124 and 91 genotypes, respectively. The analyzed samples were collected from 10 natural *P. kurroa* Himalayan populations spread across four states (Jammu & Kashmir, Sikkim, Uttarakhand and Himachal Pradesh) of India. Genotypes used in this study covered around 1000 km geographical area of the total Indian Himalayan habitat range of *P. kurroa*. Significant quantitative variation ranging from 0.01 per cent to 4.15% for P-I, and from 0.01% to 3.18% in P-II picroside was observed in the analyzed samples. Three molecular DNA markers, RAPD (22 primers), ISSR (15 primers) and AFLP (07 primer combinations) also revealed a high level of genetic variation. The percentage polymorphism and effective number of alleles for RAPD, ISSR and AFLP analysis varied from 83.5%, 80.6% and 72.1%; 1.5722, 1.5787 and 1.5665, respectively. Further, the rate of gene flow (Nm) between populations was moderate for RAPD (0.8434), and AFLP (0.9882) and comparatively higher for ISSR (1.6093). Fst values were observed to be 0.56, 0.33, and 0.51 for RAPD, ISSR and AFLP markers, respectively. These values suggest that most of the observed genetic variation resided within populations. Neighbour joining (NJ), principal coordinate analysis (PCoA) and Bayesian based STRUCTURE grouped all the analyzed accessions into largely region-wise clusters and showed some intermixing between the populations, indicating the existence of distinct gene pools with limited gene flow/exchange. The present study has revealed a high level of genetic diversity in the analyzed populations. The analysis has resulted in identification of genetically diverse and high picrosides containing *P. kurroa* genotypes from Sainj, Dayara,

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s12298-021-00972-w.

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THE EUROPEAN PHYSICAL JOURNAL D

Regular Article - Quantum Information

Localization–delocalization of a particle in a quantum corral in presence of a constant magnetic field

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Abstract. We obtained the energy and wave functions of a particle in a quantum corral subjected to a constant magnetic field, as a function of the radius of the quantum corral R_c and the intensity of the magnetic field b^2. We also computed the standard deviation and the Shannon information entropies as a function of R_c and b^2, which in turn are compared to determine their effectiveness in measuring particle (de)localization. For a fixed magnitude of the magnetic field b^2, the Shannon entropy of all states diminishes as the confinement radius R_c decreases revealing an extensive localization. For a fixed value of R_c, the Shannon entropy of the states $(0,0)$ and $(0,1)$ decreases monotonically as the magnetic field b^2 grows, whereas for the states $(1,0)$, $(2,0)$, $(1,1)$ and $(2,1)$, the Shannon entropy grows slowly, reaching a maximum (delocalization), and then diminishes as b^2 increases. The expectation value of $\langle r\rangle$ for a fixed value R_c, for the states $(0,0)$ and $(0,1)$, decreases monotonically as b^2 increases, whereas for the states $(1,0)$, $(2,0)$, $(1,1)$ and $(2,1)$ increases and after reaching a maximum, it decreases as b^2 grows. This behavior is counter-intuitive because the particle is forecasted to be closer to the origin as the magnetic field grows.

1 Introduction

Eighty years ago, Michels et al. [1] used the confined hydrogen atom (CHA) as a model to study the change in the polarizability of a hydrogen atom subjected to high external pressure. Here, the nucleus of the hydrogen atom was assumed to be clamped at the center of an impenetrable sphere of radius R_c, while the electron could move within the included volume. Ley-Koo and Rubinstein [2] considered a hydrogen atom confined in spherical box with penetrable walls to explain the ionization of a hydrogen atom trapped in alpha-quartz [3,4].

Many applications have been developed from these models [5–12], and they have been generalized to cavities with different geometries. This model has subsequently been applied to a wide range of physical problems [13–23]. Observable properties of the systems such as the energy spectrum, transition frequencies and probabilities, the behavior of atoms trapped in fullerenes and some studies in the theoretical information [24–33] are changed by spatial confinement. Recent experimental studies show that the electron-capture nuclear decay rate is increased under compression [34,35]. A partial explanation of this effect was given using the model of many-electron atoms confined in an impenetrable spherical cavity [36]. With the advent of technology to construct atomic-scale confinements, the study of confined systems has become increasingly relevant.

As mentioned earlier, confinement changes many properties of the system, which makes the study of confined systems very alluring. In this work, we analyze the localization–delocalization properties of a particle in a quantum corral subjected to a constant magnetic field. The quantum corrals that we study here are the best results of fusion of science and technology. Moreover, this system has gained popularity because of many interdisciplinary applications. Experimentally, these corrals are formed by the confining electrons of the surface states on the metallic atoms to form a two-dimensional (2D) nearly free electron gas. The confining potential at the walls of the system is provided by the closed packed atoms as suggested by some experimental methods [37,38]. Theoretically, these corrals form a platform to understand basic physics at low-dimensional level. It is interesting to note that, for understanding the behavior of quantum corrals at the basic level, it can be modeled as a particle in circular box [24,25,41]. Corzo et. al. [25] studied the localization-delocalization of a free particle in a quantum corral using the Shannon entropy and the radial variance.

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USES OF CERIUM OXIDE AS ANTIBACTERIAL AGENT FOR MANAGEMENT OF DISEASE FREE FISH

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Abstract

An experiment was designed to investigate the antibacterial activity of two nanoparticles against fish bacterial pathogens Bacillus subtilis, Vibrio harveyi species. Different concentration of nanoparticles was assessed by well diffusion method against an antibacterial activity. The nanoparticles was analysed by MIC and MBC technique. The potential nanoparticle CeO_2 which showed maximum antibacterial was also subjected for the time killed assay method. Among the two nanoparticles CeO_2 shows maximum activity against Bacillus subtilis (14±0.45 mm diameter) MIC test carried by the liquid dilution method. The result suggested that the CeO_2 nanoparticles showed maximum inhibition at the concentration of 19 µg/ml against Bacillus subtilis and 29 µg/ml against vibrio. It is also noted that 9 µg/ml concentration of CeO_2 nanoparticles showed the maximum reduction of bacteria growth 2nd hour up to 12th hours. It is concluded from the present study the CeO_2 could be used as an affective antibacterial agent for disease free fish management.

Keywords: *Nanoparticles, MBC, MIC, Time Kill Assay*

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INTRODUCTION

Nanotechnology has been defined by U.S. National Nanotechnology Initiative (NNI) as understanding and control of matter at dimension of roughly 1 to 100 nm (1 nano meters being equal to 1 X 10^{-9} of a meter). CeO_2 Cerium oxide adopts a Fluorite crystalline structure that has unique antioxidant properties. Nowadays nanotechnology has a tremendous potential to revolutionize agriculture and allied fields including aquaculture and fisheries it can provide new tools for aquaculture neon particles are used as smart drug delivery for the treatment of fish diseases [1]. The nanoparticles have been used to deliver the drugs into the cells with negligible side effects

[2]. The Synthesis of nanoparticles from metals possesses various biological processes through to enzymatic systems. The interaction of these nanoparticles with biological active ligand in the animal system through chelation

[3] Due to the increase in the outbreak of bacterial diseases in the aquaculture industry and the development at bacterial resistance, now antibacterial agents are required. Silver nanoparticles have proved to be one of the most effective metallic nanoparticles and good antibacterial activity against some bacterial pathogens [4] moreover the other metal nanoparticles the Zno nanoparticles showed antibacterial activity against various bacterial pathogen includes *E coli*, staphylococcus aurous and *Bacillus* respectively [5–7].

MATERIAL AND METHODS

Commercial nanoparticles of Al_2O_3 and CeO_2 were procured from Sigma Aldrich company, India. The Characteristics of the nanoparticles are represented in Table 1.

Test Models

Two fish pathogens *Bacillus subtiles* and *Vibrio harveyi* were taken.

Antibacterial Assay

The two nanoparticles was chosen for antibacterial activity. This is performed by well diffusion method. About 20 ml of sterile molten Mueller Hinton agar (Himedia Laboratories Pvt. Limited Mumbai India) was filled into the sterile petriplates.

Triplicate plates were filled with overnight culture (10^8 cells/ml) of pathogen bacteria *Bacillus subtilis*, and *Vibrio harveyi* sp. And make a well or punctured on solid medium culture with the help of cork. Finally the nanoparticle samples (50 g/ml) were added from the stock into the each well and incubated for 24 hours at 27±2° C and some of inhibition was measured and expressed as millimetre in diameter.

MIC (Minimum Inhibitory Concentration) Different concentration of 10, 20, 30, 40, 50 g/ml of Chosen nanoparticles were prepared with dimethylsulphoxide (DMSO) and mixed with 450 g/ml of nutrient broth and 50 l of 24 hours old bacterial inoculum and allow to grow overnight 37° C 48 hours nutrient broth alone served as negative control.

Minimum Bactericidal Concentration (MBC) The minimum bactericidal concentration (MBC) was conducted by sub-culturing the above serial dilution after 24 hours in nutrient agar plates using 0.01 ml drop and incubated at 37°C for 24 hours MBC was regarded as the lowest concentration that prevents the growth of bacterial colony on this solid media.

Time Kill Assay

The potential nanoparticles (CeO_2) which showed maximum antibacterial activity against *Bacillus subtilis* for time kill assay the inoculum of *Bacillus subtilis* (50 µl) at a concentration of (10^8 cells ml^{-1}) was mixed with 50 µl (contains 10 g/ml) of CeO_2 nanoparticles and the total Vol. was made up to 5 ml by using minimal medium (g/l) [Sucrose 5 g/l, potassium hydrogen phosphate Manganese sulphate mono hydrate 1.5 g/l, $(NH_4)2$ Hydrogen Phosphat 5 g/l, $MgSO_4$ $7H_2O$ 0.10 g/l, Manganese sulphate monohydrate H_2O 0.0035 g/l] and H_2O 1000.0 ml). The negative control was maintained without nanoparticle.

Every one he internal the growth of the bacterial observed by measuring the optical density at 600 nm by using spectrophotometer. (CeO_2) nanoparticle showed maximum sensitivity (14±0.45 mm) against *Bacillus subtilis* and Showed minimum activity against *Vibrio harveyi* (10±0.35). The Al_2O_3 Showed maximum sensitivity 13±0.12 against *Bacillus subtilis* and showed minimums 9±0.15 against *Vibrio harveyi*, respectively (Table 2).

In MIC assay the nanoparticle CeO_2 showed maximum sensitivity (19 g/ml) against *Bacillus Subtilis* and 29 g/ml against *Vibrio harveyi* respectively However, the nanoparticles Al_2O_3 showed high sensitivity 45 g/ml against *Bacillus subtilis* and against *Vibrio harveyi* 58 g/ml (Table 3).

The effect of CeO_2 nanoparticle against *Bacillus subtilis* was also performed with time kill assay. It reveals that the [illegible] was inhibited gradually from the 2nd hours up to 12th hours when compared to the control.

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Research Article

Child marriage debates during British India: Age of consent to age of marriage

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ABSTRACT

The social reformers continuously attacked the custom of child marriage in the mid-nineteenth century, but they could not start an organized campaign for various reasons. Apart from individual feminism, the female voice was also quiet. In the late Nineteenth Century, the reformer's campaign did not attack the religious aspect of child marriage rather focused on its moral and physical elements. Consequently, they restricted their efforts to the sphere of Age of Consent for sexual Consummation of girls only. The Revivalist leaders' massive opposition compelled the British Indian Government not to interfere with its domestic sphere. The various changes in the first half of the twentieth century supplied a favourable environment to reopen child marriage. In this paper, the author will examine those changes and delineate the shift from "Age of Consent to the age of marriage".

KEY WORDS

Marriage, Child, Debates, Legislative, British

Introduction

Eleven years old married, Bingu Bai got frustrated by regularly sending to husband's place and decided to suicide in a well at Narayan Peeth, station road on the G.I.E. railway between Raichur and Wadi. She was married at six years of age to an older Maratha man.[1] The cases like that of BinguBai became a natural phenomenon during the British-India since religious laws and State Legislation were unfavourable for child girls. The British-government adopted the policy of Non-Interference in 1858 when they directly took over the administration of India. According to this, The British-government decided to administer social matters according to existing laws of [2].

In the late eighteen and early nineteenth century, state-sponsored Orientalist scholarship studied the Ancient Hindu past through classical language, i.e. Sanskrit. This scholarship did not highlight Caste, Class, and Gender inequalities in the Ancient Hindu past.[3]. The Utilitarian stream of writing on India, belonging to the early nineteenth century, highlighted these inequalities, especially that of gender, in painting a picture of the abject Degeneration of contemporary Hinduism, which had fallen prey to repeated foreign conquest, and the efficiency of the Indian men.[4]. According to James Mill, the status of women is an indicator of the condition of society.[5]This colonial ideology was justifying the imperial subjection of the natives and giving the British a sense of superiority in India. In this state of affairs, the British-government and reformers ended the child marriage debates, at least theoretically, with the Enactment of Child marriage restraint Act[6] of 1929, popularly known as Sarda Act,[7] also. Thus, this Act was the first Legislation That fixed the Age of marriage, 14 for girls and 18 for boys and penalized early marriages by fine or imprisonment. This Legislation was not a bunch of black scripts inscribed over white papers,

[1] The Hindustan Times, June 26 1926.

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[3] Uma Chakravarti, "Whatever Happened to the Vedic Dasi", in Kumkum Sangari and Sudesh Vaid, (ed) Recasting Women: Essays on Colonial History, (New Delhi, Kali for Women, 1989), pp.27-81.

[4] Ibid.

[5] Geraldine Forbes, Women in Modern India, (New York, Cambridge University Press, 1998), pp.1-9.

[6] Hereafter C.M.R.A.

[7] Har Bilas Sarda (Ajmer - Marwara) introduced the Child marriage Bill on September 15, 1927, which eventually enacted into C.M.R.A. on October 1, 1929, Sarda Act

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Original Article

Cost-Effective *in vitro* Multiplication and Phenolic Profile of an Important Medicinal Orchid, *Satyrium nepalense* D. Don

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Abstract: In this study we report a cost-effective and reproducible protocol for large-scale multiplication of an important medicinal orchid, *Satyrium nepalense* through a four-step protocol, involving asymbiotic seed germination, multiplication of protocorm-like bodies (PLBs), development and multiplication of shoots, and finally *in vitro* rooting of the developed shoots. Out of various media tested for seed germination, Mitra's medium supplemented with 0.1 % peptone (BM) supported the highest (79.19 %) seed germination. Eight-week-old protocorms were sub-cultured on BM alone and supplemented with different concentrations (1-8 µM) of BAP, KN, or TDZ. The highest number of shoots was developed on the medium containing 4 µM KN. Here we also observed that the highest number of shoots were produced from protocorms cultured on a 2 % isubgol gelled medium out of the seven different low-cost gelling agents used. Further, optimal elongation of shoots was observed on BM alone and 2 % guar gum, among the tested gelling agents. Elongated shoots were transferred for rooting on BM containing 0-2 µM of IAA, IBA, or NAA. The best rhizogenic response was observed on BM fortified with 0.5 µM IBA and isubgol (3 %). The rooted plantlets showed a 76 % survival rate on acclimatization after transfer to the potting mixture of sand and vermiculite (1:1). HPLC analysis of therapeutically important phenolic acids of leaves and tubers of *in vitro* regenerated and *in vivo* plants revealed the presence of higher levels of selected phenolic acids in *in vitro* tissues than those from their native habitat. This protocol could facilitate the conservation and propagation of this important medicinal orchid.

Keywords: Asymbiotic seed germination, *Satyrium nepalense*, micropropagation, phenolics, HPLC.

Abbreviations

6-Benzylaminopurine (BAP), Kinetin (KN) or 1-Phenyl-3-(1, 2, 3-thiadiazol-5-yl)-urea (TDZ), indole-3-acetic acid (IAA), indole-3-butyric acid (IBA) or naphthalene acetic acid (NAA), high performance liquid chromatography (HPLC).

Introduction

Orchids belong to the family Orchidaceae are grown primarily as ornamentals and are valued for their cut flowers, not only because of their exotic beauty but for their long shelf life. An aura of fascination has always surrounded this extraordinary plant family. The ornamental, as well as therapeutic value of orchids, has prompted scientists to develop new and advanced strategies for their micropropagation through tissue culture technique [1-5].

In orchids, seed germination medium has been reported to be species-specific [6,7]. The orchid

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Regular Article - Atomic Physics

Shannon information entropy sum of the confined hydrogenic atom under the influence of an electric field

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Abstract. In this work, we present the effects of an external electric field on the Shannon entropy sum of a spherically confined hydrogenic atom. The confinement considered is of the impenetrable hard wall type. The electric field modifies the spectrum of the confined hydrogenic system, which results in avoided crossings among the energy levels of the system, with strong competition between the Coulombic and hard wall potential. The results presented indicate that the electric field is a strong candidate to modify information theoretic measures. In addition, we examine the effects of field strength, nuclear charge and hard walls on the minima/maxima structure of the entropic sum.

1 Introduction

Ever since the publication of Shannon's historic paper [1], studies on information theory [2] have been increasing. This is due to the application of information theoretic measures to study phenomena in areas such as classical and quantum mechanics, [3] statistical mechanics [4], quantum computation [5], quantum information [6], quantum biology [7], application of uncertainties [8] and many more.

In quantum mechanical systems, the quantum information in continuous variable systems can be quantified in terms of entropies, which are measures of the localization/delocalization that is present in the underlying distributions. Among these, the Shannon entropies in position (S_r) and in momentum space (S_p) are perhaps the most well-known measures. The entropy increases with delocalization or larger uncertainty in the underlying distribution and conversely decreases when the distribution localizes. These Shannon entropies can be used to formulate a stronger version of the Heisenberg uncertainty principle of quantum mechanics in terms of the entropic sum [9–23]

$$S_t = S_r + S_p \geq D(1 + ln\pi), \tag{1}$$

where D is the spatial dimension (here $D = 3$). These entropies have been examined for a number of quantum systems [13,18,24–53].

It is well known that external electric and magnetic fields induce changes in the energy spectrum of quantum systems, and that the spectrum shows well-defined avoided crossings at higher field values. At these critical field values, the system shows mixed properties of the states involved. The quantum system is thus called a dressed system. Depending on the system at hand, these avoided crossings can exhibit complex structure. An example of these in the case of static electric fields is the well-known Stark shift, and in the case of laser fields, the appearance of the dynamic Stark shifts.

Similar behaviours with regard to the removal of degeneracies or accidental degeneracy [54] are observed, when atoms are placed under various confinements. Confined systems and their physical and chemical properties are modified according to the strength of confinements. The characteristics of confined systems also lead to the modifications of their Shannon entropies. The system shows different behaviours, leading to different properties, depending on the nature of confinement, e.g. infinite wall, soft confinement or confinement in a cavity.

There have been numerous studies on quantum confinement systems. Furthermore, information-theoretic measures have been shown to display interesting behaviour in confined systems [55,56]. Recently, Estañón et al. [48] and Salazar et al. [57] have studied entropic measures of 2-D and 3-D confined hydrogenic systems. The latter study focused on the behaviour of the Shannon entropy of confined 3-D hydrogenic systems, where it was shown that the competition between Coulombic and hard wall potential leads to interesting features or structures in the entropy sum as a function of the confinement radius.

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Yolo 194

क्षेत्रीय मौखिक परंपराओं में इतिहास : संताल परगना एक व्यक्तिगत अध्ययन

रंजन कुमार

इस लेख का उद्देश्य संताल परगना के निम्न वर्ग के इतिहास को सबके समक्ष करना है। गत दो वर्षों में 'पंकज गोष्ठी' में शिरकत करते हुए कई संभावनाएँ मानसपटल पर घूमतीं रहीं। एक इतिहास जो की कागज पर अपनी पहचान न बना पाया, जिसे आज भी निम्न वर्ग अपनी मौखिक परंपरा का हिस्सा बनाए हुए है। क्या 'पंकज गोष्ठी' के माध्यम से उसे वो पहचान अर्जीत हो सकती है? स्वयं डॉक्टर विक्रम सिंह भी यह मानते हैं की किवदंतियों तथा दंतकथाओं का भी श्री पंकज जी और उनकी गोष्ठी की लोकप्रियता में बड़ा योगदान था। तो क्या इसी आधार पर एक ऐसी परंपरा का अध्ययन नहीं हो सकता जो की कई वर्षों से संताल परगना, झारखण्ड की अनुसूचित जाती के लोगों में चली आ रही है। यह परंपरा जिसे अनुसूचित जाती के वृद्ध एवं धार्मिक लोग, जिन्हें आम बोलचाल में यहाँ 'भगत' कह कर संभोधित किया जाता है, जनकल्याण के लिए दोहराते चले आ रहे हैं। ऐसे कई और समूहों का उदाहरण हमें संताल परगना में मिल सकता है जो अपने स्थानीय इतिहास को पीढ़ी दर पीढ़ी बचाए हुए हैं। यह इतिहास या ज्ञान कहीन कहीं हाशिए पर है और अगर शीघ्र ही इसे संरक्षित करने का प्रयास न किया गया या फिर इससे लिखित रूप न दिया गया, तो शायद यह लुप्त भी हो जाएगा। इसलिए इस लेख का उद्देश्य इस परंपरा से लोगों को परिचित करना है ताकि इसे जीवित रखा जा सके।

पाश्चात्य क्षेत्रों में मौखिक इतिहास अपनी जड़ें छोड़ चूका है, लेकिन भारत में अब भी कई क्षेत्र ऐसे हैं जहाँ मौखिक इतिहास ही एक मात्र श्रोत है जिसके जरीये उन क्षेत्रों के इतिहास का ज्ञान हम अर्जीत कर सकते हैं। भारतीय सभ्यता, निरंतरता और बदलाव का एक अनुठा उदहारण है। यहाँ इतिहास की संपूर्ण प्रक्रिया अपने सभी रंगों के साथ तथा विभिन्न दौर के इतिहास के साथ किसी-न-किसी रूप में जीवित प्रतीत होती है। जिसका मुख्य कारण यहाँ के इतिहासकारों के समक्ष विभिन्न मौखिक श्रोतों की उपलब्धता है जो की लिखित श्रोतों के पूरक भी हैं परिशिष्ट भी, साथ ही ये लिखित श्रोतों का विरोध भी करते हैं। परंतु इन मौखिक श्रोतों का उपयोग अगर समालोचनात्मक रूप में होता रहे तो इतिहास की सुंदरता, कार्यप्रणाली और व्यापकता आदि की संभावना कहीं बेहतर हो जाएगी।

संताल परगना दो शब्दों के मेल से बना है, जिसमें 'संताल' भारत की प्रमुख जन-जाती है, तथा 'परगना' फारसी मूल का शब्द है, जिसका अर्थ जिला है। यह झारखण्ड राज्य का एक मंडल है जिसका मुख्यालय 'दुमका' है। इस समय इस प्रशासनिक मंडल में छह जिलें हैं : गोड्डा, देवघर, दुमका, जामताड़ा, साहिबगंज और पाकुड़। अविभाज्य 'बिहार' राज्य में भी संताल परगना के जिलों के नाम यही थे।

जहाँ तक इस क्षेत्र के इतिहास का सवाल है, सन् 1855 में अंग्रेजों के शासन के अंतर्गत, भारत के इस हिस्से को राज्य का दर्जा मिला और बंगाल का अध्यक्षाधीन मंडल बनाया गया। महाभारत ग्रंथ में अगर इस क्षेत्र का वर्णन ढूँढ़ें, तो संताल को 'अंग' महाजनपद का हिस्सा बताया गया है। प्राचीन साहित्यिक श्रोतों में इस क्षेत्र को 'कजंगल' नाम से भी संबोधित किया जाता रहा है। चीनी यात्री (Xuangzang) हुवान शांग के संदर्भ में भी यह लिखा गया है की सातवीं शताब्दी में उन्होंने 'चंपा' से 'कजंगल' तक की यात्रा के उपरांत पुण्ड्रवर्धन (बांग्लादेश) की तरफ प्रस्थान किया था। इनके यात्रावृतांत में इस क्षेत्र के संदर्भ में उन्होंने लिखा है की इस प्रांत की उत्तरी सिमा का क्षेत्र (साहिबगंज), गंगा नदी से समीप स्थित है। दक्षिणी हिस्सों में यहाँ घने जंगल हैं जिनमें हाथियों की संख्या बहुत अधिक है। यहाँ के लोग सरल, प्रतिभावान और शिक्षा के अनुरागी हैं। जहा तक भाषा का प्रश्न है, संथाल परगना में कई भाषाएँ बोली जाती हैं। बांग्ला, संताली, भोजपुरी, अंगीका आदि ज्यादातर जुबानें यहाँ बोली जातीं हैं। पर संताल क्षेत्रीय जान जाती होने की वजह से 'संताली' जुबान यहाँ खासकर बोली जाती है।

इस शोध का दीर्घ कलिक लक्ष्य 'संताल परगना' क्षेत्र के अनसुने का अध्ययन करना है। चूँकि इतिहास हमेशा से शासक वर्ग एवं कुलीन तंत्र के लिए

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A Study of the Impact of Covid- 19 pandemic on the Psychology of Buyers using E- Commerce Platform in Indian Metropolitan Cities

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Abstract

E-Commerce behavior and psychological impact on buyers during the pandemic, specially focusing Covid-19, was conducted to analyze consumers' attitudes towards online buying habits and identify changes in it. E-Commerce's present scenario towards its customers is purely business-oriented. The crisis changed the buying patterns due to panic psychology, which will increase E-Commerce activities. This article aims to find the consumer spending behavior of E-Commerce platform, especially in metropolitan cities, during lockdown using primary and secondary data. The studies and findings are presented in this paper. This primary data-based study revealed that there is a significant difference in E-Commerce activities and panic psychological behavior.

Keywords: COVID-19, Crisis, Lock Down, Psychological Panic Behavior.

Introduction

The 21st century is a witness to an era of digitalization. This mechanism is maximum utilized by the consumers as well as sellers. Now everything is available online, from gadgets to grocery, clothing to furniture. The pandemic situation encourages consumers to depend more on online shopping to avoid it. Break the chain of Covid -19. History proves that we are targeted by natural calamities like war and economic crisis. This crisis teaches humanity to adapt and adjust to new sources of livelihood. Pandemic situations disturb the daily flow of the common person and challenge accomplishing specific basic needs. The pandemic has created faster adoption of digital channels by both buyers and sellers in metro cities. The significantly enhanced availability of value-priced merchandise has led to distinct consumer preferences. Still, thanks to the E-Commerce Platforms such as Flip kart, Amazon, and Snap deals, one can find everything. Digitization is a more personalized dominion now. The metro cities are more dependent and comfortable to adopt new buying systems. Now, slowly, it is extending even to semi-urban cities and towns too.

To attract buyers and enhance Ecommerce activities, Ecommerce Companies are upgrading their policies according to consumer requirements like EMI options, return–exchange policy, quick delivery, etc. India reported its first corona case in January 2020 in Kerala. The Indian government announced a nationwide lockdown from March 25th, 2020, which hampering socio-cultural and economic activities to control the pandemic outbreak. India witnessed the rise of unemployment, poverty, miseries in the life of an ordinary person. Life became more uncertain due to unpredicted deaths and pains. Innocent people couldn't stabilize their psychological balance because of the collapse of the economy and family and daily needs sustainability. It was a nightmare to imagine the complete shutdown of mobility and availability of goods and services. Crisis, whatever kind it is, shatters the social, economic, and political life of people. The rise in unemployment, price levels, and lack of means to earn will bring drastic changes in people's financial activities. Lack of mobility and availability of goods and services will worsen the situation.

Review of Literature

Nielsen carried out an inquiry amid Walk 2020 when Covid-19 happened. More than 50 percent of clients decreased their recurrence of going to physical stores, 80 percent diminished their events of out-of-home utilization, and 39 percent bought more habitually from online shopping

Roll 199

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Women Wronged In Bollywood

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Indian cinema has just completed self-proclaimed, so-called glorious hundred years. But for a right-thinking person, it will be very taxing to see a Bollywood movie, if one has a sense of regard for women. Surprisingly, all the feminists are also silent on the wrong projection of woman in Indian cinema. Movies are also to be blamed for portraying women as sex objects and providing spice for entertainment. It includes stories as well as photography and songs.

In 'Chennai Express', film, the loafer type hero (Shah Rukh Khan), finally gets a girl (Deepika Padukone) who belongs to a very affluent family and highly educated. Of course, film producer and director have the right and freedom to make what they want. But the reality that Indian films show the woman in such a manner, will be saddened all. And more shockingly, the film broke all the earnings' records.

In the movie 'Kuch Kuch Hota Hai', the role of the heroine, Kajol is excellent and superb but the entire credit for the success is given to Shah Rukh Khan although his role is very ordinary and cannot be said impressive or excellent.

In 'Dabangg', the entire credit of the film's success is given to the hero Salman Khan, although, the role of the heroine Sonakshi Sinha is much more impressive than Salman Khan. In 'Three Idiots', the heroine of the film Kareena Kapoor is shown running around the rogue and duffer hero, Aamir Khan.

In Bollywood, most of the heroes are old, sick, wrinkled and involved in murky things but their heroines are as young as 20 to 25 years category. Shah Rukh Khan, Salman Khan, Aamir Khan, Saif Ali Khan, Sanjay Dutt, Sunny Deol, Kamla Hassan, Rajni Kant etc., are in the late fifties or sixties but their heroines like Anushka Sharma, Katrina Kaif, Sonakshi Sinha, Kangna, Priyanka Chopra, Parneeti Chopra etc., are in only twenties, means younger by around fifteen to twenty years. Even then these heroines are treated as an inferior object to these old and wrinkled heroes.

That aside, it is very clear that Bollywood would never change its mindset and would take a bold, liberal, stance when it comes to women. Even if a producer or director dared to do, the box office, comprising a very traditional, old-fashioned Indian audience, would reject it severely.

Heroines are paid much less, their names figure after heroes and retired at an early age. Very beautiful, charming, charismatic, brilliant and talented heroines like Madhuri Dixit, Rani Mukherjee, Kajol, Manisha Koirala, Kareena Kapoor, Tabbu etc., are almost rejected and retired by Bollywood although they are much younger and charming than the popular hero of today like Shah Rukh Khan or Salman Khan.

The most deplorable part of Bollywood movies is the use of very reputed and popular actress as item dancers or in a large number of movies, women actresses have to shed their clothes and to expose themselves, to add sex spices in movies. Bollywood is carrying forward the patriarchal type of social order. Bollywood depicts tapori, mawali, (Rogue) type males as heroes but educated heroines from good families are seen chasing such taporis and mawalis and taporis are mawalis are shown as

Yolo 203 Link

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Wetting layer and size effects on the nonlinear optical properties of semi oblate and prolate $Si_{0.7}Ge_{0.3}/Si$ quantum dots

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ABSTRACT

Semi oblate and semi prolate are among the most probable self-organized nanostructures shapes. The optoelectronic properties of such nanostructures are not just manipulated with the height and lateral size but also with the wetting layer element. The practical interest of derivatives of germanium and silicon has a great important role in optoelectronic devices. This study is a contribution to the analysis of linear and nonlinear optical properties of $Si_{0.7}Ge_{0.3}/Si$. In the framework of the effective mass approximation, we solve numerically the Schrödinger equation relative to one particle confined in $Si_{0.7}Ge_{0.3}/Si$ semi prolate and semi oblate quantum dots by using the finite element method and by taking into consideration the effect of the wetting layer. The energy spectrum of the lowest states and the dipolar matrix for the fourth allowed transitions are determined and discussed. We also calculate the detailed optical properties, including absorption coefficients, refractive index changes, second and third harmonic generation as a function of the quantum dot sizes. We found that with the change in the size of prolate and oblate quantum dots, there is a shift in the resonance peaks for the absorption coefficient and refractive index. It is due to the modification in the energy levels with changing size. The study proves a redshift in the second harmonic generation and third harmonic generation coefficients with an increase in the height/radius of the oblate/prolate quantum dot, respectively. We also demonstrated the variation of wavefunction inside the quantum dot with the change in wetting layer thickness.

1. Introduction

Due to their promising optical and electronic properties, quantum dots (QDs), also labeled as artificial atoms, have attracted notable attention from theorists and experimenters [1,2]. These nanostructures are widely used in several optoelectronic devices in different fields space (LEDs, Lasers, quantum information, biomarkers, among others) [3–6]. In QDs, the quantum effects induced by both size and shape alter the energy spectra of charge carriers and control their optical and electronic properties. Thus, the choice of confinement and geometrical factors are crucial tools to design the most attractive optoelectronic devices [7,8]. The control of QD's optoelectronic properties known as bandgap engineering is supported by advancements in nanofabrication techniques that allow the design of different types of nanostructures of different shapes [9–12]. Historically, *Si*, *Ge* and their combinations $Si_{1-\eta}Ge_{\eta}$ (where η is the concentration of *Ge*) have a special place in the field of semiconductor devices and applied physics [13]. Various components demonstrate the importance of *SiGe* material in field effect transistor (FET) applications [14], complementary metal-oxide-semiconductor (CMOS), quantum well MOSFET [15], heterojunction bipolar transistor (HBT) [16], photodetectors and modulators [17,18] and tunneling devices [19,20]. The *SiGe* alloy is known for its high density, superior

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Moving Towards an Environmentally Sustainable Food Sector Through Mitigation of Food Losses and Wastage-A Possibilitarian's Approac

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Abstract

One in nine people in the world do not have sufficient food to lead a healthy life. But at the same time, 1/3rd of all the food produced in the world, does so only to get lost (Food Loss) or wasted (Food Waste). Food loss (FL) mostly happens due to reasons beyond the dir the actor, e.g., uncertainty of weather, market fluctuations, inadequate storage facilities, low levels of post harvest technology etc. On the other hand, food waste (FW) is a waste ofperfectly edible food by choice or negligence (left to spoil or expire) on the part of the actor food service units and household of the consumer. FW includes intentional discarding of food due to poor shopping patterns, or when retailers reject ugly but perfectly edible produce, or food discarded by hotels wh en the production exceeds the demand. The quantum o waste (FLW) does not reflect the fact that large amounts of water for irrigation, land for planting, energy for harvest, transportation and processing, agricultural and animal husbandry inputs and efforts of our brothers and sisters at the farm, as well as in the production an of the food we eat, simply ends up as waste. To exemplify, let us consider just one input "water " th at has gone into each unit of edible material sitting in the consumer's refrigerator, and is likely to expire or go stale. If we throw a glass ofstale milk, the 255 litres of water t into its production and delivery to us, also go waste. When we discard 250 gm of stale bread (due to excessive purchase and poor meal planning), we are discarding 402 L of water that went into its production from farm to fork [2]. Similarly, it wastes all the other inputs (li fertilisers, energy, manpower etc.) that have gone into the production of that food item. Further, the wasted food also emits tonnes of greenhouse gases. This accounts for our larger than necessary Food Eco-Footprin t. It has even been said that iffood waste was a count the third largest emitting country in the world-that s the extent of damage it causes to the environment. Regardless of our purchasing power or development status of our countries, there is a strong environmental, financial, social and ethical rationale to save FLW. This cc elaborates on the scenario, the problem at hand and also suggests a possibilitarian s approach to combat the same through a strategic framework for mitigation of FLW and the smart society's FLW pyramid.

Abbreviations: FL-Food Loss, FW-Food Waste, FLW-Food Loss and Waste, FAO-Food and Agriculture Organisation

Definitions

1 Food Loss- The food that we lose due to reasons beyond the control of the doer from harvest till (but not including) food retail

2 Food Waste-The food that we lose due to the decision or inaction or negligence of the doer at food retail and beyond. For the understanding of the reader, it needs to be emphasised that 'food waste' is actually wasted food. The emphasis is that this is food, not waste- hat is particularly important in context of food recovery programs. No one wants to eat waste! [3]

3 Sustainability-The ability to endure, for example by exploiting resources in a way that does not deplete their future availability or unduly damage the wider environment. This concept has been incorporated in the idea of sustainable development.

4 Ecological Footprint -Ecological footprint is a measure of how fast we consume natural resources and generate waste [5]

5 Food Eco Footprint -Food Eco-footprint is a measure of how fast we consume natural resources and generate waste while fulfilling our need for food

First bread, and then religion "-Swami Vivekananda

Keywords:

Food loss, Food waste, Mitigation, Food eco-footprint, Food waste pyramid, The smart society's FLW pyramid, Mitigation strategies, Framework, Smart society, Smart Governance, Smart citizen, Smart consumer, Smart retail

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SHAKESPEARE- BEYOND GENERATIONS

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ABSTRACT:

Shakespeare inspired generations of teachers, students, writers, directors, playwrights and creative geniuses across the globe. By using modern and popular techniques, an attempt has been made to carry Shakespeare to the new generation. Reading long texts of Shakespeare may be boring. So new methods are very necessary. That is why Shakespeare will remain immortal. The world has seen Shakespeare for around 450 years.

KEYWORDS: 1- Manga, 2- Adaptation, 3- Legacy, 4- Interpretations, 5- Featuring, 6- Samurai-Style, 7- Playwright, 8- Interpretations, 9- Variety, 10- Curriculum, 11- Legion, 12- Improvisation.

INTRODUCTION:

Shakespeare always remains decisively at centre stage. Manga is almost the same as the stage performances. Intellectuals in Japan has used this art very intelligently to study the Bard of Avon. Shakespeare is alive and popular today due to the adaptations. Due to all these developments, Shakespeare remains a modern playwright. Shakespeare's verses play and quotes boil and bubble in the heart of the masses. Shakespeare is not only alive in classrooms, but also theatres, cinema halls, exhibitions, libraries etc.

> *"Taken as a whole, Shakespeare's plays constitute the greatest single body of work which any writer has contributed to our literature. Perhaps their most salient feature is their astonishing variety. Other men have surpassed him at this point and that; but no one has ever rivalled him in the range and versatility of the powers. "*
>
> *(Hudson, ' The Age of SHAKESPERE'-Continued. THE DRAMA, p.74-7.)*

Shakespeare has got a new version Manga that is a greatly popular comic adaptation now. In the chain, Romeo and Juliet is set In Tokyo. In this new adaptation of Juliet in which mobiles, polished corporate dons, samurai-style fighters as suitors of Juliet, in digital forms is all part of this new version of Shakespeare.

Hamlet has also set in the cyber world. Now, the state of Denmark has thrived in the cyber world in a different mode that is not rotten. Prospero has been stranded on an untamed island

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Article

Quantum Confined Stark Effect on the Linear and Nonlinear Optical Properties of SiGe/Si Semi Oblate and Prolate Quantum Dots Grown in Si Wetting Layer

Varsha [1,2], Mohamed Kria [3], Jawad El Hamdaoui [3], Laura M. Pérez [4,*], Vinod Prasad [5,*], Mohamed El-Yadri [3], David Laroze [4] and El Mustapha Feddi [3,*]

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Abstract: We have studied the parallel and perpendicular electric field effects on the system of SiGe prolate and oblate quantum dots numerically, taking into account the wetting layer and quantum dot size effects. Using the effective-mass approximation in the two bands model, we computationally calculated the extensive variation of dipole matrix (DM) elements, bandgap and non-linear optical properties, including absorption coefficients, refractive index changes, second harmonic generation and third harmonic generation as a function of the electric field, wetting layer size and the size of the quantum dot. The redshift is observed for the non-linear optical properties with the increasing electric field and an increase in wetting layer thickness. The sensitivity to the electric field toward the shape of the quantum dot is also observed. This study is resourceful for all the researchers as it provides a pragmatic model by considering oblate and prolate shaped quantum dots by explaining the optical and electronic properties precisely, as a consequence of the confined stark shift and wetting layer.

Keywords: prolate quantum dot (QD); oblate quantum dot (QD); absorption coefficient (AC); second harmonic generation (SHG); electric field

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1. Introduction

The science of zero-dimensional semiconductor nanomaterial structures, quantum dots (QDs), has revolutionized the research of fabrication of optoelectronic devices as they have exquisite optical and electronic properties [1–3]. The renovation of the fabrication capabilities opened the arena of different shapes and sizes of QDs that lead to the vicissitude in the electronic and nonlinear optical properties. Many theorists and experimentalists have undertaken intensive work to achieve innovation in this domain, also called bandgap engineering [4–10]. Experimentally, during epitaxial growth, QDs arise at the wetting layer (WL) of the material. However, during the growth process, the constraints generated by lattice mismatch of different materials and the strain of WL cause non-symmetrical and non-homogenous shapes. Thus, different shapes with different size dispersions can be observed by TEM imaging: hemispherical, disk, cylinder, lens, ring, conical, pyramidal, dome, oblate and prolate or semi oblate and prolate [11–20].

The optoelectronic properties of these different shapes attracted much interest and have been the subject of intensive theoretical investigations. Some authors have used orthogonal curvilinear coordinates to solve exactly the Schrdinger equation of QDs with

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Case Study

SIR-SI Mathematical Model for Zika Virus Progression Dynamics in India: A Case Study

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ABSTRACT

Viral diseases are very hazardous for humanity because in the case of most viral diseases, drugs are not effective. At present, the whole world is living with the fear of COVID-19. From time to time, several viral diseases have been troubling human life. In this article, we have tried to capture the progression dynamics of Zika Virus (ZIKV) infection in the Indian scenario. A constructed model is based on compartment modelling. In the model, Susceptible-Infected-Recovered (SIR) structure is used for the human population and Susceptible-Infected (SI) structure is used for mosquito population. The value of the basic reproduction number (R_0) is computed 0.36 at baseline values of parameters involved in the model. The lower value of R_0 suggests that infection was unable to spread in the human population. Sensitive analysis for R_0 revealed that the most accountable parameter in the spread of infection was mosquito biting rate. The modelling technique might be useful for other diseases also.

Keywords: Zika Virus Infection, Disease-free Equilibrium, Basic Reproduction Number, Numerical Simulation

Introduction

Zika virus is an emerging mosquito-borne Flavivirus in the Flaviviridae family that is responsible for many recent epidemics in America and the Caribbean region.[1] Zika virus (ZIKV) can be transmitted via mosquito bites, sexual contact, and blood transfer (very likely but not confirmed) from a pregnant woman to her foetus. Aedes mosquito was found to be the main cause of transmission of ZIKV infection in humans. This transmission is bidirectional i.e. infected mosquitoes infect humans and vice-versa.[1,2] Transmission by other means is very low as compared to transmission by mosquitoes.[2] The common symptoms of ZIKV infection are fever, headache, joint pain, muscle pain, rashes, red eyes[3] etc. As Zika may be transmitted vertically, in pregnancy cases, ZIKV infection may cause microcephaly or other serious brain defects.[4] Further ZIKV infection may be responsible for other problems like miscarriage, stillbirth, and other birth defects.

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Synthesis of Silver Nanoparticles using Egg White: Dye Degradation and Antimicrobial Potential

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Abstract: In recent years, developing nanoparticles with green processes is gaining huge attention due to its cost-effectiveness, simplicity and non–toxic precursors. The present study utilized the potential of egg white for the synthesis of stable silver nanoparticles (EW-AgNPs). In order to characterize the EW-AgNPs, various techniques have been employed. *UV-vis* spectroscopy (300-700nm) was used to study the $\lambda_{max.}$ which highlighted the peak at 422nm. Further, the stability of synthesized EW-AgNPs was studied using Zeta potential, the value of -16.4 mV was obtained, indicating the stability of developed EW-AgNPs in the solution. Transmission electron microscopy was used specifically to visualize the shape and size of synthesized EW-AgNPs, the images showed spherical to the diverse shape of EW-AgNPs. In the first phase, the EW-AgNPs were studied for dye degradation along with $NaBH_4$. The enhanced dye degradation of blue dye was obtained with EW-AgNPs+$NaBH_4$, showing 90- 100% degradation from 100- 25 mgL^{-1} dye solution, respectively. Further, in the second phase, antimicrobial activity (Zone of Inhibition) of EW-AgNPs was analyzed against *Escherichia coli* and *Staphylococcus aureus*. A higher ZOI was obtained for *E.coli* (16mm) than *S. aureus* (12.4mm). The present study proved egg white's ability to develop stable silver nanoparticles, which was further found to be effective for blue dye degradation and antimicrobial activity.

Keywords: egg white; silver nanoparticles; TEM; dye degradation; antimicrobial agent.

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1. Introduction

Textiles dyes are classified into two major groups, i.e., organic dyes and synthetic dyes [1–3]. Organic dyes are obtained from natural sources, like a flower, leaves, roots, etc. On the other hand, synthetic dyes are developed through chemical processes. The organic dyes are non-toxic and degradable [4], whereas synthetic dyes are toxic and may be categorized into xenobiotic compounds [5, 6]. The paper and textile industries are the major industries that utilize synthetic dyes for coloring paper and clothes. A major part of the dyes remained unutilized during the colorization process and discarded as effluent [6]. The colored effluent is discharged into the nearby water bodies and is the source of toxicity to the living aquatic organisms [7]. In addition to this, the color of dye reduces light penetration, which directly affects the life forms on aquatic sources [8]. Further, irrigation with such wastewater transfers dye and its components into the plants [9, 10]. Many physical, chemical, biological methods or combinations of these have been developed to remove or degrade the dye from synthetic as well as actual wastewater. The physio-chemical methods are fast but requires ...

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RESEARCH PAPER

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Microbial amelioration of salinity stress in HD 2967 wheat cultivar by up-regulating antioxidant defense

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ABSTRACT

An experiment was conducted to investigate the potential of *Piriformospora indica* and plant growth-promoting bacteria (PGPB) to ameliorate salinity stress in HD 2967 wheat cultivar. Plants were treated with four different levels of salinity viz. 0, 50, 100 and 200 mM NaCl (electrical conductivity value 0.01, 5.84, 11.50 and 21.4 mS cm^{-1}, respectively) under greenhouse conditions, using a completely randomized design experiment. Plants inoculated with PGPB and *P. indica* showed decrease in lipid peroxidation, relative membrane permeability and lipoxygenase enzyme (LOX) activity as compared to uninoculated plants. The result of this study showed that PGPB and *P. indica* inoculated HD 2967 wheat plants accumulated higher content of proline, α-tocopherol and carotenoid as compared to uninoculated plants. The HD 2967 wheat plants either inoculated with PGPB or *P. indica* showed significantly higher activities of antioxidant enzymes viz. superoxide dismutase, catalase and ascorbate peroxidase than that of the uninoculated plants. Moreover, PGPB inoculated plants showed greater activity of antioxidant enzymes than the plants inoculated with *P. indica*. Salinity stress tolerance was more pronounced in the PGPB inoculated than *P. indica* inoculated plants. This study revealed the potentiality of PGPB and *P. indica* as bio-ameliorator under salinity stress, and suggests that this plant microbial association could be a promising biotechnological tool to combat the deleterious effects of salinity stress.

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Salinity; antioxidants; plant growth promoting bacteria; *P. indica*; abiotic stress

Introduction

As per an estimation of World Population Prospects (2020), the human population is currently increasing at the rate of 1.05% per year, and it is expected to be around 7.8 billion in 2021 Agriculture sector is facing a major problem to meet the food requirement of growing population. However, plant development and yield has been severely influenced by several abiotic stresses like salinity, drought, temperature, and heavy metals [1]. Among various abiotic stresses, salinity is one of major deleterious factors, which limits crop productivity, in various parts of world [2]. About 20% of cultivated land area is affected by salinity globally [3]. According to an estimate, about 50% of cultivated land will be affected by salinity by 2050, if salinization process continues at a current pace [4]. Agricultural land is affected by salinization primarily due to the excessive accumulation of soluble salts in the soil, particularly due to accumulation of NaCl salt [1].

Salinity stress often induces overproduction of reactive oxygen species (ROS) including hydroxyl radical ($OH^{\bullet}$), single oxygen ($^1O_2$), superoxide anion ($O_2^{\bullet-}$) and hydrogen peroxide (H_2O_2) [5]. ROS formation causes oxidative damage to proteins, lipids and photosynthetic pigments [6]. ROS deteriorates the structure of cell membrane by oxidation of polysaturated fatty acids of the lipid layer, altering their permeability. However, plants have an excellent antioxidant system to ameliorate ROS induced oxidative stress via enzymatic and non-enzymatic antioxidant production [7,8]. Several studies have revealed that the enzymatic antioxidant system viz. ascorbate peroxidase (APX), catalase (CAT), superoxide dismutase (SOD), and the non-enzymatic antioxidants like as carotenoids, proline, α-tocopherol and ascorbic acid could combat oxidative stress and thereby facilitating plants to better adopt under saline conditions [7,8].

The level of lipid peroxidation largely increased under saline conditions [9], and has an influence on the plant membrane properties, protein degradation and the capacity of ion transport, and eventually triggers the process of plant cell death. However, ROS production under salt stress further initiates higher production of lipid peroxidation [10]. Excessive ROS production and peroxidation of lipids alters the activity of lipoxygenase enzymes [11], therefore enhance the

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Review article

Orientation and Alignment dynamics of polar molecule driven by shaped laser pulses

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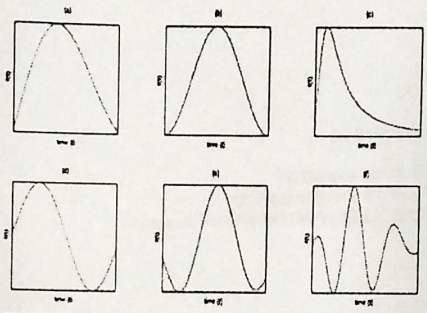
HIGHLIGHTS

- Reviewed Details of Orientation and Alignment.
- Different Numerical methods to solve time dependent Schrödinger equation are discussed.
- Collisional Rotational Excitation Dynamics is also discussed.

GRAPHICAL ABSTRACT



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ABSTRACT

We review the theoretical status of intense laser induced orientation and alignment-a field of study which lies at the interface of intense laser physics and chemical dynamics and having potential applications such as high harmonic generation, nano-scale processing and control of chemical reactions. The evolution of the rotational wave packet and its dynamics leading to orientation and alignment is the topic of the present discussion. The major part of *this* article primarily presents an overview of recent theoretical progress in controlling the orientation and alignment dynamics of a molecule by means of shaped laser pulses. The various theoretical approaches that lead to orientation and alignment such as static electrostatic field in combination with laser field(s), combination of orienting and aligning field, combination of aligning fields, combination of orienting fields, application of train of pulses *etc*, are discussed. It is observed that the train of pulses is quite an efficient tool for increasing the orientation or alignment of a molecule without causing the molecule to ionize. The orientation and alignment both can occur in adiabatic and non-adiabatic conditions with the rotational period of the molecule taken under consideration. The discussion is mostly limited to non-adiabatic rotational excitation (NAREX) i.e. cases in which the pulse duration is shorter than the rotational period of the molecule. We have emphasised on the so called half-cycle pulse (HCP) and square pulse (SQP). The effect of ramped pulses and of collision on the various laser parameters is also studied. We summarize the current discussion by presenting a consistent theoretical approach for describing the action of such pulses on movement of molecules. The impact of a particular pulse shape on the post-pulse dynamics is also calculated and analysed. In addition to this, the roles played by various laser parameters including the laser frequency, the pulse duration and the system temperature etc. are illustrated and discussed. The concept of alignment is extended from

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Nanotechnology as an Effective Tool for Antimicrobial Applications: Current Research and Challenges

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Review Article

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ABSTRACT

The prevention and treatment of bacterial infections is a matter of great concern. The high use of antimicrobials/antibiotics for treating bacterial infections in recent years also poses a great risk of developing resistance in many bacterial species. It was also reported that biofilm formation by bacteria prevents the entry of antibiotics and also helps bacteria to develop resistance against any applied antibiotic, making the treatment more difficult. All the current approaches have shown inadequacy to overcome the challenges presented by pathogenic microbes. Therefore, adoption of a better method/strategy to face these challenges is the need of the hour. As per reports, nanotechnology has shown tremendous success in many fields. Moreover, in the last few years, the research highlighted the potential of nanotechnology as an effective tool for antimicrobial applications. Metallic nanoparticles and their oxides such as silver (AgNPs), zinc (ZnAgNPs), gold (AuNPs), iron (FeNPs), copper (CuNPs), titanium (TiNPs), zinc oxide (ZnO-NPs), magnesium oxide (MgO), titanium dioxide (TiO_2-NPs), copper oxides (CuO-NPs) and iron oxides (Fe_2O_3-NPs) are considered effective nano-materials against pathogenic microbes. It was observed that the higher surface area to volume ratio of nanoparticles, the way they interact with bacterial membranes/cell wall and their various antimicrobial mechanisms surpass all the barriers and reach targeted sites,

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MORPHOLOGICAL IMPORTANCE OF NANOPARTICLES AND ITS APPLICATIONS

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Review Article

ABSTRACT

The properties of nanoparticle depend largely on their size, shape and distribution. There are processes (physical, chemical and biological) which are extensively used for the synthesis of various metallic nanoparticles (Ag, Au, Fe, Cu, Cd, Pd, Pt, Ti and Zn etc.) employed for numerous applications. As per literature studies, green synthesis of nanoparticle development is gaining attention in comparison to other methods, due to its cost effectiveness, simplicity and no production of toxic by-products. The main challenge for all the current processes of nanoparticle synthesis is the production of size and shape specific nanoparticles which is crucial for designing particular application. Recently, the research to illustrate the profound effect of specific sized nanoparticles has begun. The factors such as temperature, pH, and reducing agent: metal solution ratios influence the kinetics of nanoparticles, thereby affecting the final shape and size of synthesized nanoparticle. Types of nanoparticles (Ag, Au, Si, Cu, Fe, Zn etc.), size (1- 100 nm) and shapes (spherical, triangular, hexagonal, decahedral etc.) defines its function and usability, therefore tuning nanoparticles using various processes would be helpful in resolving existing hurdles in agriculture, medical sciences, textiles and environment protection etc. Therefore, the present review provides an overview of the various growth parameters for obtaining desirable shaped/sized nanoparticles with special emphasis on their potential applications in various sectors.

Keywords: Nanoparticles; green synthesis; kinetics; growth parameters; reducing agents.

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Silver nanoparticles for enhanced dye degradation

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ABSTRACT

Dye wastewater discharged after improper treatment is very harmful for environment and living creatures. As per mandate, the dye wastewater should be treated well in order to prevent any negative effects after discharge. Although there are various methods which are in use, however most of these methods have some or the other associated disadvantages i.e., high cost, generation of secondary pollutants, low efficiency, complexity etc. The objective of this study is to identify the dye degradation (orange and blue dye-individually/mixture) potential of chemically synthesized silver nanoparticles (CH-AgNPs) along with $NaBH_4$. Literature studies highlighted the efficacy of AgNPs for individual dye degradation, however it is very important to study the degradation potential of nanoparticles in presence of dye mixture (to mimic the natural wastewater condition). In the present study, the rapid synthesis of silver nanoparticles (CH-AgNPs) was obtained by using trisodium citrate solution. The developed CH-AgNPs were examined for UV–vis Spectrophotometry (maxima-422 nm), Zeta Potential (−6.70 mV), and Transmission Electron Microscopy (spherical shape with size range of 8–40 nm), highlighting the nano-size and stability of synthesized CH-AgNPs. For catalytic activity, CH-AgNPs and $NaBH_4$ were tested for dye degradation potential for Orange and Blue dyes individually and in mixture (orange + blue dye). It was observed that with increase in dye concentration from 50 ppm to 200 ppm, $NaBH_4$ showed 28% and 25% removal for blue and orange dyes, respectively. However, when CH-AgNPs + $NaBH_4$ was used, up to 100% degradation was obtained from blue dye, however the degradation of orange dye has shown 97.4% degradation. Further, as the wastewater contains multiple dyes, therefore in dye mixture studies (orange + blue dye- 50 ppm), 100% degradation was achieved with $NaBH_4$+CH-AgNPs in just 5 min, highlighting the efficient catalytic ability of $NaBH_4$+AgNPs. The results clearly highlighted the potential of CH-AgNPs in enhancing the dye degradation of orange and blue dyes-individually and in mixture, therefore the present study is relevant for further research to identify the best dye degradation agents, especially in presence of dyes mixture.

1. Introduction

Wastewater generated by various industries contain multiple contaminants such as dye, heavy metals, antibiotics, pesticides, etc [1,2]. Effluent generated by the textile, plastic, paper, food, tanneries and pharmaceutical industries contains toxic chemical dyes as one of the major pollutants along with other toxic chemical components [3,4]. Azo, basic, acidic, cationic, etc are some of the major dyes that are used by industries to impart color [5]. However, these synthetic dyes are highly toxic, carcinogenic and mutagenic in nature [1,6]. Industries directly discharge dye containing wastewater to near-by water bodies such as river, lake, drain, etc [7,8]. Moreover, in some cases wastewater generated by the various industries is directly used for the irrigational purposes and such practice deteriorate the quality of crops as well as soil [9]. The presence of dye molecule in the water is toxicity and also decrease the sunlight penetration into the water bodies affecting aquatic living organism [10]. Hence, proper treatment of dye containing wastewater is very important before its discharge to near-by water bodies. Degradation of dye molecule to nontoxic component is difficult due to its chemical structure which provides high stability to the dye molecule.

Metallic nanoparticles are known to possess multiple physical and chemical properties that helps researcher to exploit them in various field such as electronics, biosensors, food, textile, healthcare, environment, agriculture, etc [11–14]. Utilizing metallic nanoparticles for the

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Raw No-219

The Outcaste: An Intersectionality of Self, Community and Nation

Prarabdh Pathak

Abstract

It is significant to note that autobiography is a popular genre in Dalit literature. Unlike the non-Dalit autobiography Dalit autobiography is more than the story of an individual. Sharankumar Limbale's *The Outcaste* is a representative Dalit autobiography. I have taken this as a case study to deal with a few important questions: in what way Dalit autobiography dismantles the very definition of autobiography? Is Dalit autobiography limited to the narration of an individual's lived experience? How is it the life story of more than just an individual? How does an individual's story intersect with the story of a community and the nation at large?

Keywords: autobiography, Dalit autobiography, caste, community, nation, self, intersectionality

Dalit Autobiography

What is an autobiography? Simply speaking, an autobiography is writing about self by the individual himself/herself. Autobiography constitutes three important components: auto (self), bio (life) and graphy (writing). Philippe Lejeune, a French critic defines autobiography as "Retrospective prose narrative written by a real person concerning his own existence, where the focus is his individual life, in particular the story of his personality" (Lejeune, as quoted in Kumar, 2010, p. 3). Autobiography is traditionally known as the act of writing a conscious individual self. The subjecthood of 'self' is the main focus in every autobiography. But individual self cannot be removed from the community (society) or even nation. It is in relationship with the community that an individual self is

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Thidiazuron outpaces 6-benzylamino purine and kinetin in delaying flower senescence in *Gladiolus grandiflora* by alleviating physiological and biochemical responses

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Gladiolus grandiflora, lipid peroxidation, lipoxygenase, membrane stability index, Senescence, vase life

ABSTRACT

An experiment was carried out to elucidate the role of thidiazuron (TDZ), 6-benzylamino purine (BAP), and kinetin on the vase life of *Gladiolus grandiflora* cut flower. Harvested flowers were treated with BAP, kinetin, and TDZ of various concentrations, viz., 100 µM, 0.5 mM, and 1 mM. Our findings revealed that there was a significant increase in flower longevity in treatment with BAP, kinetin, and TDZ as compared to untreated flowers. Vase solutions which contain BAP (0.5 mM), kinetin (1 mM), and TDZ (100 µM) were most effective in improving vase life (14, 13, and 15 days, respectively) of cut *Gladiolus* floral spike. Flower vase life was extended with increase in fresh weight, vase solution uptake, high membrane integrity, besides reduced pH of vase solution, malondialdehyde content, and lipoxygenase activity in the flowers. However, TDZ outpaced BAP and kinetin in improving the vase life of *G. grandiflora*.

1. INTRODUCTION

Flowers are the excellent model system to unveil the physiological and biochemical processes during senescence as the senescence process in flowers is rapid and foreseeable. Senescence is defined as an age-dependent degenerative process in plants leading to death [1]. The senescence process involves halt of various biochemical pathways and up-regulation of many degradative pathways, finally leading to the cell, tissue, or whole plant death [2]. Genetically, senescence is determined and it is governed by the various plant hormones and environmental factors during plant development process. During senescence process, a number of changes such as reduced fresh weight, vase solution uptake, loss of membrane integrity, increase in lipid peroxidation, production of reactive oxygen species (ROS), increase in membrane lipid peroxidation, degradation of fatty acids, proteins, DNA, RNA, and sugars are induced [3–5]. Morphological changes which are visible during petal senescence are change of petal color and rolling of petals [6], and anatomical changes include degradation of mesophyll cells before morphological changes are apparent [7,8].

It is the life span and quality of the cut flower that determine the commercial value of flowers [9]. To increase flower life span, it is important to understand physiological and biochemical processes associated with petal senescence [10]. Cytokinins act as senescence retarding hormones that increase the life span in both the ethene-sensitive and ethene-insensitive flowers [1,11]. Because of cytokinin delays senescence process, it is used in postharvest technology to enhance the postharvest life of flowers [12]. Cytokinin delays flower senescence by increasing uptake of water, fresh weight sink activity, metabolites contents in flower petals, besides preventing membrane lipid peroxidation [11,13]. Cytokinin both adenine type 6-benzylamino purine (BAP, kinetin) and diphenyl urea derived thidiazuron (TDZ) [14] retard senescence process by increasing the content of various metabolites, vase solution uptake, besides preventing peroxidation of membrane lipids [12]. Exogenous application of cytokinin has important

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Continuity of Oral Tradition in Print Era with Reference to Short Film "Salt in My Village" Documented by North-East Network (NEN)

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Abstract

Print in the community is still a new thing to the Nagas, especially the communities who were exposed to the education and partly because of the late arrival of Christianity. The Nagas absence of written script and the complete dependence on verbal narration has led to the loss of many folklore of the community because it was left at the mercy of collective memory. Folklore in print may prove both advantage and disadvantage to people, because of the possibility of print distorting the beauty of oral narration on one side, and on the other side, it helps in recording the community's folklore. The paper will try to give an in-depth study of the nature of folklore in print and look into the importance of its vital role in passing the community knowledge to the younger generation, by reaching them out through print. The community life in the modern world will be focussed through the short film of "Salt in My Village" documented by North East Network(NEN), a Non Governmental Organisation (NGO) working among the people to promote the community's culture besides help the community's women for self-sustenance and self-dependence. Through the documentary, the paper will try to bring out the continuum of oral tradition of the community and the existence of the community knowledge, and how oral tradition and print goes hand in hand.

Keyword: Print, Folklore, Community life, *Salt in my Village*, Oral tradition.

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Original Article:

Impact of COVID-19 Pandemic on Mental Health of General Population and University Students Across the World: A Review

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Abstract: Background: With the outbreak of COVID-19 pandemic across the world, people have suffered an unexpected setback to their mental health. As psychological support is being provided to patients and healthcare workers, the general population and university students go unnoticed. This review aims to present existing literature that reports the effects of COVID-19 on psychological outcomes of the general population and university students in different countries. **Methods:** A manual search was conducted on PubMed, Google Scholar and Mendeley from inception to 31st January 2021. Articles were selected based on the predetermined eligibility criteria. **Results:** During COVID-19 pandemic, relatively high rates of depression (4.5% to 72.3%), anxiety (12.7% to 85.7%) and stress (5% to 29.1%) were reported in the general population as well as in university students, depression (3% to 70.5%), anxiety (9% to 63.3%) and stress (61.5% to 25%) in India, Nepal, Pakistan, China, Spain, US, UK, France, Egypt, Ethiopia, Bangladesh, Nigeria and Saudi Arabia. Risk factors associated include female gender, younger age group (≤40 years), unemployment, student status, and frequent exposure to social media/news concerning COVID-19. **Conclusions:** The COVID-19 pandemic is associated with highly significant levels of psychological disorders such as depression, anxiety and stress. Alleviating the hazardous effects of COVID-19 on mental health should be given due attention internationally.
Key Words: COVID-19, General population, University students, Anxiety, Depression, Stress

Introduction:

The World Health Organization officially designated novel coronavirus disease as COVID-19 as it has reached the level of a pandemic, affecting countries across the world. By 1st February 2021, over 10.5 million confirmed cases attributable to this disease have been reported. (1) In the wake of this global health crisis, stringent public health measures essential to halt transmission of the virus have been implemented to curtail the spread of COVID-19. This has led to physical isolation, closure of schools, colleges and offices limiting the necessary human interaction.

Any pandemic brings with itself a major setback in the mental health front. The resulting uncertainties and fears associated with the COVID-19 virus outbreak, along with mass lockdowns and economic recession can lead to increases in suicide as well as associated mental disorders. (2) As was seen in the case of the Ebola outbreak in 2014, symptoms of Post-Traumatic Stress Disorder (PTSD) and anxiety-depression were more prevalent even after 1 year of Ebola response. (3) The risk of PTSD in the aftermath of the pandemic can, therefore, be a huge challenge to the mental health system of the country. (4) Similarly, the widespread outbreak of COVID-19 is associated with mental health issues focusing on health workers, patients; children, students and the general population (5-6).

A recent review of the virus outbreak documented certain stressors such as infection fears, frustration, boredom, inadequate supplies, financial loss, job loss, insecurities, and disruption of work progress in the general population. (7) Elevated levels of stress, anxiety and depressive symptoms among general population samples in North America and Europe were found. (8) A similar trend was also reported in the USA, India, France, Germany, and Italy. (9)

While in university students, additional stressors were reported such as hindering studies, halting research, disruptions in starting classes and taking exams online, feelings of hopelessness and others. (10) High level of psychological distress (51%) was reported among university students of the United Arab Emirates (UAE). (11) Similar trends were reported in Asia, Africa, United Kingdom (UK) and North America in terms of depression, anxiety and stress. (12-15)

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REVIEW ARTICLE

Application of Nuclear Technique is an Eco-friendly and Economically Viable Approach for the Processing and Preservation of Agricultural Produce

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ABSTRACT One of the important applications of nuclear technique is in the processing and preservation of food commodities. The advances in agricultural methods have ensured food production keeping pace with the rapidly growing requirements, unchecked processing and storage losses of food commodities, so equal emphasis has now to be devoted to food preservation. It is estimated that one quarter to one third of world food production is lost due to pests, insects, bacteria, fungi and enzymes which eat, degrade or destroy the crops. Apart from food losses, the problem of contamination has to be encountered which includes pathogens and parasites that lead to food borne diseases. The incidence of food borne disease is one of the most widespread health problems not only in developing countries but also in developed countries with relatively high standards of hygiene. The potential economic loss due to food borne disease and rejection of food contaminated with pathogenic microorganisms is apparently enormous. Therefore, a number of methods have been employed for food preservation. Popular means and ways include the use of chemical additives for the preservation of several food products. However, some of the chemicals like fumigants, ethylene di-bromide (EDB) and ethylene oxide are harmful to mankind and the environment. The use of ionizing and non-ionizing radiation offers very good potential in this context. It is essentially a technique of exposing agricultural produce to ionizing radiations such as X-rays, γ-rays, electron beams and non- ionizing radiation such as UV rays. These rays leave no radioactive residues, however help in reducing from the spoilage of post-harvest agricultural produce due to microorganisms as well as can slow down the speed at which enzymes change the food articles as a result prevents from ripening, and inhibits sprouting of potato, onion, and garlic so that enhance the shelf life. Moreover, irradiation of agricultural produce aims to prevent the spread of invasive pest species through trade in fresh vegetables, fruits, grains, pulses and spices, either within countries, or trade across international boundaries which could significantly affect agricultural production and the environment.

Keywords: Irradiation, Radioactive, Post-harvested, Preservation, Ecofriendly, Invasive

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INTRODUCTION

Since time immemorial mankind has been cultivating. After human civilization, agriculture has been the way of life for their livelihood. Many impediments have come across their path. Farmers, through a long history of battle against insects stored product pests, have learnt to exploit natural resources to largely damage food grains in stores as well as during shipping and transportation. Several kinds of insects, diseases, weeds, rodents cause immense damage to crops both in field and in storage. The hot and humid climate of the country is quite favorable to the growth of numerous insects and microorganisms which destroy stored crops and cause spoilage of food. The seasonal nature of production and the long

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Article

The Change in Fatty Acids and Sugars Reveals the Association between Trifoliate Orange and Endophytic Fungi

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Abstract: Endophytes have the ability to improve plant nutrition alongside their agronomic performance, among which arbuscular mycorrhizal fungi provide the most benefits to their host. Previously, we reported for the first time that an arbuscular mycorrhizal-like fungus *Piriformospora indica* had the ability to colonize roots of trifoliate orange (*Poncirus trifoliata*) and conferred positive effects on nutrient acquisition. Present study showed the changes in fatty acids and sugars to unravel the physiological and symbiotic association of trifoliate orange with *P. indica* and an arbuscular mycorrhizal fungus, *Funneliformis mosseae* singly or in combination. All the endophytic fungi collectively increased fructose, glucose, and sucrose content in leaves and roots, along with a relatively higher increase with *P. indica* inoculation than with *F. mosseae* alone or dual inoculation. Treatment with *P. indica* increased the concentration of part unsaturated fatty acids such as C18:3N6, C20:2, C20:3N6, C20:4N6, C20:3N3, C20:5N3, C22:1N9, and C24:1. Additionally, *P. indica* induced the increase in the concentration of part saturated fatty acids such as C6:0, C8:0, C13:0, C14:0, and C24:0. *F. mosseae* hardly changed the content of fatty acids, except for increase in C14:0 and C20:5N3. Double inoculation only reduced the C21:0, C10:0, C12:0, C18:3N3, and C18:1 content and increased the C20:5N3 content. These endophytic fungi up-regulated the root *PtFAD2*, *PtFAD6*, *PtΔ9*, and *PtΔ15* gene expression level, coupled with a higher expression of *PtFAD2* and *PtΔ9* by *P. indica* than by *F. mosseae*. It was concluded that *P. indica* exhibited a stronger response, for sugars and fatty acids, than *F. mosseae* on trifoliate orange. Such results also reveal the *Pi* (an *in vitro* culturable fungus) as a bio-stimulator applying to citriculture.

Keywords: carbohydrate; citrus; endophytes; fatty acid; symbiosis

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1. Introduction

Terrestrial plants are reported to form mutual symbioses with endophytic fungi in roots, without causing any damage to host plants [1,2]. Amongst endophytic fungi, arbuscular mycorrhizal (AM) fungi predominantly occurring in the soil have the ability to colonize roots of more than 72% of terrestrial plants and, thus, form arbuscular mycorrhizas in the roots [3]. In such a mutualistic relationship, host plants provide the required substances to AM fungi for their growth and, in reciprocation, AM fungi facilitate water and nutrient acquisition of the host [4,5]. As a result, host plants offer mycorrhizal-C

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RESEARCH PAPER

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Home-Stay Tourism Potential in Garhwal Himalaya: A Case Study of Pauri Garhwal, Uttarakhand

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Abstract

Tourism has experienced continued expansion and diversification, to become one of the largest and fastest-growing economic sectors in the world. India is a country with great natural and cultural diversity and is the most sought-after tourist destinations. Home Stays are informally arranged by social connections in rural areas. It allows the visitor or the tourist to rent rooms from local families. This type of tourism is of twin benefit; it not only enables the visitor to have first-hand experience of local culture, traditions, and language, but also allows the host to earn a decent income in situ. Home stays are a scope for eco-friendly tourism in fragile Himalayan Mountain ecosystem. As per the guidelines laid by Government of India, any Home Stay can have only five rooms at the maximum. The concept helps in preserving the culture and environment of the area as well as boosts the financial status of the hosts.

The main objective of the paper is to examine the potential benefits of home stay tourism in the study area. The participation of local community ensures the sustainability of this form of tourism. The Home-Stay reduces the large-scale urbanization and commercialization of rural areas, thereby keeping a check on population expansion, pollution, and degradation of mountainous areas. It also helps in regulating out migration of people from rural areas to cities.

Pauri Garhwal district in the Garhwal Himalaya consist 15 blocks comprising 3473 villages, has pristine views, adventurous treks, as well as the serenity that one looks for at any tourist destination.

Keywords: *Home Stay, Fragile Himalayan Mountain Ecosystem, Eco-friendly Tourism, Preservation of culture, Preservation of Environment*

Article Publication

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Tourism Potential in Garhwal Himalaya

With its towering peaks, majestic landscapes, rich biodiversity and cultural heritage, the Indian *Himalayan Region (IHR)* has long drawn visitors and pilgrims from the Indian sub-continent and across the world. The Himalaya are home to over 52.7 million people and had 46.8 million visits in 2011 (Apollo, 2015a; 2015b). A huge part of that number is domestic visitors (45.3 million), mostly pilgrims visiting sacred temples located in the High Himalaya (e.g., Amarnath, 3,888 m; Manimahesh Lake, 4,080 m; the complex of four temples at Chota Char Dham, 3,048 to 3,553 m). In total, about 4.7 million people visit the High Himalaya each year (Apollo, 2015b). In India, tourism industries have the strongest impact on economy and it is growing rapidly with its foggy hill stations, captivating beaches, historical monuments, golden deserts, serene backwaters, pilgrimage sites, rich wildlife, and colorful fairs which capture the heart of every tourist. The direct contribution of Travel & Tourism to GDP was INR2,478.2bn (2.2% of total GDP) in 2014, and prediction is to rise by 7.2% pa, from 2015-2025, to INR5,339.2bn (2.5% of total GDP) in 2025. In 2014 Travel & Tourism directly supported 23,024,000 jobs (5.5% of total employment). It is expected to rise by 2.2% pa to 29,020,000 jobs (5.7% of total employment) in 2025. Visitor exports generated INR1,224.4bn (4.1% of total exports) in 2014. This is forecast to grow by 6.3% pa, from 2015-2025, to INR2,377.2bn in 2025 (4.2% of total). Travel & Tourism generated 23,024,000 jobs directly in 2014 (5.5% of total

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Beauveria bassiana assisted remediation of chromium and indanthane blue

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ABSTRACT

The presence of toxic pollutants in wastewater is a matter of great concern, posing risk to environment and health. Generally, dyes and heavy metals are concomitant pollutants of wastewaters, associated with multiple diseases in humans. Various physical and chemical approaches of removing these contaminants have been in use, however biological approach, utilizing microorganisms has been identified as an advantageous option. The present study utilized the potential of fungus, *Beauveria bassiana* for the removal of Chromium (Cr) and Indanthane blue, individually and simultaneously. Results showed that maximum Cr removal of 61% was observed at 30 mg L^{-1} with 3.8 mg g^{-1} of specific metal uptake. Further, 99.6% removal of dye (Indanthane blue) was observed at 200 mg L^{-1} of initial dye concentration. The results of simultaneous removal of Cr and dye mixture highlighted the higher potential of *B. bassiana* for dye removal in comparison to Cr uptake. Moreover, the temperature of 30 °C with pH value of 7, accounts for maximum removal efficacy by *B. bassiana*. The analytical techniques, such as Atomic force microscopy (AFM) and Transmission electron microscopy high-angle annular dark field (TEM HAADF) were employed to study the morphological characteristics of *B. bassiana* in presence of Cr and dye. AFM highlighted the increase in surface roughness of *B. Bassiana* cells, further TEM HAADF clearly indicated the localization of heavy metals within the cells of *B. bassiana*.

1. Introduction

Different kinds of pollutants such as heavy metals, antibiotics, microplastics, pesticides, insecticides and dyes are the matter of great concern globally [1–3]. Multiple industries i.e., textiles, pharma, electro-plating, batteries, etc., has been identified as a source of contamination and many of these industries, discharge their waste effluent directly to the nearby water source (river, lake, ponds and drain) or vacant land [4–6]. Pollutants such as heavy metals and textiles dyes are severely toxic in nature and are known to cause multiple disease such as skin irritation, headache, organ failure, cancer, etc. Utilization of contaminated wastewater for irrigation purposes is a common practice performed by the farmers in the developing countries [1,7]. Such kind of irrigational practices result in production of contaminated food crops and vegetable [8,9]. Removal of pollutants from wastewater using biological processes is advantageous as compared to the different physical and chemical processes in term of cost, energy and production of toxic intermediates [10].

In biological systems, fungi are very well known to remediates multiple pollutants from synthetic as well as actual wastewater. However, only few studies investigated the simultaneous removal of more than one contaminant from wastewater using fungal strain. Some fungal strains (*Apergillus* spp. and *Rhizopus* spp.) are known to remove up to 100% pollutant (heavy metal and dye) from synthetic wastewater [11–14]. However, fungal strains like *Aspergillus* spp. are very well recognized for the production of aflatoxins. Aflatoxins are very poisonous to animals as well as humans [15]. Hence, wastewater treated with such kind of fungal strains may contains aflatoxins which can affect human health. Some fungi are very well known for their insecticidal properties for example, *Beauveria bassiana* has been reported for efficient insecticidal properties [16]. Fungus has been used for removal of textile dyes, metals, petroleum, pharmaceutical and personal care products. Different types of fungal enzymes plays role in bioremediation process. The bioremediation potential of *B. bassiana* is reported in very few studies, however among these very limited studies of *B. bassiana* are available for removal of heavy metals and dyes from contaminated wastewater. Studies only reported the efficacy of fungus in remediating individual metal and dyes only [17–19]. Further, in the real scenario,

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Research Article

Formulation of *Clitoria ternatea* Leaves-mediated Silver Nanoparticles to Control *Aedes aegypti* Larvae

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ABSTRACT

Introduction: Global rise in the *Aedes*-borne diseases and harmful effects of synthetic insecticides has diverted research to explore secondary metabolites in plants as mosquito control agent in the form of nanoparticles. Current study investigated *Clitoria ternatea*-mediated nanoparticles against *Aedes aegypti*.

Methods: The aqueous and hexane leaf extracts of *C. ternatea* were assayed against *Ae. aegypti* early fourth instars. The extract-mediated silver nanocomposites (AgNCs) were synthesized after optimizing the volume and concentration of silver nitrate solution. The synthesis was tracked by the colour change of reaction mixture from pale yellow to dark brown followed by monitoring with UV-Visible spectroscopy and Dynamic Light Scattering.

Results: The biosynthesis of 3 mM, 4 mM and 5 mM AgNCs was traced at 438, 401 and 407 nm, respectively. The average particle size distribution ranged from 34.62 to 60.64 nm and polydispersity index was 0.6-0.7. The 24 h larval exposure with aqueous and hexane leaf extracts demonstrated respective LC_{50} values of 53.057 and 42.179 mg/L, which decreased significantly on larvicidal assay with NCs. The 5mM AgNCs showed the maximum efficiency with LC_{50} of 10.317 mg/L after 24 h. Scanning and transmission electron microscopy images demonstrated a spherical, poly-dispersed structure with diameter in the 1-27 nm range. The assays against non-targets; *Moina* and *Cyclops* ascertained the eco-safety of NCs.

Conclusion: The study demonstrated the *C. ternatea* leaf extract as possible effective mosquito nano-larvicide, alternate to traditional insecticides. Field studies, which could not be held due to the current pandemic, would further ascertain the possible use of these NCs against *Aedes* larvae.

Keywords: Larvicide, Nanocomposites, *Clitoria ternatea*, *Aedes aegypti*, DLS, SEM, TEM

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Scanning electron microscopic and energy dispersive X-ray spectroscopic studies of *Drechmeria coniospora*, an endoparasitic nematophagous fungus

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Saxena G. (2021) Scanning electron microscopic and energy dispersive X-ray spectroscopic studies of *Drechmeria coniospora*, an endoparasitic nematophagous fungus. – Sydowia 74: 133–142.

Nematophagous fungi are promising biological agents for the control of plant parasitic nematodes. Three general groups of nematophagous fungi are categorized based on the mechanism by which they attack nematodes: Nematode-trapping or predatory fungi, Egg parasitic fungi of cyst and root-knot nematodes and Endoparasitic fungi. In this study, scanning electron microscopy and energy dispersive X- ray spectroscopy has been done on an obligate endoparasite *Drechmeria coniospora*. Its conidia produce adhesive buds to attach, infect and parasitize nematodes. *D. coniospora* was isolated from compost soil, grown in pure culture with *Panagrellus redivivus* nematode suspensions on dialysis membrane and freeze dried for these studies. Eight elements namely Na^+, Mg^{2+}, Si, P, S, Cl^-, K^+ and Ca^{2+} were analyzed. Freeze drying was useful in preserving the original structure of the fungus. Several conidiophores breaking out from the whole nematode body were observed. They formed conidiiferous pegs which in turn produced cluster of conical conidia. Elemental analysis of young and mature conidiophores, conidiiferous pegs and young and mature conidia showed high P, S and K^+ contents. Although scanning electron microscopic studies have been done previously on *D. coniospora*, energy dispersive X- ray spectroscopy is the first attempt to study any endoparasitic fungus.

Keywords: nematophagous fungi, endoparasite, biocontrol, elemental analysis, conidiophores.

Nematode-destroying fungi often called nematophagous fungi are a very fascinating group of micro organisms present in various habitats in all climatic conditions throughout the world (Saxena & Mukerji 1991, Saxena & Lysek 1993, Saxena & Mittal, 1997, Saxena 2008). They play a key role in controlling the population of plant parasitic nematodes in soil (Saxena 2018). There are broadly three categories of nematophagous fungi, depending on their distinct strategies to kill nematodes: (i) Predatory or nematode-trapping fungi which produce adhesive or non-adhesive trapping devices to capture and prey upon nematodes. Adhesive hyphae are formed by *Stylopage hadra* and *S. leiohypha* of Zygomycota. *Arthrobotrys* is characterized by adhesive networks, *Drechslerella* by constricting rings and *Dactylellina* by adhesive knobs and non-constricting rings, all asexual morphs of Orbiliaceae, Ascomycota (Li et al. 2005, Zhang & Hyde 2014). (ii) Parasites of females and eggs of cyst and root-knot nematodes. They exploit the nematodes by their hyphal tips which penetrate the nematode cuticle and egg shell either by using mechanical force or by producing hydrolytic enzymes including collagenases, glucanases, chitinases and proteases (Yang et al. 2007, Hussain et al. 2017). Some significant biocontrol agents are *Catenaria auxiliaries*, *Lecanicillium psalliatae*, *Pochonia chlamydosporia*, *Purpureocillium lilacinum* and Oomycete parasite *Nematophthora gynophila*. They have a broad nematode host range such as *Ditylenchus*, *Globodera*, *Heterodera*, *Meloidogyne*, *Pratylenchus*, *Rotylenchus*. (iii) Endoparasitic fungi are often obligate parasites and exist in mycelial form within the nematode. Only their reproductive structures break out through the nematode cuticle. Their infection strategy is either ingestible, palatable conidia, e.g. *Harposporium* or adhesive spores which adhere and penetrate the cuticle of the host. They belong to various phyla, *Meristacrum* to Zygomycota, *Drechmeria*, *Haptocillium* and *Hirsutella* to Hypocreales, Ascomycota and *Nematoctonus* to Basidiomycota. *Catenaria anguillulae* (Chytridiomycota) and Oomycetes such as *Haptoglossa* and *Myzocytium* infect the nematodes by uniflagellate and biflagellate zoospores respectively.

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'Shroud' or '*Kafan:*' A New Interpretation

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Abstract

During British rule, the Colonizers have stereotypical views about the colonized people or the Indians, mainly about the Hindus that they are lazy, corrupt, liars, ill-mannered, uncivilized, violent, silly, messy people. This is a very negative and erroneous image. The native people for them were inferior human beings. They are just shapes and shadows of disease and starvation to them. Dalit literature is full of such images and Dalit writers have vociferously propagated this erroneous trend and images. Indian literature is full of such examples. This caste-based stereotyping has been a very popular theme for Indian writers in the post-colonial era. Dalit studies and researches are also full of such types of results in India. They look at the problem of marginalised communities and groups, with the same mindset. They don't give much importance to economic conditions but they always see them with a vested interest. Now, such studies have created a group of very powerful force consisted of Dalits, tribals, Muslims, women physically challenged groups and LGPTQ communities. Scholars and activists undertake research and development work on the same pattern.

Keywords: 1-stereotype, 2-Dalit, 3- *Chamar*, 4- stereotyped, 5- oppressed, 6- discrimination, 7- cremation, 8- pregnant, 10- caste.

Introduction:

It is a post-colonial theory and fashion to stereotype Hindus in a very negative and debasing way. They are described as racist and oppressors. Their positive traits are deliberately hidden and distorted. Post-colonial thinkers and intellectuals have demonized them as a bully, uncivilized, cruel, irrational and corrupt. They have been branded responsible for all the problems of the society, mainly of Dalits, tribals, poor, backward and oppressed people. But this is not the reality about India and the Hindus. Hence, this article tries to explore the wrong and intentional stereotyping of upper-caste Hindus as oppressor and Dalits as oppressed by them.

Munshi Premchand was a very famous Hindi and Urdu writer of the 20th century. He became more famous in post-colonial India. 'Shroud' or '*Kafan*' by Munshi Premchand (1880-1936) is a very famous story written on the lives of two '*Chamar*' (*Jatav*-Dalit) characters. Ghisu is the father while Madhav is his young son. Both are very lazy and obviously very poor. Both do not want to do any work and just want to rest and relax all the time.

"Premchand begins his story with a depreciatory note castigating the father and son for their laziness. They are described as useless from an upper caste point of view because upper caste people are not able to free or cheap labour out of them. The value of lower caste people in the society is measured by their utility to the upper castes..."

(*VEDA'S, JOURNAL OF ENGLISH LANGUAGE AND LITERATURE (JOELL)* http://www.joell.in Vol.4 Issue 4 2017, 'RESEARCH ARTICLE APPROACHING THE QUESTION OF CASTE SUBJUGATION IN PREMCHAND'S STORIES KAFAN AND SADGATI AND ANALYZING THEM WITH REFERENCE TO DOMINANT TRENDS NOTICED IN DALIT LITERATURE', Yashika Kant)

There is one female character Bhudhiya who was the wife of Madhav. Budhiya was pregnant but the father and son have no money to take care of her and for her treatment. Due to lack of care and treatment, she died the very next morning after undergoing unbearable pain and miseries.

After the death of Budhiys, they have no money and resources for her last rites and cremation. However, kind hearted Hindus donated money liberally for her funeral. After collecting money, father and son went to the market to buy the 'Shroud' for her funeral but instead of purchasing and arranging the shroud for the last rites they spend the collected money on drinking and eating '*pakode*' and '*poori*'. They danced and collapsed on the street and the story ends.

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Regular Article

Electric field modified quantum entropic measures of particle in a spherical box

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Abstract The dynamics of a particle in a spherical box (PISB) in the presence of a static electric field is analyzed. According to recent research, the electric field has an interesting effect on information measurements like Shannon entropy. In this work, we propose to study the influence of the external electric field on entropic measures of a PISB. The total Shannon entropy S_T in the presence of a static electric field shows variations with the confining radius, but S_T remains constant with the confining radius in the absence of a static electric field. We calculated different quantum entropic measures of PISB with and without the external electric field. The Shannon entropy of considered levels with confinement and electric field is studied in detail. It is shown the electric field shows considerable modification on S_T and other parameters. We have also calculated corresponding Kullback–Leibler distance in position and momentum space.

1 Introduction

Applying an external field and altering the confining potential are the two main prerequisites for changing or controlling the features of quantum systems. The influence of the electric field on many quantum systems, such as the H-atom, quantum wells and quantum dots, has been studied extensively [1–8]. Also, the confined quantum systems have been used in various fields of physics and chemistry. The physical/chemical properties such as oscillator strength [9], polarizability [10], energy levels [11] and chemical reactivity [12] of atoms or molecules can be altered with the help of confinement. The confinement can be hard or soft depending upon the strength of confining potential. The shapes of confining potential can be of different types such as spherical [13], ring shaped [14,15], Hulthan potential [16], Yukawa potential [17,18] and Kratzer potential [19,20].

The applications of information theory have increased in recent years. The quantum information is mostly sought in terms of entropies [21,22] such as the Shannon entropies [23–27], Fisher information [28,29], Renyi's and Tsallis entropies [30], Shannon Fisher complex-

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Entropic measures of an atom confined in modified Hulthen potential

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ABSTRACT

Various information theoretic measures, complexities and their inequalities are studied for hydrogen atom under modified Hulthen potential which is a combination of Hulthen potential and inverse square potential. In addition, spherical confinement is also considered. Few of these results are compared with the results are available in the literature. In particular the Shannon entropy for free and confined atom is detailed for many states. The effects of inverse square potential parameter ('α' which is either positive or negative) on Shannon entropy and Fisher information is studied in confined and free region of atom. The Bialynicki-Birula-Mycielski (BBM) inequality is verified for the confined system.

Introduction

In the fourth decade of the 20th century, confinement of an atom or molecule within an impenetrable space was first studied [1]. Scientific studies on these quantum structures have been checked many times, highlighting their significance in both fundamental physics and chemistry, as well as in various branches of engineering [2–6]. This has been used in a number of contexts, such as, the analysis of impurities in semiconductor materials, liquid cell model, high-pressure physics, isolated molecules, zeolites cages, helium droplets, nanobubbles, etc [7–12]. This has also seen astrophysical uses, such as hydrogen atom spectra [13], mass-radius relationship between white dwarf theory, estimation of star escape rates from galactic and globular clusters, simulation of the interiors of giant planets Jupiter and Saturn [14] and so on. The recent increase in interest in nanotechnology has also motivated comprehensive research work in restricted quantum systems. The importance of these artificial atoms has been recognized through the usage of a broad range of confining potentials through quantum wells, quantum wires, quantum dots as well as nano-sized circuits such as quantum computers and others [15–17].

Information entropy measures such as Shannon entropy (S), Fisher information (I), Rényi entropy (R), Tsallis entropy (T) and Onicescu energy (D) that provide comprehensive knowledge about diffusion of atomic orbitals, spread of probability of electrons, periodic properties, correlation energy and so forth in atomic systems [18–21]. Information generating functions which are known as Rényi entropy, Tsallis entropy are related directly to entropy moments and completely measure probability density. These are possibly the most effective measures of uncertainty, since they make no reference to any particular points in the respective Hilbert space [22]. Onicescu energy is always positive. The negative value of Shannon entropy and Rényi entropy indicate intense localization. Reversing of their numerical value from negative to positive only explains enhancement of delocalization. These have been used extensively to demonstrate chemical reactivity, quantum entanglement, de-coherence and localization properties of Rydberg states of atoms [23–26]. Likewise, Tsallis entropy has been involved specially for non-extensive thermo-statistics [27], gravitation [28,29] etc. Remarkably, Shannon entropy and Onicescu energy are two special instances of Rényi entropy and Tsallis entropy. Shannon entropy measures the extent of concentration of the system wave function in corresponding space and Onicescu energy calculates the expectation values of probability density function. Basically, Shannon entropy and Onicescu energy determine a mutually opposite form of probability density. For example, increasing Shannon entropy increases the spreading of the probability density, but the increase in Onicescu energy decreases the spreading of the probability density and vice versa. The implementations of Shannon entropy are in atomic avoided crossing [30], illuminating Colin conjecture, electron correlation [31], orbital free density functional theory [32], aromaticity in many-electron systems [33], configuration interaction [34], entanglement in artificial atoms [35] etc. Onicescu energy has also been commonly used to estimate correlation energy and first ionization potential [21].

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700 238

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ANALYZING FINANCIAL LITERACY OF INDIAN ENTREPRENEURS – A STUDY OF MSMEs

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Abstract

Entrepreneurs are constantly involved in decision making activities where the substantial decisions are financial in nature. So, increasing the financial literacy levels of entrepreneurs can play an effective role in efficient management of business finance and handling of financial risks and opportunities. This paper is an attempt to examine the financial literacy of MSME entrepreneurs along four dimensions- preparation and use of accounting statements; savings, investments and insurance; financial budgeting; and management of debt. The study is descriptive in nature. Since the majority of medium firms exhibited a higher level of financial literacy as compared to small and micro firms, so the policy makers, practitioners and other stakeholders should focus more upon the enhanced financial education needs of micro and small firms.

Keywords: *Financial literacy, entrepreneur, MSME, accounting statements, financial budgeting, debt management*

I. Introduction

The holistic development of an entrepreneurial ecosystem is essential to transform India's socioeconomic landscape and to boost its growth (Mittal & Raghuvaran, 2021). The Indian MSMEs have a significant role in expansion of entrepreneurial endeavours in the country. The contribution of MSMEs in India's GDP is 30% which is crucial to achieve and sustain its growth

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Is Uttarakhand a Hotbed of Disasters? Learning Experiences from the Kedarnath Tragedy

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Abstract

The state of Uttarakhand is a high-risk prone area with respect to earthquakes, landslides, avalanches, and floods. The Uttarakhand Catastrophe of 2013 often referred to as the Himalayan Tsunami is one of the most cited examples in the recent history of one of the biggest disasters contributed by natural as well as human induced factors. Being an ecologically fragile zone and also subject to intense pressure from its annual tourism activity, it created a havoc in the entire region. Many experts believed that it was avoidable and so are the future predictable and unpredictable risks in this state. Over time this region had witnessed developmental activities that were unplanned and against the principles of the ecological setting of that place. Besides, large scale deforestation and mining, administrative mismanagement, unplanned land allocation, hydroelectric projects and houses built on the banks of the river, all had serious implications on the mountain ecology of the Kedarnath area. The monster was not merely the cloud burst or the glacial lake outburst but a "muddy flood", which was clear evidence of poor planning and management. Whole of this Himalayan belt, particularly the state of Uttarakhand falls under the active seismic belt and is therefore prone to devastation. Most of the factors for the deluge are still active in the region waiting to explode once more. Time has come where one needs to retrospect and visualise the future risks in this entire region. Also due to the ever-increasing demand on infrastructural requirements due to tourism, both natives and prospective tourists can fall into the disaster trap. This can happen again if the situation is not taken seriously. Thus, one needs to balance the development needs with nature's carrying capacity without compromising the vulnerable lives and livelihoods of its inhabitants. The present study highlights the future risks in the state of Uttarakhand along with an effort to forewarn the authorities and the civic society about the need for preparedness and take proactive measure for Disaster Risk Reduction.

***KEY WORDS**: Disaster, Tragedy, Himalayan Tsunami, Ecologically fragile.*

Generation of whistler wave by parametric decay of lower hybrid wave in a complex plasma

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ABSTRACT

The effect of fluctuations of dust grains on the parametric up conversion of lower hybrid waves into a whistler wave in a complex plasma is studied. In a complex plasma, which contains ambient magnetic field, the lower hybrid pump possessing a large amplitude decays into two modes: a whistler wave mode and a lower hybrid wave mode having low frequency. Furthermore, a ponderomotive force is exerted by the lower hybrid pump and whistler side bands on the existing electrons, which drives the lower hybrid decay mode. Furthermore, the coupling of $\tilde{v}_{i1}$, the oscillatory velocity of low-frequency lower hybrid waves, along with the density perturbations, produces a nonlinear current, which drives the whistler mode. The growth rate Γ ($\sec^{-1}$) of lower hybrid waves scales linearly with the amplitude of the pump waves, and it increases as the amplitude of the lower hybrid pump waves increase. Moreover, the dust grain charges influence the instability appreciably. Our theoretically observed growth rate decreases with the increase in the relative density $d\left(=n^{0i}/n^{0e}\right)$ of negatively charged dust grains, while it decreases with the size of dust grains $a(\mu m)$. The growth rate varies inversely to the electron cyclotron frequency ω_{ce}, and it decreases as ω_{ce} increases. The results presented in the article are efficiently able to elaborate the basics of the whistler wave excitation in complex plasmas, space plasmas, processing in solid state plasmas, fusion plasmas, and laboratory plasmas as well as industrial plasmas.

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I. INTRODUCTION

Complex plasmas, which consist of positive ions, negatively charged electrons, and dust grains, exist in the laboratory, in space, and in astrophysical environments. A variety of electrostatic and electromagnetic waves propagate in fluid plasma. The interest in studying the whistler and lower hybrid waves in multicomponent complex plasmas is growing very fast these days. A whistler wave can be defined as a low-frequency electromagnetic (EM) wave produced in the magneto sheath, plasma sphere, and terrestrial foreshock and seeded by lightening in thunderstorms.[1] This wave is circularly polarized and lies in the audio frequency range. It travels along with the earth's magnetic field from the southern hemisphere to the northern hemisphere or vice versa, which was observed by Gipolla *et al.*[2] earlier. Stenzel[3] made a comprehensive review about the whistler wave related phenomena in both space and laboratory plasmas. Modulated whistler waves with density perturbation are used in satellite missions, as observed by Moullard *et al.*[4] and Huang *et al.*,[5] magnetospheres, and laboratory experiments.[6–8] Baranets *et al.*[9] have performed experiments and observed that with modulated and unmodulated charged particle beams, Cerenkov radiation and cyclotron emission of the whistler waves can be produced. Kraft *et al.*[10] studied the interaction of an electron beam (density modulated) with a magnetized plasma, which produces whistler waves, where a whistler wave and beam wave can be excited at the same frequency when the beam velocity is different from the phase velocity. However, when both these velocities are equal, then the maximum amount of whistler waves can be emitted. The whistler wave emission by an electron beam (density modulated) over transition radiation was studied by Straodubtsev *et al.*[11] The parametric up conversion of a lower hybrid wave (LHW) into a whistler wave in a plasma was studied by Kumar and Tripathi.[12] Here, the authors observed that the growth rate increases with the amplitude of lower hybrid pump waves. The amplitude modulation effect on the

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The Covid-19 3rd Wave Predictions: Fact and Fantasy : A Critical Analysis

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Abstract

Some people may say that Covid-19 is a weapon of Bio-war. Some people have said that Covid-19 is the consequence of exploiting the environment exhaustively. This pandemic has led to massive killings and changes in the way we live and in our behavioral patterns that we've come to accept as normal. This paper examines the potential consequences of this pandemic that needs a clear and a deeper understanding of Covid-19 effects of the 2nd wave and the factors that may lead us to the 3rd wave. There is no need to argue whether the third wave of Covid-19 will arrive soon or if it has already begun. As long as vulnerable people are there and those who remain unvaccinated or who have a weakened immune system, a major surge will mean more deaths. Therefore, to resume normalcy, people must observe Covid-19 protocols as there are plenty of measures that reduce risk without bringing life to a halt. Therefore, to prevent infection, 100% vaccination and Covid-19 measures must adhere.

Keywords: Covid-19, Endemicity, Fact, Fantasy and, 3rd Wave Predictions.

Introduction

We all are well acquainted with difficult times we have lived through for almost two years caused by this Covid-19 pandemic across the world. It has made a paradigm shift in almost all the spheres of human lives through its potential consequences and now it has become a new normal across the globe. The intensity and harshness of the Covid-19 2nd wave stirred all of us at the core. This wave of Covid-19 pandemic has taken millions of lives and resulted in the most profound economic diminution. The adverse social consequences, including job losses, have been massive in many countries, even if large-scale government, particularly in India. Apart from physical health, the mental health and economic impact of the pandemic are still staggering and measures needed to halt the pandemic from getting out of control that had put a sudden stop in all the spheres of human lives. However, the government is making tremendous efforts to fight it back, yet the clouds of the 2nd wave still float among us because people are still testing positive as well as lifeless.

Also, the 3rd wave predictions and fear have been made by many government and non-government agencies. The government of India has made us available with age-wise helpline numbers to fight Covid-19, such as Health Ministry (1075), Child (1098), Mental Health (08046110007), Senior Citizens (14567), Ayush Covid-19 Counseling (14443), My Government Whatsapp Helpdesk (9013151515), etc. The Ministry of Home Affairs has also introduced fresh, effective guidelines and the enforcement of the Test-Track-Treat Protocol on 1 April 2021 to increase the pace of vaccination and overcome this deadly pandemic (Poulomi Ghosh, 2021). It also allowed states to make their own local restrictions like night curfew or weekend restrictions in the district, sub-district, or city level, based on the situation, without any restriction on inter-state and intra-state movement. And, to keep the economy running, lockdown cannot be an option at all, but it is important that citizens must observe appropriate Covid-19 behavior such as wearing masks, maintaining social distance and hand hygiene. If the

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RESEARCH ARTICLE

water ENVIRONMENT RESEARCH

Antimicrobial and dye degradation application of fungi-assisted silver nanoparticles and utilization of fungal retentate biomass for dye removal

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Abstract

The present study utilized *Aspergillus* spp. for the synthesis of silver nanoparticles (AgNPs); the developed AgNPs were categorized using analytical techniques, that is, ultraviolet–visible (UV–vis) spectrophotometer, Zeta-potential, dynamic light scattering (DLS), and transmission electron microscopy (TEM). A sharp peak of 463 nm highlighted the synthesis of AgNPs; further Zeta-potential of −16 mV indicates stability of synthesized AgNPs. The TEM micrograph showed spherical and hexagonal shapes of synthesized AgNPs of 6–25 nm. The photocatalytic activity of fungal-mediated AgNPs was evaluated for degradation of reactive yellow dye in the concentration range of 20–100 mg L^{-1}. The results showed efficient degradation of dye using AgNPs in short span of time. For antibacterial activity, synthesized AgNPs, antibiotic, and AgNPs + antibiotic were tested. As per results, the zone of inhibition (ZOI) of AgNPs showed the values of 13 and 10 mm for *Escherichia coli* and *Staphylococcus aureus*, respectively. Further, the ZOI of penicillin highlighted the values of 18 and 17 mm for *E. coli* and *S. aureus*, respectively. When AgNPs and penicillin were used in combination, a clear synergistic effect was observed; the ZOI showed 0.49- and 0.36-fold increase in area against *E. coli* and *S. aureus*, respectively, in comparison with penicillin or AgNPs alone. Further, the leftover biomass (retentate biomass) was used to decolorize the reactive yellow dye at different initial concentration ranging from 20 to 100 mg L^{-1}. It was observed that 1 g L^{-1} retentate biomass (B_R) can effectively remove 82%–100% dye at 20 and 100 mg L^{-1} initial dye concentration. Results also indicated that with increase in initial reactive dye concentration from 20 to 100 mg L^{-1}, the decolorization capacity of retentate biomass (B_R) (at 0.2 g L^{-1}) decreased from 79.2% to 32.3%. However, the use of AgNPs synthesized leftover fungal biomass can be a good option for up taking the additional dyes/contaminants, and also as leftover biomass can be utilized effectively, it can prove to be an excellent approach for environment safety.

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Research Article

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Prediction of Putative Protein Interactions between Zika Virus and Its Hosts Using Computational Techniques

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ABSTRACT

Generally, protein-interaction prediction between the proteins of any host and the virus's proteins is quite crucial for the infection and the pathogenesis of the virus, which makes it striking target for the development of the therapeutics. The major aim of the present study was to utilize the structure-based approach to predict proteins responsible for the propagation of the ZIKV infection in the host machinery. A computational structure-based approach has been applied for the prediction of interacting proteins. From this methodology, we come up with the interactions which are very crucial for the virus infection propagation into the host's cellular system. As there is a notable relationship between the Zika virus and the neurodevelopment abnormalities, still there is no specific system underlying which impaired neurological development has not been determined. We encounter some of the interactions which are predicted from the methodology adopted in our work, through which we can say that these are some interactions which cause neuron disorders as the major problem associated with this viral infection.

Keywords: ZIKV, PPI; hZIKV-similar, Protein Structure, Protein-Interaction Prediction

Introduction

Zika virus (ZIKV) is a vector borne disease which is of the family *Flaviviridae*, genus *Flavivirus*. It was first reported in 2007 on Yap Island.[1] The epidemic of ZIKV was reported in October 2013 in French Polynesia[2] where a large population estimated around 28,000 (11% of whole population) suffered illness and sought medical care.[3] *Aedes* mosquito is a vector, which plays a crucial role for the transmission of ZIKV. It has been reported that the virus infection also transmits through sexual contacts with the infected person, as well as from mother to her babies. *Aedes* mosquitoes are also having a major role during the transmission of dengue fever and yellow fever. Mild headaches, joint pains, fever, malaise, and conjunctivitis and maculopapular rash are common symptoms of ZIKV infection. So far, it is a mild disease and only 20% of patients may develop symptoms. However, for pregnant women, especially those that become infected in the first trimester of pregnancy, Zika virus infection

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TOCO 246 Link

SPECIAL ARTICLE

Adequacy of Social Assistance Schemes during the COVID-19 Lockdown

Evidence from Delhi Slums

SAUDAMINI DAS, AJIT MISHRA

Multiple social assistance schemes were launched during the first lockdown to help the poor in India, but not all eligible households took advantage of them. Studying slum households in Delhi to evaluate the efficacy of nine central and state government schemes show that the average gain was only ₹992 per household for a month. If all eligible households had received benefits, this figure would have been ₹1,956 per household, making the distribution much fairer. The schemes decreased the indebtedness of households by an average of 12.24%, but this would have been 24% if all eligible households had been covered.

Social assistance schemes are an integral part of the functioning of economies that aim to reduce poverty and inequality. An assessment of current social assistance provisions reveals that the expenditure on social protections has gone from an unweighted average of just under 4% of the gross domestic product (GDP) in 2003–05 in Asia and the Pacific to 5.3% in 2015 (Barrientos 2019). According to the World Bank (2018), developing countries in general spend 1.5% of their GDP on social assistance programmes every year.

Using the World Bank data set ASPIRE (Atlas of Social Protection Indicators of Resilience and Equity), which covers 123 developing and transitioning countries, Parekh and Bandiera (2020) found that social assistance programmes had reached 2.7 billion people and lifted 7% of them out of poverty. In Zambia, for instance, cash transfers have proved to have multiplier effects on the economy (Handa et al 2018). Historical evidence shows social protection programmes have been executed in many countries to fight hunger and poverty. There are proven cases of such programmes addressing chronic poverty and social inequality by enhancing the livelihoods of the poor (Alderman and Yemtsov 2012; Hidrobo et al 2018). Strategy 2030 of the Asian Development Bank acknowledges the role of social protection investments in contributing to inclu[illegible]wth (ADB 2018).

Countries offer a myriad of social [illegible] services, such as cash transfers, social services for [illegible]oved, the elderly, and labour, and activat[illegible]et the diverse needs of marginalised p[illegible] directly protect individuals and fan[illegible] shock of a crisis and prevent it from l[illegible] effects on human capital, well-bein[illegible] support social cohesion and avoid [illegible] turn, could have major negative soci[illegible] consequences. They are a key tool to [illegible] not reverse the earlier achievements m[illegible]

The usefulness of social protection [illegible] more crucial than during the COVID-19 lockdown crisis. As such schemes are designed to reach the largest chunk of the population at the bottom of the social ladder, they are largely used for increased transfers to cushion the poor from economic impact. In response to the adverse effects of the lockdown and social distancing, and the need for special policies to curtail health impacts, 133 countries planned, introduced or adapted social protection and jobs programmes (Gentilini et al 2020). In most

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R010 247

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Adoption of Silver Nanoparticles Diagnosis and Therapeutic Management

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ABSTRACT

This review presented as uses of silver nanoparticles in different fields including medicines food health care, consumers, cosmetics and industrial purposes due to their unique physical and chemical properties. These includes optical thermal, high electrical conductivity and biological properties. The adoption of silver nanoparticles in medicines for antimicrobial and anti cancer therapy and also applied in the promotion of wound repair and bone healing or as the vaccine adjuvant antidiabetic agent and cosmetics products as antiseptics as well as preservatives to treat dermal problem. Thus silver nanoparticles have been developed as a superior product in the field of nanotechnology.

Keywords: Anticancer, Antimicrobial, Nanoparticles, Silver

INTRODUCTION

Nanotechnology has been rapidly growing field with numerous uses in science field. Silver nanoparticles are increasingly used in various field cancer therapy drug delivery diagnosis regenerative medicines cosmetics molecular imaging (Figure 1). AgNps are various shapes and size differing in optical properties and chemical sensors. Silver nanoparticles are being used in numerous technologies. AgNPs are various shape and size. The size can vary according to field of application in drug delivery are generally greater than 100 Nano meters to accommodate good amount of drug to be delivered similarly, the ideal size of the NPs for treatment of cancer is 70-200 nanometer (De Jong *et al.*, 2008) the fenestrations in the endothelium is a developing tumors is about 200-780 Nano meter (Gaumet *et al.*, 2008). The anti cancer property has been analysed *in vitro* against various type of cancer cells human hepatoma cells (Kawata *et al.*, 2011) lung cancer (Foldbjerg *et al.*, 2011) breast cancer (Gurunathan *et al.*, 2013) and cervical Cancer carcinoma (Vasanth *et al.*, 2014). They impart toxicity to cancer cells by decreasing mitochondrial function, reactive oxygen species production (ROS). The medical use of silver nanoparticles wound dressing creams and an antibiotics coating on medical devices. Wound dressings containing silver (Lu *et al.*, 2008). sulfadiazine or silver Nano materials may be used to treat external infection. Silver nanoparticle have been studied for their antimicrobial potential and have proven to be antibacterial agents against both Gram negative and Gram positive bacteria (Kim *et al.*, 2007; Sondi *et al.*, 2004) and antiviral agents against the HIV-1 (Sun *et al.*, 2005) hepatitis B virus (Lu *et al.*, 2008) respiratory syncytial virus (Sun, 2008) herpes simplex virus type 1 (Baram *et al.*, 2009) and monkey pox virus(Rogers *et al.*, 2008). The development of silver nanoparticle products is expanding. They are now used as part of clothing, food containers, wound dressings ointments, implant coating and other items (Arora *et al.*, 2008; Kamari *et al.*, 2008). Some silver nanoparticle applications have received approval from the US food and Drug Administration (Dunn *et al.*, 2004).

AgNPs enter the mammalian cells as aggregates mostly through endocytosis and can also Cross the blood brain due to their small size upon entering the cells in the endocytic vesicles they are distributed to cytoplasm and nucleus through intracellular trafficking (Greulich *et al.*, 2011). Due to difference in their physics chemical properties, they may affect different cellular processes. Silver nanoparticles are widely used in a variety of commercial products, there has only recently been major effort to study their effect on

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The impact of microplastics on marine environment: A review

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ARTICLE INFO

Keywords:
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ABSTRACT

With increase in population, waste management is becoming a major issue, further recent studies also highlighted another serious issue of marine litter. It was observed that the human generated waste is accumulating in marine environment, with presence of high amounts of microplastics in water bodies such as rivers, lakes, seas and oceans. Research has highlighted that U.V light and low temperature helps in the breakdown of normal plastic into smaller pieces, which we generally referred as microplastics and through runoff, it enters into marine environment. Generally microplastics composed of polyvinyl chloride (PVC), polyethylene terephthalate (PET), polystyrene (PS) and nylon etc. With lack of efficient management, the concentration of these microplastics is increasing at an alarming rate, which not only affect the marine environment, but it is directly affecting the marine life. Some recent investigations have shown that marine environment closer to urban areas have higher levels of microplastics and aquatic animals of these areas have shown high accumulation of microplastics in their tissues. Further, it has also been reported that the other water pollutants, such as dyes, heavy metals and other chemicals can easily attach with microplastics and these microplastics also act as a carrier of other pollutants in the body of aquatic animals, which further enters into food chain. The present review provides an overview of the microplastics, its fate and its toxic effects to environment and marine health.

1. Introduction

In the modern world, plastic has become an important part of human life and its uses are widespread in day to day activities (Jiang et al., 2019; Li et al., 2019; Zhang et al., 2020). As per recent available data, global plastic production was observed to be around 367 million metric tons in 2020 (Tiseo, 2021- Statista). Plastic is a synthetic material that possess multiple unique properties such as strength, durability, lightness etc (Li et al., 2019). And due to its multiple unique properties it has been widely used by the food industry, health-care manufacturer, electrical product industry, etc (Klemeš et al., 2020; Kosior and Mitchell, 2020). However, mismanagement in the process of plastic disposes-off methods has contributed largely towards accumulation of this non-degradable synthetic material into the water bodies like the sea, ponds, river, etc and soil (Chae and An, 2018; Li et al., 2018). Like other pollutants such as dye, heavy metals and organic pollutants, plastic material have been identified as a toxic component for the living being present in the aquatic bodies (Bhattacharya et al., 2020; Gola et al., 2020; Gola et al., 2017; Jain et al., 2020; Li et al., 2019). Recently Sivagami et al. (2021) identified the presence of microplastics from commonly used sea salts, the study also highlighted the complications associated with human health. It was estimated that around 4.8–12.7 million tons of plastic was dispose-off in the oceans and this amount is increasing day by day (Jambeck et al., 2015). Plastic material dispose-off in the water bodies varies greatly in their size, shape, density, chemical compositions, etc. The plastic material size ranging from 1 μM to 5 mm has been classified as microplastic (Cole et al., 2011). Further, microplastics present in water bodies have been divided into major groups i.e., primary microplastics and secondary microplastics (Auta et al., 2017). The major source of primary plastic includes, cosmetic products, personal-healthcare products, children's product, insect repellent etc (Chatterjee and Sharma, 2019). On the other hand, a major source of secondary plastics are fragmented products produced via physical fragmentation, biological degradation and chemical degradation of large sized plastic

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Roll 249

Ripples of Pandemic in Bishnupada Sethi's *Beyond Here and Other Poems*

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Abstract

These are the times of sudden deaths and harrowing distresses experienced by almost everyone in the society in the backdrop of coronavirus pandemic. The modern times have become a matter of questioning for its moral, social, cultural and political order as it stands exposed for all its vulnerabilities. This is certainly an issue which needs to be understood in its broader context. How is it that humankind is going to come to terms with this situation and be resilient when they are striving to survive it with hope and courage. In fact, there is a long literary tradition which reflects on the fears of humans towards infectious diseases and how they have dealt with it. In the first section, this article attempts to briefly trace the history of literary manifestations of pandemics all around the world in different times and spaces and in the next section it discusses at length Bishnupada Sethi's select poems from *Beyond Here and Other Poems* (2021) depicting various nuances of the pandemic.

Key words: Coronavirus, Pandemic, Lockdown, Pestilence, Epidemic

Literary manifestation of Pandemic:

There have been multiple perspectives on how humans have tried to understand diseases and pestilence. From Greek historian Thucydides (460–395 BCE), to the Latin poet Lucretius (99–55 BCE) who attempted to establish that diseases don't have supernatural origins, *The Decameron* by Giovanni Boccaccio (1313–1375) and *The Canterbury Tales* by Geoffrey Chaucer (1343–1400) made connections between diseases and human behaviour; Daniel Defoe's (1659–1731) *A Journal of the Plague Year* is a narrative of events and anecdotes, regarding the Great Plague of London of 1665. *The Betrothed* and *History of the Column of Infamy*, both written by Italian novelist Alessandro Manzoni (1785–1873) are descriptions of the plague that struck Milan around 1630. Mary Shelley's (1797–1851) *The Last Man* (1826) is one of the first apocalyptic novels telling of a future world that had been ravaged by a plague. Edgar Allan Poe's (1809–1849) *The Masque of the Red Death* (1842), Jack London's (18 o–1916) *The Scarlet Plague* (1912) are also in the backdrop of the diseases. Albert Camus' *The Plague* (1947) resonates very well with the present times where the possibility of collective resistance and cooperation amongst individuals is the key idea proposed by the author as one ideal way of dealing with pandemics and diseases. The idea that no single individual should be left alone should be the foundation of our social, cultural, economic and political order. In a more recent work

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Epistemological Marginality of Dalit World: Reading of Basudev Sunani's Novel *Mashani Sahara Dilli* (Delhi: The City of Tombs)

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Abstract:
Michael Foucault rightly said that knowledge is/has power. Certain ideas have dominated the Epistemological discourse. Certain ideas have become the normative while certain other kinds of ideas have been deliberately relegated to the margin. In Indian context, Brahmanism was created and shrewdly sustained for ages as the normative. However such hegemonic and regressive ideas never went unchallenged. Dalit Panthers Movement in 1970s gave a decisive turn to the Dalit Movement in India by creating a counter discourse against Brahmanism in a very systematic manner. Dalit literature which emerged from Dalit movement, is not just about expression of anger against the discursive idea of caste and casteism, or pain and misery of the community, but also it strongly lies in creating Dalit philosophy and Dalit Epistemology.
This paper will not only question the Epistemological world of the Brhamanism, it will also attempt to showcase the strong presence of Dalit Epistemology and Dalit Philosophy through Basudev Sunani's recent novel, *Mashani Sahara Dilli* (2020) (Delhi: The City of Tombs).

Key words: Epistemology, Brahmanism, Normative, Discursive, Counter discourse

Introduction:

Michael Foucault has rightly said that knowledge is/has power. People who have knowledge, have power too. And people who are in power create knowledge. Thus, only certain ideas have dominated the Epistemological discourse. Certain ideas have become the normative while certain other kinds of ideas have been deliberately relegated to the margin. History is a witness to the fact that ideas are created and sustained through their hegemonic dominance either through consent or through coercion in the words of Gramsci. In order to do so, people in power have manipulated the state apparatus in Althusser's idea and used them as mercenary.

In Indian context, Brahmanism was created and shrewdly sustained for ages as the normative. According to Brahmanism to know 'Brahma' is what is said to be 'knowledge'. Critiquing this narrow idea of knowledge, Kancha Ilhaiah Shepherd says, "the contours of that 'knowledge' are not wide enough to include all that goes with the word 'knowledge' as many philosophers and linguists of the world have used it- the knowledge of seed, fruit, bird, animal, soil, water, air, body and soul, and so on. None of the latter became part of that word as the Brahmans defined it." (Ilhaiah 2007 p.183). Exclusion was its philosophy and the idea of purity of pollution was its dominant socio-cultural practice. Such regressive

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Roll 251

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Intersectional Feminism in India

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Introduction:

The Constitution of India grants equality to women in all fields of life. But it is still only on paper. Yet a large number of women are either ill-equipped or not in a position to push themselves out of their traditionally unsatisfactory and unequal socio-economic conditions. They are still poor, uneducated and insufficiently trained. They are most often wrapped up in the struggle to maintain the family physically and emotionally and as a canon are discouraged from taking interest in affairs outside home and family matters.

Oppression and atrocities against women are still rampant. Patriarchy continues to be rooted in the social system in all parts of India, denying a majority of women the choice to decide on how they live. The dominant magnitude of community in a patriarchal sense ensures that women rarely have an independent say even in community issues. However, women are also responsible for the oppression of women.

Abstract:

Intersectional feminism a new term for India and Indian intellectuals. This is an intellectual fashion to talk about equality and the right of women but on the ground, nothing much is achieved. The economic depression due to COVID-19 has a very unequal impact on the communities around the world and it has increased discrimination and inequality. This must be understood and fight a mass of injustices and inequalities right now is very important. How to put all these problems and issues, to the people is another major issue. Intersectional feminism suggests new ways and approach to strive and reach a more equal and just future for all.

There has been a shift in policy approaches from the concept of 'welfare' in the seventies to 'development' in the eighties and now it is to 'empowerment' in the nineties. This process has been further accelerated with some sections of women becoming increasingly self-conscious of their discrimination in several areas of family and public life. They are also in a position to mobilize themselves on issues that can affect their overall position.

Keywords:

1- Empowerment, 2- discrimination, 3- intersectional, 4- feminism, 5- benefits, 6- literacy, 7- backwardness, 8- violence, 9- educate, 10- communities, 11- sustainable, 12- existing.

The Government of India had ushered in the new millennium by declaring the year 2001 as 'Women's Empowerment Year' to focus on a vision 'where women are equal partners like men'. The most familiar account of 'women's empowerment is the capability to apply full control over one's actions. The last decades have witnessed some major changes in the status and role of women in our society and nation

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Empowerment of Women in India

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Abstract: Subjugation of women in patriarchal society is a well-known fact. Her role in society is seen in relation to men who are considered primary. It implies that women's status and issues related to her are secondary. So she is kept away from development in various fields like social, educational, economic and political despite the equal status of all the citizens in the eyes of law. But the development and growth of a nation is not possible without participation of women in this process because they constitute a sizable population of the country despite all odds. Therefore, it is essential to create a secure and conducive environment for women to avail their participation in the process of development. In this paper I have tried to focus on the policies and schemes of government and other agencies to do their part in the direction of empowerment of women

Introduction:

In patriarchal societies women are given secondary position in relation to men. Socially constructed identity locates her within the four walls of house and limited access outside home. The division of labour is also based on gender. A woman is supposed to do all household chores and men are supposed to take care of all works outside home. It implies that men have access to all areas such as economic, political, education and commercial. Women's traditionally defined role gives her a very limited access to the areas available to men and that too is controlled by men. This discrimination of women in patriarchal social structure based on genderhampers the growth of a society and nation as a whole because women constitute a sizable population of a country. The situation is not different in India. Development of a country is not possible without the development of its women in every field. The welfare and empowerment of women cannot be ignored as they constitute sizable population of our country.

Empowerment of women means to create a conducive, safe and secure environment for women so that they can contribute to the development of a nation without any fear. This is possible when the process of empowering women takes places at different levels like constitutional, governmental, social. With the support and strength of our constitution, the issues related to women's development and empowerment are placed on the priority list by the government.In this paper,I propose to discuss brieflyall these aspects and the strategies for empowering women in India.

The principles of gender equality and protection of women's rights have been the prime concern in Indian thinking right from the days of independence. The country's concern in safe guarding the rights and privileges of women found its best expression in the Constitution of India. Our constitution prohibits any kind of discriminatory and ill practices. Article 14 of the Indian Constitution confers equal rights and opportunities on men and women in the political,economic and social spheres. Article 15 prohibits discrimination against any citizen on the grounds of sex, religion, race, caste etc. There is a provision of

Vol 257

अजय कुमार सिंह, *इतिहास दर्पण* [अंक 26(1), वर्ष प्रतिपदा, कलियुगाब्द 5123, ईस्वी सन् 2021], पृ. 114-122, ISSN 0974-3065, UGC-CARE Journal ID-101002593
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महात्मा गाँधी और महिला सुधार

अजय कुमार सिंह

गांधी जी के नारी चिंतन का क्षेत्र व्यापक था। गाँधी जी चाहते थे कि पुरूषों के साथ-साथ स्त्रियाँ भी देश की स्वतंत्रता के अहिंसक सत्याग्रह संग्राम में भाग लें और जो रचनात्मक कार्यक्रम इस आन्दोलन का अभिन्न अंग है उसको कार्यान्वित करने में अग्रणी हों। इसीलिए घर की स्त्रियों से मिलना उनके लिए आवश्यक ही था। उन्होंने तो जो भी प्रवृत्ति शुरू की उसमें स्त्रियों को बराबर शामिल किया।[1] सत्याग्रह जैसे संग्राम में अपार धीरज और शिकायत किये बगैर मूक कष्टसहन की शक्ति आवश्यक होती है और ये ऐसे गुण है जो पुरूषों की अपेक्षा स्त्रियों में ज्यादा होते है।[2] गाँधी जी का कहना था, 'स्त्रियों को अबला जाति कहना उसका अपमान है; ऐसा कहकर पुरूष स्त्रियों के प्रति अन्याय ही करते हैं। बल का अर्थ पशुबल है तो सचमुच स्त्री पुरूष की अपेक्षा कम पशु है, परन्तु बल का अर्थ नैतिक बल हो तो उसमें पुरूष से स्त्री कहीं अधिक श्रेष्ठ है।'[3] स्त्रियों के लिए और खासतौर घर में पुरूषों से अलग परदे में रहने वाली उच्चवर्गीय महिलाओं के लिए ऐसे राष्ट्रीय संग्राम में भाग लेना, जिसमें कि उन्हें पुरूषों के साथ मिलकर काम करना इसलिए सम्भव हुआ क्योंकि गाँधजी का चरित्र बड़ा शुद्ध और निष्कलंक था। पुरूषों को इस बात का पूरा विश्वास था कि गाँधीजी के मार्गदर्शन में चलने वाले अहिंसात्मक संग्राम में उनकी स्त्रियों की इज्जत पूरी तरह सुरक्षित है। इसीलिए उन्होंने अपनी स्त्रियों को उसमें भाग लेने देने में कोई संकोच नहीं किया।[4]

स्त्रियों का कहना था कि गाँधी जी हमारी शक्ति-अशक्ति दोनों जानते थे। हमारी शक्ति का इलाज करके हमारी शक्ति को मजबूत करने का काम उन्हीं का था।[5] गाँधी जी का कथन है कि-"मुझे तो गर्व है कि स्त्रियाँ अपनी प्रगति के लिए जो लड़ाई लड़ रही हैं उसमें मेरा योग सत्याग्रह के हथियार की खोज के साथ निश्चित रूप से शुरू हो गया।"[6] गाँधीजी ने नारी शक्ति का सर्वप्रथम प्रयोग अफ्रीका में किया। वही उन्होंने यह महसूस किया कि सत्याग्रह के लिए स्त्रियाँ कैसे नेतृत्व सम्भाल सकती है क्योंकि इसके लिए किसी किताबी शिक्षा की आवश्यकता नहीं होती बल्कि इसके लिए साहस की आवश्यकता है जो श्रद्धा और संघर्ष से उत्पन्न होती है।[7] महिलाओं के आन्दोलन में प्रवेश से इस सत्याग्रह को एक बड़ी माता में सफलता मिली। इससे गाँधीजी को यह सीख मिली कि बहुस से आन्दोलन हमारी स्त्रियों की स्थिति के कारण बीच में ही रूक जाते हैं। हमारे बहुत से कार्य उपयुक्त परिणाम नहीं उत्पन्न कर पाते।[8]

गाँधीजी ने राष्ट्रीय आन्दोलनों में स्त्रियों का शामिल करने की इस नयी नीति को भारत में भी लागू करने का निश्चय किया। 1921 के प्रथम असहयोग आन्दोलन में गाँधीजी ने चैतन्य रूप से महिलाओं को एक प्रयास के रूप में शामिल किया तथा उनके संघर्ष को राष्ट्रीय स्वतंत्रता संघर्ष के साथ जोड़ दिया।[9] असहयोग आन्दोलन के एक चरण में, कांग्रेसियों ने सरकार के शिक्षण संस्थानों, विधि न्यायालयों तथा विधानसभा का बहिष्कार करने को कहा तथा सरकार तथा उसके अन्यायपूर्ण विधि का शान्तिपूर्ण तरीके से मुकाबला करने को कहा। किन्तु स्वदेशी आन्दोलन के रचनात्मक कार्यक्रम के तहत् ब्रिटिश सामानों का बहिष्कार करना, सूत कातना तथा चरखे से बुने गये खादी के कपड़े पहनना, शराब की दुकानों पर धरना देना आदि शामिल था।[10] 1920 के इस स्वदेशी आन्दोलन में गूढ़ पारम्परिक परिवारों की महिलाओं ने बिना पर्दे के भाग लिया उन्होंने अत्याचार तथा उत्पीड़न के खिलाफ आवाज उठायी तथा कुल की भ्रान्त धारणा को त्याग दिया। गाँधीजी छुआछुत को पूर्ण रूप से नष्ट करने हेतु भी महिलाओं का प्रयोग किया।[11]

गाँधीजी का विश्वास था कि जब तक महिलायें सार्वजनिक जीवन में सक्रिय भाग नहीं लेंगी आजादी की लड़ाई सफलतापूर्वक संचालित नहीं की जा सकती वे जानते थे कि जब तक स्त्रियाँ सार्वजनिक जीवन में भाग नहीं लेगी तब तक देश का उद्धार नहीं हो सकेगा।[12] वह जानते थे कि यदि देश की आधी जनसंख्या निष्क्रिय तथा तटस्थ रहेगी तो कोई भी आन्दोलन सफल नहीं हो सकता।[13]

70-0 258

चौरी चौरा जनक्रांति और ब्रिटिश साम्राज्य की द्वेशपूर्ण न्यायिक प्रक्रिया

डॉ. अजय कुमार सिंह

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शोध सारांश

चौरी-चौरा की घटना भारतीय इतिहास का वह उपेक्षित अध्याय जो पर्याप्त महत्व रखते हुये भी अपने ठोस विश्लेषण से वंचित है। चौरी-चौरा के बारे में यदि किसी भी आम आदमी से पूछा जाए तो वह भारतीयों की अनुशासनहीनता और क्रूरता के विषय में ही कहेगा, जिसके परिणामस्वरूप 23 ब्रिटिश पुलिस कर्मियों को जीवित जला दिया गया। इस दुर्घटना के आधार पर गाँधी जी ने असहयोग आंदोलन को वापस ले लिया। भारत के स्वतंत्रता संग्राम में चौरी-चौरा के महत्व को समझने के लिए इसके परिप्रेक्ष्य और पृष्ठभूमि को समझना आवश्यक है। आजादी के बाद सरकार के द्वारा अमर शहीदों को सम्मानित करने के बजाय उसे उपेक्षित किया गया। इतिहास की कमजोरियों और चालाकियों के कारण बलिदानियों के शौर्य को कम आका गया। राष्ट्रीय आंदोलन की यह पहली घटना है जो अंग्रेजो के खिलाफ जबर्दस्त प्रतिरोध थी। चौरी-चौरा क्रांति एक अभूतपूर्व घटना थी। इस शोध-पत्र में चौरी-चौरा के मुकदमे और उसके फैसले तथा ब्रिटिश साम्राज्यवाद की भूमिका पर प्रकाश डालने का प्रयास किया गया है।

बीज शब्द : जलियांवाला बाग, चौरी-चौरा क्रांति, राष्ट्रवाद, ब्रिटिश साम्राज्यवाद, जनाक्रोश, 'स्व' का जागरण, बाबा राघव दास, मदन मोहन मालवीय

शोध विस्तार

चौरी-चौरा को यदि राष्ट्रीय फलक पर समझना है तो जलियांवाला बाग घटना को समझना होगा, जहां एक तथाकथित सुसंस्कृत राष्ट्र ने निहत्थे भारतीयों का कत्लेआम किया। जनाक्रोश राष्ट्रीय हुआ और असहयोग आंदोलन को इसके कारण आधार मिला। चौरी-चौरा का आक्रोश जलियांवाला बाग की घटना का प्रत्युत्तर था।

'अब्दुल्ला और अन्य बनाम सम्राट' (सेसन कोर्ट, गोरखपुर, 21 जून 1922-9 जनवरी, 1923)

यह मुकद्दमा अब्दुल्लाह व अन्य बनाम ब्रिटिश हुकमत के नाम से चला। न्याय की प्रक्रिया की दृष्टि से चौरी-चौरा घटना का न्यायधीशों द्वारा दिया गया फैसला ब्रिटिश साम्राज्यवाद के अनुकूल था। यह मुकद्दमा दिखावा मात्र था। फैसला तो पहले ही तय हो चुका का था। मुकद्दमें की पृष्ठभूमि तैयार करने के लिए डी.आई.जी. सैण्ड ने पुलिस और गुप्तचर विभाग को जाँच सौंपा। तमाम सबूतों, चित्रों[1] एवं चौरी चौरा घटना का पूरा विवरण भारत सरकार के मुख्य सचिव के भेजा गया।[2] 24 मार्च 1922 को पुलिस ने 273 व्यक्तियों का विभिन्न आरोपों एवं धाराओं के अर्न्तगत चालान किया।[3] जिसमें से 217 व्यक्ति पहले से ही गिरफ्तार और 56 व्यक्ति फरार थे। जेल के अन्दर ही 25 मार्च 1922 को घटना की प्राथमिक सुनवाई मजिस्ट्रेट एम0 बी0 दीक्षित ने प्रारम्भ किया।[4] मजिस्ट्रेट ने 18 जून 1922 को 228 व्यक्तियों को धारा 120 (सम्राट के खिलाफ बगावत), 147, 149, 302 (हत्या), 149/395 (डकैती), 435 (आगजनी), 149/332 (सरमारी कर्मचारी पर प्रहार), 412/125 (तार एक्ट) और 126 (रेलवे एक्ट) के अन्तर्गत अभियुक्तों को सेशन कोर्ट को सौंप दिया। इन 228 अभियुक्तों में से दो मर चुके थे तथा एक अभियुक्त पुलिस का मुखविर हो जाने के कारण उसका मुकद्दमा वापस ले लिया गया।

21 जून 1922 को सेशन जज एच. ई. होम्स के न्यायालय में 225[5] लोगों पर मुकद्दमें की कार्यवाही प्रारम्भ हुई जिसमें 23 अक्टूबर तक गवाहियाँ होती रहीं। पुलिस अभियुक्तों पर अभियोग सिद्ध करने के लिए अनेक झूठी गवाहियों का सहारा लिया। इस मुकद्दमें में सरकारी गवाह चार प्रकार के थे-

1. वे अभियुक्त जो सरकार के मुखविर हो गये थे।
2. वे पुलिस कर्मचारी और उनके व्यक्तिगत नौकर, जो बच गये थे।
3. पोस्ट आफिस और रेलवे कर्मचारी।
4. स्थानीय जमींदार और उनके कारिन्दे आदि।

इन गवाहों पर पुलिस ने दबाव डालकर, अपनी इच्छानुसार बयान दिलवाया था।[6] गवाहियों के अलावा पुलिस ने गुप्तचर विभाग के छायाकार द्वारा खींचे गये घटनास्थल के चित्रों को भी सबूत के रूप में पेश किया था।

सरकार ने अपने तर्कों को जोरदार ढ़ग से रखने के लिए अलीगढ़ से सरकारी बैरिस्टर मिस्टर कादरी को नियुक्त किया था। गोरखपुर के वकील सरकार खान मुहम्मद जकी के अलावा सुल्तानपुर के कोर्ट इंस्पेक्टर शिवनाथ सिंह उनकी सहायता के लिए नियुक्त थे। न्यायालय के समक्ष पुलिस द्वारा पेश किए

Y00 259

चौरी चौरा जनक्रांति एवं असहयोग आन्दोलन स्थगन पर प्रतिक्रियाएँ

अजय कुमार सिंह

पूर्वांचल का चौरी चौरा जनविद्रोह भारतीय स्वतंत्रता आन्दोलन की एक ऐसी घटना थी, जिसने ब्रिटिश सरकार और उसके प्रशासन को वर्षों तक आंतकित और भयभीत किये रखा। इस विद्रोह ने सामाजिक संरचना को भी प्रभावित किया। चौरी चौरा जनविद्रोह के परिणामों ने ब्रिटिश सत्ता के आत्मबल को हिला दिया था। चौरी चौरा घटना का समाचार मिलते ही महात्मा गाँधी ने इसकी निन्दा की और इसी को आधार बनाकर 12 फरवरी, 1922 को बारदोली में हुई कांग्रेस की बैठक में असहयोग आन्दोलन को स्थगित करने का निर्णय लिया। जबकि यह आन्दोलन ब्रिटिश सरकार के खिलाफ पूरे देश में बड़ा रूप ले चुका था जिसे स्वयं गाँधीजी ने स्वीकार किया है। इस घटना को लेकर गाँधी जी ने यंग इण्डिया में लिखा "आन्दोलन को हिंसक होने से बचाने के लिए मैं हर एक अपमान, हर एक यातनापूर्ण बहिष्कार, यहाँ तक कि मौत भी सहने को तैयार हूँ।"[1]

गोरखपुर का गुनाह

..... गोरखपुर की दुर्घटना के सम्बन्ध में श्री गोसांई "नवजीवन" में लिखते हैं-" इस दुर्घटना का हाल सुनकर मेरा और प्रत्येक समझदार आदमी का सिर नीचे झुक जाता है। बारदोली के शुभ आरम्भ के लिए यह अपशकुन है। जो लोग शान्ति के पुजारी हैं उन्हें अशान्ति की पूजनेवाली सरकार और लोक-समाज दोनों से असहयोग करना पड़ेगा। जब हमारे आदमी मरते हैं तब मेरा दिल नहीं धड़कता अथवा यदि धड़कता है तो मैं उसे दबा सकता हूँ। पर जब किसी एक भी सहयोगी का खून हो जाता है तब मुझे शर्म मालूम होती है और हमारी उन्नति के विषय में भय उत्पन्न हो जाता है।

यह संग्राम नये ढंग का है। जो शान्ति के माने जाते हैं उन्हें अपनी आत्मा को जोर करनी पड़ेगी। उन्हें शान्ति का विस्तार करना पड़ेगा। इस लड़ाई का उद्देश गैर बढ़ाना नहीं, गैर घटाना है। यह लड़ाई मनुष्यों को जुदा करने के लिए नहीं बल्कि एकत्र करने के लिए शुरू की गई है। गोरखपुर जिले के लोगों के इस पाप का सब से बड़ा जिम्मेदार मैं हूँ। पर प्रत्येक शुद्ध असहयोगी भी है। हम सबको उसका मुकाबला करना पड़ेगा। ईश्वर, सत्याग्रहियों को और असहयोगियों को शक्ति दे!

मो० क० गांधी

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Arbuscular mycorrhizal fungi mitigate drought stress in citrus by modulating root microenvironment

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ABSTRACT

This study aimed to evaluate effects of *Funneliformis mosseae* on plant growth and root exudate compositions and contents, soil and root phosphatase activity, soil glomalin concentrations, and thus soil aggregate stability and distribution in trifoliate orange under well-watered (75% of maximum water holding capacity) and drought stress (55% of maximum water holding capacity) conditions. After eight weeks of drought treatment, mycorrhizal fungal inoculation improved plant growth and exhibited altered composition of root exudates than non-inoculated treatment. Mycorrhizal fungal inoculation dramatically increased the relative abundance of phenolics (e.g., 2 H,8 H-Benzo[1,2-b:3,4-b'] dipyran-2-one,8,8-dimethyl), terpenoids (e.g., geijerene), and acids (n-hexadecanoic acid), while notably reduced the relative abundance of alkanes (e.g., tridecane, 2-methyl-), esters (e.g., hexanedioic acid and dimethyl ester), and amides (e.g.,13-docosenamide) in root exudates. Mycorrhizal fungal colonization profoundly increased easily extractable and total glomalin-related soil protein levels under two soil water regimes, which cemented soil macroaggregate (2–4 mm size) formation, thereby, improving soil aggregate stability. Mycorrhizal fungal-inoculated plants represented higher soil acid, alkaline and total phosphatase activities, irrespective of well-watered and drought treatment. The results suggest that mycorrhizal plants had improved root microenvironment to mitigate drought damage through changes in root exudate components along with glomalin, phosphatase, and soil aggregate stability in the mycorrhizosphere.

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KEYWORDS
Aggregate stability; arbuscular mycorrhiza; glomalin; phosphatase; root exudate

Introduction

Drought stress (DS) is one of the abiotic stresses that severely limit the growth and yield of crops (Zhang et al. 2018). Citrus is a subtropical fruit tree and is often subjected to soil DS in arid and semi-arid regions, thereby, inhibiting citrus productivity. Soil arbuscular mycorrhizal fungi (AMF) are capable of colonizing roots of most terrestrial plants to build a symbiotic association (Kiers and Heijden 2006). An important feature of AMF is to improve plant growth by mycorrhizal extraradical mycelium absorbing water and nutrients (Wu et al. 2013; Zou et al. 2020). Moreover, mycorrhizal hyphae are directly involved in the absorption and transfer of water (Zhang et al. 2018). Previous studies also indicated positive roles of AMF inoculation in antioxidant production, polyamines,

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Synthetic Approach, Structural Performance and *in vitro* Antibacterial Activity: Nitrogen and Oxygen Donor Atoms containing Bidentate Schiff Base Ligand and its Mononuclear Complexation with Co(II) and Cu(II) Metal Ions

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A synthetic approach has been designed and followed for the synthesis of new bidentate Schiff base ligand 2-acetylthiophenenicotinic hydrazone (L) (which possessed nitrogen and oxygen donor atoms) and its Co(II) and Cu(II) mononuclear complexes. All the compounds were examined IR, ^{1}H NMR, mass, EPR, conductivity, elemental analysis, *etc*. Octahedral geometry has been assigned to all synthesized compounds on the basis of magnetic, IR and electronic spectral analysis. *In vitro* activity *i.e.* antibacterial (*E. coli* and *P. aeruginosa*) and antifungal (*A. niger*, *M. phasolina* and *P. glomerata*) had been examined for these compounds following well diffusion and poisoned food methods, respectively. During the performance of antifungal activity, antifungal agent was incorporated into the molten agar at various concentrations and mixed well. After performance of *in vitro* activity, it has been resulted out that metal(II) complexes exhibited remarkable activity than free ligand but less active compared to the standard drugs..

Keywords: Schiff base, Acetylthiophenenicotinic hydrazone, Metal(II) complex, Well diffusion method, Poisoned food method.

INTRODUCTION

Coordination chemistry is one of the important branch of chemistry and one of the most active research areas from the past decades to till now [1-3]. In the field of coordination chemistry in 1913, for the pioneering contribution of Werner, he received Nobel Prize [4]. From the time of Werner & Jorgenson, attentions of researchers have been increased in the field of coordination chemistry [5-8]. In this area, there has been growing awareness and interest to study the role of a wide range of organic molecules such as Schiff base ligands which contain nitrogen, oxygen and sulphur donor atoms and inorganic elements such as transition metal ions [9-12]. Some specifications like ease of use, a range of variety and structural variability make Schiff bases and their metal complexes are highly valuable [13,14]. The chelating process which involves binding of a ligand to a metal ion through two or more donor atoms (nitrogen, oxygen and sulphur) is a versatile method to realize this and may be present in different combination of donor atoms [15,16].

Assembly of metal-organic framework (*i.e.* ligand metal complexation) with various network topologies had been prepared from the metal-organic building block [17]. The applications of these synthesized ligands and complexes have been highly explored in inorganic, organic and biological fields [18-22]. Additionally, bidentate Schiff base ligands which possessed N,O-donor atoms in their framework are well known and applicable for the formation of their mononuclear complexes and also screened for their significance biological applications [23-27]. Usually, N,O-donor Schiff bases can be derived by condensing the aldehydes or ketones with varied primary amines/amino acids [28-30]. From a long time, the organic frame work for N and O donor atoms containing ligands had been prepared by use of nicotinic hydrazide as an amine moiety [31,32]. Synthesized Schiff base ligands are their metal complexes considered on a

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Prof. Sadhna Babbar
row 269 Link

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ORIGINAL ARTICLE

Authentication and deciphering interrelationships of *Hippophae* species using DNA barcodes

Saloni Malik[1] · Sadhana Babbar[2] · Manju Chaudhary[3] · Suman Sharma[4] · Soom N. Raina[3] · Shashi B. Babbar[1]

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Abstract

In India, the genus *Hippophae* is represented by three species viz., *H. rhamnoides* subsp. *turkestanica*, *H. tibetana* and *H. salicifolia*. These are distributed in Himachal Pradesh (HP), Uttarakhand (UK) and Sikkim (SK). In vegetative or fragmented state, these species are difficult to identify. In an earlier investigation, based on the analyses of accessions of *Hippophae* collected from the three states of India and some procured from abroad, an unexpected result was obtained about the taxonomic status of some accessions of a species collected from Uttarakhand. To verify this, four DNA barcode markers (ITS, *matK*, *rbcL* and *rpoC1*) were applied to the same 80 accessions. The initial analyses based on Neighbour joining (NJ) trees, raised doubts about the identification of some accessions of *H. salicifolia* and *H. tibetana* from HP, and *H. rhamnoides* subsp. *turkestanica* from UK. Therefore, *matK* sequences of all these accessions were BLAST searched on NCBI and BOLD, and ITS sequences only on NCBI. This revealed that the accessions collected as *H. rhamnoides* subsp. *turkestanica* from UK were, in fact, *H. salicifolia*. Likewise, *H. salicifolia* collected from HP turned out to be *H. rhamnoides*. The correct identity of four accessions collected from HP as *H. tibetana* was *H. salicifolia*. In ITS and *matK* trees, constructed with corrected identities, all the three species segregated in different clades, while some subspecies of *H. rhamnoides* too occupied different branches. The three species could be easily distinguished on the basis *rpoC1* sequences also, though sub-species of *H. rhamnoides* could not be distinguished. Among the loci tested, *rbcL* sequences could not distinguish even the species. Thus, DNA barcoding, with ITS and *matK* as the markers, proved to be effective for the authentication of *Hippophae* species, in the absence of their voucher specimens. The apparent distinctive nature of *H. rhamnoides* subsp. *turkestanica* suggests the possibility of raising it to species level.

Keywords Sea buckthorn · DNA barcoding · Identification/authentication · Botanical identities

Introduction

The genus *Hippophae* L. is distributed widely in Northern Europe, Central Europe and Central Asia [27]. According to the recent classification, genus *Hippophae* (Sea buckthorn), belonging to the family Elaeagnaceae, is represented by seven species and eight subspecies [3]. The species delimited by Swenson and Bartish [35] were *H. rhamnoides* L. with seven subspecies, *H. salicifolia* D. Don., *H. neurocarpa* S. W. Liu & T. N. He with two subspecies, *H. tibetana* Schltdl., *H. litangensis* Y. S. Lian & X. L. Chen ex Swenson & Bartish, *H. goniocarpa* Y. S. Lian and X. L. Chen ex Swenson & Bartish and *H. gyantsensis* (Rousi) Y. S. Lian. The taxonomic treatment and relationship among taxa in this genus have remained in dispute [3, 27]. In 1909, only one species (*H. rhamnoides*) with three subspecies were recognized by Servettaz [29]. However, Rousi [27] raised the

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CONJUGATES OF ANTICANCER AGENTS WITH PEG (POLY ETHYLENE GLYCOL)

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ABSTRACT :

Soluble conjugates of low molecular weight drugs and high molecular weight proteins, peptides, or polymers are being investigated in several laboratories because of their potential therapeutic advantages compared to the free drug. Polymers in particulate carrier systems are widely used for enhancing drug efficacy, reducing toxicity, improving patient compliance, and inducing unique body distribution for targeting to malignant cells of specific cells. Among synthetic polymers, poly (ethylene glycol) (PEG) plays a stupendous role as a drug carrier. As a water-soluble, biocompatible, non-toxic, and non-immunogenic material, it exhibits favorable pharmacokinetics and tissue distribution. PEG conjugates of the anticancer agents' paclitaxel, camptothecin, and doxorubicinhave been designed to enhance the water-solubility and plasma half-life of the drugs.

INTRODUCTION :

In recent years, research and development in the field of Drug Delivery Systems (DDS) facilitating site specific therapy has achieved significant progression. Safe and nontoxic formulations of a cytotoxic drug based on a polymer, its site-specific delivery and specific activation of the cytotoxic biologically active compound at its target-tumor tissue or tumor cells-based on polymer micelles (Han et.al.2003, Kayak et.al.2000,Yasudaet.al.1999,Johari et.al. 1998, kataokan et.al. 1993, 2001,Yokohama et.al.1990,)coated micro- and nanoparticles (Fontana et.al.2001, Verrechaueret.al.) liposomes (Stearne et. al.2002,Carrion et.al. 2001,Gabizon et.al.1998,Sadzuka et.al.1997,Gabizonet.al.1997) and various prodrug systems (Ducan et.al.2001,Satchiet.al.2001,2002) including water-soluble polymer-drug conjugates (Li

YOW 302

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COMPARATIVE BIOCHEMICAL ALTERATION OF FISH EXPOSED TO ORGANOPHOSPHORUS PESTICIDE NUVAN

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Abstract

Fish can be directly or indirectly impacted by pesticides.Some long term exposure cause abnormalities or mutations in developing fish larvae.While acute exposure can cause immediate fish die offs. The present study was designed to compare the total proteinresponses in the liver and kidney of fresh water cat fish .Clarias batrachus exposed to organophosphorus pesticide nuvan.The fish Clarias batrachus were exposed to 1/10th(0.16 mg / l) and1/15th(0.10mg / l)of 96 hrs.LC50 value of nuvan for the period of 10 and 20 days.The total protein estimated from control and experimental group of fishes. Total protein in theliver of control group of fishes were 20.5+-0.346 mg/100mg and kidney was 12.9+- 0.25mg/100mg.Nuvan exposed cat fish have shown a decrease level of protein liver and kidney not only after 10 days but also after 20 days.The decrease in the protein content suggested an increase in the proteolytic activity and possible utilization.

Keywords: *Nuvan Toxicology Clarias batrachus.*

Introduction

Physiological and biochemical measurement have not been as integral part of aquatic toxicology as they have been of mammalian toxicology. However they are attracting more interest,as aquatic toxicologist find a need for short term tests that predict long term toxicity.The number of toxic chemicals and the cost of conducting chronic toxicity studies are increasing. Although they will not replace acute or chronic toxicity tests that determine effects on survival,growth and reproduction,in the laboratory, physiological and biochemical measurement will be useful in setting priorities for determining the chemicals for which more comprehensive hazard assessment is needed.Thy will also be useful in field investigation s to determine the toxicological significance of contaminant residues in wild fish populations. Aquatic toxicologist need better diagnostic tools in order to understand the impact of chemicals on fish and other aquatic organisms.Estimation of total protein and other contents of various tissues of internal organs are considered as an important factors for toxicological studies.Protein are the essential constituent s of living cells.There are no living structure known that does not have protein s as constituents.They are not only responsible for comprising the structure of the cell but are connected with every function of the cell including tissue building, fair,catalysis of enzymes reactions,transport of organic molecule,regulation of metabolism,movement and defence reactions. Protein regulate the integration of physiological function in the body through hormones. IN addition these proteins,like carbohydrates and fats,serve as a source of energy to the body.

Amino acid are the central importance in the metabolism of all organisms principally because they are the precursors of protein.Thaerange of protein functions was determined by the sequential arrangement of amino acids in the protein molecules, the presence of polar and non polar groups,acid base properties and stereo chemistry of the amino acids.Environmental agents play a vital role in altering the metabolism of an organism (Knox and Greengard,1965.Alteration in the environmental factors induced changes in the physiological and biochemical aspects of the animals and the animals may withstand the environmental perturbation to a certain extended and may try to adjust or succumb to the changed environment(Fry1971,Hoar1991).The phenomenon of decreased level of protein in liver and kidney of fish due to pesticides exposure is evident in Saccobranchus fossilise(Verma et.al.,1983)Channa punctatus (Ram and Sathyanasan,1985,Jyothi et.al.1989,Baigh et al 1991,Sastri and Dasgupta 1991), inLabeo. rohita and Cirrhinus mrigala(Medda

Poco 304

BAUL, BHAKTI AND LALON SHAH

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Background:
Indian folk music and songs are on the way out. They are systematically smashed, watered down and cul turally appropriated by those who don't understand music, art and culture. Now these great traditions and legacies have been replaced by sick Bollywood music and songs. Things change all the time. It is a nat ural process. However, we have to preserve our cultural wealth and heritage. We should not let them die. They should not be left in those hands who have no knowledge of music and culture or fabricate music and stories to suit their business and agenda. In this way, that rich wealth will be gone forever.
In India, music and songs are culturally used by those powers, now those who do not know anything about the history of music, songs, singers and poets. Unfortunately, *Baul* music and songs also fell victim to this system. People have almost forgotten this great cultural tradition. It remains only in parts of Bengal and Assam and was com pletely destroyed in Islamic Bangladesh in which it was dancing with the melodious music and *Baul* songs.

Keywords: 1-*Baul*, 2-Music, 3-Culture, 3-Dance, 4-*Sufism*, 5-*Bhakti*, 6-Life, 7-Knowledge, 8-God, 9-Krishna, 10- Devotion, 11 - *guru*, 12-*Iktara*.

Introduction:
India has a rich and diverse culture. Indian folk music and songs are very diverse.
Indian languages have dialects, so music and songs are widely sung in this vast nation. The Indians have spread this rich tradition all over the world. No other nation or culture is as rich and varied as the Indian or *Sanatan* culture is. With the spread of Islam in Pakistan, Afghanistan, Bangladesh, Iran, Kashmir, etc., this wealth and diversity died and was destroyed. The *Bauls* were a tribe of mysterious folk sects living in Bengal and what is now Indian Bengal, Assam and Bangladesh.

The songs they sing are often widely known as *Baul-gaan (Baul* songs). The *Baul* of Bengal was a music, dance and song originated and popular in India in the 18th, 19th and early 20th centuries. Indian saints perform a type of music and dance using *khamak*, *ektara* and *dotara*. The word *Baul* is derived from the Sanskrit word *batul*, which means madness inspired by the gods. Madness here means merging into God or His *bhakti*. They are basically Hindu mystical saints. They were influenced by the Hindu tantric sect of the *Kartabhajas*. The *Bauls* are like nomads who travel to purify themselves internally, *Maner Manush* (Man of Heart).
"The origin of the word Baul dates back to the 15th century. It is mentioned by Vrindavanadas and Krishnadas Kaviraj in *Chaitanya-Bhagavata* and *Chaitanya Charitamrita* ("On the *Baul* Tradition") respectively. The songs they sing are often widely known as *Baul-gaan (Baul* songs). However, some scholars believe the word is also used as a synonym for " mad". Some scholars, such as Shashibhusan Das Gupta, trace the word back to *Vatula*, which means "divinely inspired madness", and *Vyakula*, whic h means "impatient longing". This meaning corresponds to *Baul's* philosophy, which revolves around the opposite path, the method by which *Baul* ultimately achieves union with God ("About *Baul*

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Bonding Ability of Isopthalic Acid-*bis*(thiosemicarbozone) to Manganese and Cobalt Metal Ions: Preparation, Spectral Investigation, Computational and *in vitro* Antipathogenic Screening

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Manganese and cobalt complexes have been designed and prepared with a tetradentate ligand *i.e.* isopthalic acid-*bis*(thiosemicarbozone) (IPBT), which bind to metal ions *via* donor atoms present in ligand. Different spectroscopic techniques *viz.* nuclear magnetic resonance, infrared, mass, electronic spin resonance and analytical studies have been used to determine the chemical composition of synthesized IPBT and its Mn(II) and Co(II) complexes. The spectroscopic data exposed that IPBT behaves in a tetradentate (N_2S_2) mode by having ability to bind with metal ions through N_2S_2 atoms. An octahedral structure for manganese and cobalt complexes has been suggested on the basis of spectroscopic as well as analytical studies. The ligand (IPBT) and its metal(II) complexes have been screened to determine their antipathogenic activity against some selective microorganisms *S. aureus*, *P. aeruginosa*, *E. coli*, *A. niger*, *M. phaseolina* and *P. glomerata*. In this experimental work, well diffusion and poisoned food techniques have been introduced for screening purpose and as standard drugs neomycin and chlorothalonil have been used. Data for antipathogenic screening exposed that metal complexes exerted higher activity towards all examined microbes (bacteria and fungi) even than ligand.

Keywords: Tetradentate ligand, Isopthalic acid, Metal complexes, Antimicrobial screening, Poisoned food method.

INTRODUCTION

Over the last decade, in the field of coordination chemistry, there has been rising alertness and attention to study the role of a broad range of inorganic elements such as transition metal ions and organic ligands, which contain donor atoms *i.e.* nitrogen, oxygen and sulphur [1]. Metal ions are vital factor in the structural association with biomolecules and operating functional processes in the genetic and metabolic system [2]. Transition metal complexes with ligands play an important role in biological systems [3]. Ligands which contain thiosemicarbazide moiety have emerged as the most preferred compounds [4-6]. Thiosemicarbazide is a privileged moiety with significant biological properties such as antimicrobial [7-11], anticancer [12, 13], anti-tumor [14] DNA binding and DNA cleavage [15], *etc.*

Moreover, tetradentate ligands, which have thiosemicarbazide in their structure and self possessed of nitrogen and sulphur donor atom framework have been acknowledged as important chelates, which have significance applications in various fields such as biological, polymer, sensor, dyes, catalytic, *etc.* [16-18]. Form the literature survey, it has been also resulted out that not only these free ligands but also their manganese and cobalt complexes also exhibited an essential role in the field of biological activities [19,20]. It has been observed that metal complexes of ligands exhibited higher activity or more inhibition against the growth of microorganisms comparatively free ligands [21,22]. From a long time, the organic frame work for nitrogen and sulphur donor atoms containing ligands had been prepared by use of thiosemicarbozide as an amine moiety [23]. Keeping in mind these significance applications of these type of comp-

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RESEARCH PAPER

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Effect of *Rhizoglomus fasciculatum* and *Paecilomyces lilacinus* in the biocontrol of root-knot nematode, *Meloidogyne incognita* in *Capsicum annuum* L

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ABSTRACT

Root-knot nematodes possess a major threat to agricultural production of various crops worldwide. The intensive use of chemical nematicides to control plant parasitic nematodes has adverse effects on our environment and human health. Owing to the importance of developing new strategies, an experiment was conducted to reveal the influence of arbuscular mycorrhizal fungus, *Rhizoglomus fasciculatum* and nematophagous fungus, *Paecilomyces lilacinus* alone or in combination with various organic amendments such as superphosphate, green and organic manure to control the infection of root-knot nematode *Meloidogyne incognita* in a vegetable crop *Capsicum annuum*. These two fungi along with soil amendments significantly improved plant growth and fruit yield and effectively controlled infection of *M. incognita*. The dual inoculation of *P. lilacinus* and *R. fasciculatum* reduced the number of galls and egg masses, thereby revealing the controlled proliferation of *M. incognita* infection in *C. annuum* roots. The beneficial effect of these fungi further increased on supplementation of soil with organic or green manures. Inoculation of *C. annuum* with these two fungi showed a significant increase in egg parasitization; however, maximum effect was detected on dual inoculation. Amongst the soil amendments, the best response was obtained in case of green manure along with mycorrhizal fungus and *P. lilacinus*. Present study revealed that nematophagous and AM fungi, in combination with green manure were effective in controlling *M. incognita*, thus suggesting the use of such agents for biocontrol of plant parasitic nematodes in agriculture.

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KEYWORDS
Arbuscular mycorrhiza; nematodes; egg parasite; biocontrol; soil amendment; nematophagous fungi

Introduction

Plant parasitic nematodes, the unseen enemies, are a diverse group of obligate pathogens obtaining nutrition from the cytoplasm of living cells of the host. All major field crops, most vegetables, certain cash crops, ornamental plants and many weeds or grasses are susceptible to one or more species of root-knot nematodes [1]. An estimate of $157 billion has been attributed to the damages occurred by plant parasitic nematodes [2], which is more significant than the damage caused by invasive insects, which is approximately $70 billion [3]. The full extent of worldwide nematode damage is likely to be miscalculated, since growers are often unaware of their presence because the symptoms caused in the plant are often nonspecific [4,5].

Nematodes are usually small soil-borne pathogens feeding on the different parts of a plant via roots, stems, leaves, flowers and seeds, although most species feed on roots [6]. They feed through a protrusible stylet that penetrates the plant cells [4,7]. Based on their feeding habitats, plant-parasitic nematodes are categorized as either ectoparasitic or endoparasitic. Sedentary endoparasitic nematodes consist of the root-knot (*Meloidogyne* spp.) and cyst nematodes (*Heterodera* and *Globodera* spp.), which are the most common nematodes in terms of crop losses [4].

Root-knot nematodes disrupt the normal processes of plant root growth and its soil exploration capacity for both water and nutrients; consequently, the infected plant shows above ground symptoms, such as stunting, yellowing, excessive wilting and reduced yield [8].

So far, several strategies have been developed for the control of nematode in agriculture [9]; however, strategies associated with biocontrol are proposed as a much safer alternative and highly practicable for plant-parasitic nematodes management [10]. *Paecilomyces lilacinus* has been proven as an effective potential biocontrol agent for root-knot and cyst

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ASSESSMENT OF GANGA RIVER

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ABSTRACT: To Hindus ,the Ganges river is the most sacred body of the water in the word with scared pilgrimage sites and cities along its banks. Many of the stories from Hindu scripture occurred along the river and more than once Hindu gods drank from it.The river itself is also the embodiment of the goddess Ganga, daughter of Himalaya, the mountain god. Gangs Jal the name of the waters of the Ganga possesses sacred power capable of cleansing the soul and healing the body. Hindus use the water to cleanse ritual objects , symbolically purify themselves before ritual objects, symbolically purify themselves before rituals and prayers and even drink the water to help with illnesses. Now is depleted in flow and polluted due to discharge of untreated municipal and industrial waste, dams and barrages, floral offerings, cremation of dead bodies on its bank. The present review shows that, discernable improvementdespite the problem of operation and maintenance the river water quality over the pre gap period. There is a fluctuating trend of water quality attributed to the flow conditions in the river which depends on rainfall and water abstraction.

Keywords: Ganga river,RiverPollution,India,UnethicalPractice.

INTRODUCTION:

The Ganges is the largest river in India with a profound religious significance. It is known by several names,includingJahnavi,Ganga,Shubhra,Sapteshwari, Nikita,Bhagirathi ,Alaknanda and Vishnupati.Nothing can match the everlasting divinity of the holy river Ganga,the sacred river is true mother by all means. The pollution of the Ganga is a huge challenge .It has already shown Its adverse impact on the environment, ecosystem, and animal and human health.About 40% of India's population across 11 states is dependent on the river for its water,but unfortunately the water is severely polluted with industrial contaminated and human waste.Ganga is one of the major rivers flowing east through the gangeticplain of North India and finally into BangladeshThe river flows through India, Nepal,Bangladesh.Itrises 2510 km in the western Himalayas in the Uttarakhand state of India and drains into Sunderban Delta into Bay of Bengal.The 2510 km or 1557 km rivers originates at the Ganga glacier in the Indian state of Uttarakhand.The major cities along Ganga are HaridwarAllahabad,Kanpur,Patna,Vanarasi.Our national river is also one of the most polluted river in the country and one of the most threatened river basins in the world.The quality of Ganga's water is steadilyworsening.Now not only is the water unfit for drinking,but it would be harmful to use for agriculture purposes,Thelevel of coliform bacteria,a type of bacteria that indicates the purity of water,should be below 50 for drinking and below 5000 for agriculture use.The present level of coli form in the ganga atHaridwar is 5500.A study conducted by the Uttaranchal Environment protection and Pollution Control Board slotted river water into four categories,A being fit for drinking,B for bathing,C for agriculture and D is for excessive pollution level.Dueto the copious availability of water throughout the year it has played a major Role in the growth of Indian civilization and economy (Paul et. al 2013).It accounts for 25% of Indian's water resources .The Ganga basin is among the most heavily populated areas in the world with an average density of 520 persons/km/s(Das. et.al 2012).The basin sustain more than 300 million people in India,Nepal and Bangladesh(Gopal et. al.2000).The basin of river Ganga which has very rich heritage, cultural and religious values,drain about 10,60,000 km/square area and it is the fifth largest in the world(Welcommeet.al.1985) The river system drains about one fourth of the Indian subcontinents.In India the river Ganga passes along 29 classical cities ,23 class Ii cities and approximately 50approximately towns because of which different type wastes such as industrial,sewageect.are release into this mighty river ecosystem(Agrawal et.al.2010,Biswas et.al.2015).In present day river pollution is a serious and emerging problem in the majority of developing countries.Due to rapid industrialization, there has been an

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[^{99m}Tc-BBPA]: A possible SPECT agent to understand the role of 18-kDa translocator protein (PBR/TSPO) during neuro-glial interaction

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ABSTRACT

The translocator protein (TSPO, 18 kDa) is one of the most promising biomarker to understand the role of neuroinflammation in human as well as in different animal species. Here we report a new TSPO-selective ligand 2-(5-(2-(bis(pyridin-2-yl methyl)amino)acetamido)-2-oxobenzo[*d*] oxazol-3(2*H*)-yl)-*N*-methyl-*N*-phenyl-acetamide, **BBPA**, which is supposed to be a potential probe to understand the role of TSPO in neuro-glial interaction through SPECT modality.

The 18 kDa translocator protein (TSPO), is a known marker for neuroinflammation in CNS [1–4]. TSPO is found on outer mitochondrial membrane protein of immunomodulatory as well as steroid synthesising cells. Normally this protein is up regulated during neuroinflammation which is related to the microglial activation [5–9]. Development of radioligand for TSPO to study its role in activation of glial cells is one of the most critical issue of biomedical imaging. Different biomedical modalities have been explored to understand CNS like Magnetic resonance imaging (MRI) Positron emission tomography (PET) and single photon emission computed tomography (SPECT). Out of these SPECT is least explored modalities for such applications [10–12].

Among the radioisotopes used in SPECT imaging ^{99m}Tc is one of the best due to its ideal radiotracer properties (low radiation burden 141 keV and appropriate half life time $t_{1/2}$ = 6 h). Besides that ^{99m}Tc is readily available through simple elution from ^{99}Mo/^{99m}Tc-generator. In recent past, we have developed acetamidobenzoxazolone based pharmacophore to evaluate TSPO through PET modalities. Two of the analogues based on this pharmacophore, [^{11}C]MBMP and [^{18}F]FEBMP were analyzed in vitro/in vivo on different animal models and on human brain sections [13–24]. In last thirty years many generations of the TSPO ligands have been developed for PET imaging but very few have been reported for ^{99m}Tc-labeled SPECT imaging [25–27]. Previously ^{99m}Tc-labeled bifunctional chelate based on imidazopyridine and Quinazoline have been assessed for binding with TSPO and it showed very good efficacy as SPECT marker. The affinity toward TSPO did not alter much after completion [28–30].

Taking lead from our work in PET imaging for acetamidobenzoxazolone pharmacophore, we have designed and evaluated a new TSPO-selective ligand, 2-(5-(2-(bis(pyridin-2-yl methyl)amino)acetamido)-2-oxobenzo[*d*]oxazol-3(2*H*)-yl)-*N*-methyl-*N*-phenylacetamide, BBPA for SPECT imaging.

Reagents and Conditions: (i) CDI, THF, reflux, 99%; (ii) Bromoacetyl Bromide, Et_3N, DCM, 0 °C - rt, 66%; (iii) K_2CO_3, DMF, 0 °C - rt, 69%; (iv) Pd/C, MeOH, rt, 70%; (v) Bromoacetyl Bromide, Et_3N, DCM, 0 °C - rt, 87%; (vi) 2-pyridine carboxaldehyde, $NaBH_4$, EtOH, 0 °C - reflux, 72%; (vii) K_2CO_3, DMF, 0 °C - rt, 54%.

Scheme 1 describes the complete synthesis of [^{99m}Tc-BBPA]. Cyclization of commercially available 2-amino phenol derivatives (1) with CDI in THF at 80 °C for 4–6 hrs afforded benzo[*d*]oxazol-2(3*H*)-one derivatives (2) in 92% yields. To attain convergent methodology in

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Alternating exosomes and their mimetics as an emergent strategy for targeted cancer therapy

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Exosomes, a subtype of the class of extracellular vesicles and nano-sized particles, have a specific membrane structure that makes them an alternative proposition to combat with cancer through slight modification. As constituents of all most all the primary body fluids, exosomes establish the status of intercellular communication. Exosomes have specific proteins/mRNAs and miRNAs which serve as biomarkers, imparting a prognostic tool in clinical and disease pathologies. They have efficient intrinsic targeting potential and efficacy. Engineered exosomes are employed to deliver therapeutic cargos to the targeted tumor cell or the recipient. Exosomes from cancer cells bring about changes in fibroblast via TGFβ/Smad pathway, augmenting the tumor growth. These extracellular vesicles are multidimensional in terms of the functions that they perform. We herein discuss the uptake and biogenesis of exosomes, their role in various facets of cancer studies, cell-to-cell communication and modification for therapeutic and diagnostic use.

KEYWORDS

exosome, targeted delivery, exosome mimetics, biomarker, therapeutics

Introduction

Exosomes are recognized as a subtype of the class of Extracellular vesicles (EVs). These nano-sized particles appear as small, flattened hemispheres with a diameter of 40–150 nm and a density of 1.13–1.21 g/ml (Kalluri, 2016; Gilligan and Dwyer, 2017; Kalimuthu et al., 2018; You et al., 2018; Gluszko et al., 2019; Zhao and Xie, 2019). The orientation of the surrounding lipid bilayer membrane can be regarded unique as it serves

Abbreviations: ARF, ADP ribosylation factor; LAMP, lysosome-associated membrane protein; MHC, major histocompatibility complex; MUC1, mucin 1; PGK-1, phosphoglycerate kinase 1; TfR, transferrin receptor.

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REVIEW ARTICLE

CRISPR-Cas9: A Potent Gene-editing Tool for the Treatment of Cancer

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Abstract: The prokaryotic adaptive immune system has clustered regularly interspaced short palindromic repeat. CRISPR-associated protein (CRISPR-Cas) genome editing systems have been harnessed. A robust programmed technique for efficient and accurate genome editing and gene targeting has been developed. Engineered cell therapy, *in vivo* gene therapy, animal modeling, and cancer diagnosis and treatment are all possible applications of this ground-breaking approach. Multiple genetic and epigenetic changes in cancer cells induce malignant cell growth and provide chemoresistance. The capacity to repair or ablate such mutations has enormous potential in the fight against cancer. The CRISPR-Cas9 genome editing method has recently become popular in cancer treatment research due to its excellent efficiency and accuracy. The preceding study has shown therapeutic potential in expanding our anticancer treatments by using CRISPR-Cas9 to directly target cancer cell genomic DNA in cellular and animal cancer models. In addition, CRISPR-Cas9 can combat oncogenic infections and test anticancer medicines. It may design immune cells and oncolytic viruses for cancer immunotherapeutic applications. In this review, these preclinical CRISPR-Cas9-based cancer therapeutic techniques are summarised, along with the hurdles and advancements in converting therapeutic CRISPR-Cas9 into clinical use. It will increase their applicability in cancer research.

Keywords: CRISPR-Cas9, cancer, epigenetic, abnormalities, oncogenic infections, mutations.

1. INTRODUCTION

CRISPR-Cas9 is an RNA-guided endonuclease that has introduced the desired manipulations in the target genomic sequence and has revolutionized the ability to edit the genome. This is a flexible methodology and can target multiple loci simultaneously.

Genetic engineering with CRISPR is advanced in several aspects, including precise targeting, efficient and effective outcomes, and fast and affordable to the public [1]. Although many other techniques are being used for genetic engineering, such as Zinc Finger Nucleases (ZFNs) and Transcription activator-like Effector Nucleases (TALENs), CRISPR remains superior to them. TALEN is an effective biological tool with fewer off-targeting approaches due to high specificity, but it is less efficient than the recent tool, CRISPR [2]. Similarly, ZFN has two approaches, one with homodimeric ZFN and the other with heterodimer ZFN. THE homodimeric ZFN approach for genetic engineering is significantly less efficient than the heterodimeric ZFN approach and CRISPR. In contrast, heterodimeric ZFN and CRISPR are strong competitors with very little difference in affectivity [3]. However, CRISPR offers a cheap and effective technique and is being exploited for many applications.

CRISPR-Cas9 technology is considered one of the novel strategies to combat cancer and is an amalgamation of several genetic mutations. Cancer patients develop resistance to conventional therapies due to genetic and epigenetic modulations. Given this abundance, it is critical to develop a strategy to decipher transcriptomic and genomic alterations in cancer. CRISPR-Cas9 system has become a promising tool in generating cellular and animal models that can mimic mutations and help understand their role in tumorigenesis. The whole-genome libraries for cancer patients can be developed with the help of CRISPR-Cas9. This approach will lead to understanding the diversity of variations in the genome among patients, thereby will help

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A GENDER WITHOUT GENDER

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BACKGROUND

There is not a country, state, city, town, village or place in the whole world where the people of this tribe are not found. Although oppressed under the curse of moral monarchs, they continue to be regarded as inferior creatures even in liberal, democratic, secular and socialist societies, forgetting their plight in theocratic Islamic states. Times have changed, but their destiny has not.

Other consequences of prejudice include the discrimination and violence they must endure often sexual and brutal. On the positive side, the judiciary and executive are making notable efforts to empower and de-marginalize transgender people. Several landmark Supreme Court decisions have made the most notable contributions.

Keywords: Community, Eunuch, Gay, *Hijra*, Homosexual, Queer and Transgender.

INTRODUCTION

Four transgender beggars were attacked by mobs in Hyderabad on the night of May 26 over rumors and fake video clips of child abduction and murder, The *Pioneer*, New Delhi reported on May 28. They were brutally beaten and stoned, one died and the others were taken to hospital in critical condition.

The incident brought to light the deep- seated prejudices against transgender people, a term that includes various categories of people who identify as a gender different from the sex they were assigned at birth who experience different physical, sexual and psychological definitions of 'masculine' and feminine.'

People are very intolerant of these people. The recent incident at Delhi's Jamia Millia Islamia University, a renowned Central Islamic University, proves this. Their students and staff are very kind and supporting rioters, thugs, extremists, but not these queer citizens. A radical Islamist group, "*Al- Hata Min Allah*',

प्रवासी हिंदी कहानियों में स्त्री विमर्श

डॉ. ऐश्वर्या झा*

प्रवासी साहित्य ने विगत दो -तीन दशकों में अपनी ज़ोरदार उपस्थिति दर्ज़ करायी है। भारतीय मूल के विदेशों में रहने वाले लेखकों के रचनात्मक लेखन को प्रवासी साहित्य का नाम दिया जाता है जिन्होंने 'हिंदी' को केंद्र में रख कर साहित्य रचना की है।प्रवासी हिंदी साहित्यकारों ने कविताएँ, उपन्यास, कहानियाँ, नाटक, एकांकी, महाकाव्य, खंडकाव्य, अनूदित साहित्य, यात्रा वर्णन, आत्मकथा आदि की रचना कर साहित्य को समृद्ध करने के साथ -साथ भारतीय संस्कृति को वैश्विक पहचान दिलाने में भी महत्वपूर्ण भूमिका निभाई है। प्रवासी साहित्य में पुरुषों की अपेक्षा महिला साहित्यकारों की मौजूदगी अधिक है और इस कारण स्त्री विमर्श को यहाँ एक अलग स्थान मिला है।प्रवासी महिला लेखन किसी निश्चित परिपाटी पर नहीं चल रहा बल्कि अपने लेखन से एक नए रास्ते को तलाश रहा है। प्रवासी साहित्य में सुषम बेदी, सुदर्शन प्रियदर्शिनी, सुधा ओम ढींगरा, दीपिका जोशी, अनीता शर्मा, सुचिता भट्ट, जकिया जुबेरी, दिव्या माथुर, शैलजा सक्सेना आदि प्रमुख महिला साहित्यकार हैं, जिनके साहित्य में स्त्री संवेदना के विभिन्न पक्ष उभरकर सामने आते हैं।प्रवासी कथा साहित्य में परिवेश भिन्न होने के कारण समस्या बदल जाती है, परन्तु समस्याओ के मूल में वही कारण रहते हैं जिनका चित्रण कहानियों में हुआ है। इन् रचनाकारों की कहानियों में विषय -बाहुल्य है।इन लेखिकाओं ने विदेशों में रहने वाली स्त्रियों के संघर्ष के हर पहलु को चित्रित किया है। इन कहानियों में स्त्री के कई रूप सामने आते है यथा ,पाश्चात्य संस्कृति में रची बसी स्त्री,भारतीय और विदेशी सस्कृति ,परिवेश में तालमेल बनती स्त्री,विदेश में अपने अस्तित्व को लेकर संघर्ष करती स्त्री,विद्रोहिणी स्त्री ,अपने अस्तित्वा के लिए प्रयत्नशील स्त्री आदि। प्रस्तुत शोध पत्र में प्रवासी साहित्य की कहानियों में में स्त्री के अलग अलग रूपों और संवेदना के विविध पक्षों को प्रस्तुत किया जायेगा।

A diaspora (From Greek "Scattering, dispersion") is a scattered population whose origin lies within a smaller geographic locale. Diaspora can also refer to the movement of the population from its original homeland. अर्थात् "डायस्पोरा शब्द ग्रीक शब्द से विकसित हुआ है। जिसका अर्थ होता है— बिखरे हुए लोग। ऐसे लोग जिनका मूल एक भौगोलिक विस्तार में हो। डायस्पोरा ऐसे लोगों के लिए भी प्रयुक्त होता है जो अपनी मातृभूमि से अन्य स्थानो में स्थानांतरित होते हैं।"[1]हिंदी साहित्य व्यापक फलक में कई प्रकार के साहित्य और विमर्शों ने अपनी पहचान बनायी है,जैसे आदिवासी, स्त्री, दलित, प्रवासी आदि। प्रवासी साहित्य विगत दो -तीन दशकों से साहित्यिक पटल पर अपनी उपस्थिति दर्ज़ करा रहा है। प्रवासी साहित्य अर्थात देश से दूर विदेशी परिवेश में लिखा गया साहित्य, जिसमें आप अपनी धरती से दूर हैं किन्तु उसकी खुश्बू बार -बार अपने पास खींच रही हैं। सारी दुनिया के सिमटते जाने से हम ऐसे देश में पहुँच गए हैं जहाँ हमारी अस्मिता एक विदेशी के तौर पर है और इसी पृष्ठभूमि में रचनाशीलता प्रवासी साहित्य के रूप में प्रकट हो रही है। भारतीय मूल के लोग दुनिया के अलग -अलग देशों में फैले हुए हैं। विदेशी धरती पर रहते हुए

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32.	प्रवासी हिंदी कहानियों में स्त्री विमर्श **डॉ. ऐश्वर्या झा**	178-181
33.	कालिदास के नाटकों मे पूर्वरंग विधान : एक समीक्षा **डॉ. नलिनी तिलकर**	182-185
34.	भवभूति कालीन समाज में यज्ञ–विधान **डॉ0 शान्ति लाल सालवी**	186-189
35.	Importance of Collaborative and Interactive Learning in Language Acquisition **Dr. Nidhi Sharma**	190-195
36.	*Yogic Sukshma Vyayama* (Micro Exercises) is an Emerging Therapeutic Yogic Exercise for Cardiopulmonary Functions: A Narrative Review **Vipin Rathore, Nidheesh Yadav**	196-201
37.	Preparing for Business Responsibility and Sustainability Reporting in India: A Review of Research on ESG in India **Dr. Vipul Bhatt, Navanshu Pandey**	202-207
38.	Analysis of 9th Grade NCERT Science Textbook with respect to Historical Validity **Kumkum Maurya, Dr. Alka Rani**	208-216
39.	The Concept of Vyadhikshamatva (Immunity) with special reference to enhancement of quality of life through Yogic practices and Herbal Immunomodulators in cancer patient **Pradip Kumar Mishra, Kuldeep Kumar Pandey**	217-227
40.	A Review of Clinical Relation between Insomnia and Hypertension **Vijay Shanker Yadav, Dr. B.N. Maurya**	228-233
41.	A Critical Study of Yoga-Nidra and its Effect on Stress and Hypertension **Mohit Kumar, Vishal Jaiswal, Dr. R.K. Jaiswal**	234-244
42.	Yoga for Holistic Health: A Review **Pankaj Patidar, Kanchan Yadav**	245-253
43.	Contextualizing India-China Relations through the Lens of Balance of Power **Ashutosh Kumar Singh**	254-260
44.	Anaesthetic Management of A Case of Large Benign Thyroid Mass with Diabetes Mallitus – An Anticipated Difficult Airway Patient- A Case Report **Dr. Vineet Mishra, Dr. Devendra Nath Pande**	261-264
45.	Stress Management **Dr. Shuchi Pande**	265-268
46.	A Study of Scholastic Aptitude in Relation to SES and Educational Level **Dr. Alok Pratap Singh Visen**	269-272

Room 164

इतिहास के नजरिए में : संत शिरोमणि रविदास और उनकी मानवधर्म की परिकल्पना

डॉ॰ साधना कुशवाहा
असिस्टेंट प्रोफेसर
स्वामी श्रद्धानंद कॉलेज, दिल्ली विश्वविद्यालय

मानवीय मूल्यों की प्रतिष्ठापना तथा मानव कल्याण हेतु संतों ने अपने जीवनकाल में कड़ा संघर्ष किया। उनके संघर्ष की प्रासंगिकता हर युग में बनी हुई है और यह तब तक बनी रहेगी जब तक मानव का अस्तित्व कायम रहेगा। गौतम बुद्ध, गुरु नानकदेव, कबीर, रविदास आदि ऐसे संत-महात्मा हुए, जिनके विचार आज भी उतने ही प्रासंगिक हैं जितना कि तत्कालीन युग में थे। उन संतों ने अपने दिव्य ज्ञान और शुभ कर्मों से संपूर्ण विश्व के जनमानस में नई चेतना भरने का काम किया। संत अपने आध्यात्मिक ज्ञान और शुभ कर्म से जनमानस में ऊर्जा का संचार करते हैं। प्राचीनकाल से ही संत-महात्मा मानवीय मूल्यों के संरक्षक रहे हैं और समाज कल्याण ही उनके जीवन का प्रमुख उद्देश्य रहा है। वास्तव में, मध्यकालीन संत रविदास जी का कार्यक्षेत्र भी मानव कल्याण ही था। उनका काव्य मानव हितों के इर्द-गिर्द ही नजर आता है।

मध्यकालीन भारतीय इतिहास में रविदास एक ऐसे महान संतकवि, मानववादी विचारक और समाज सुधारक हुए जिन्होंने शताब्दियों की अमानवीय रूढ़िवादी परंपरा, कुरीति-कुप्रथा तथा अंधविश्वास की सीमा का उल्लंघन कर, दीर्घकाल तक भारतीय जनमानस के पथ को आलोकित किया। उन्होंने अपने काव्य के माध्यम से मध्यकालीन शोषित-पीड़ित जनता के जीवन में नव-चेतना का संचार किया। काल की कठोर आवश्यकताएँ संत-महात्मा अथवा महापुरुष को जन्म देती हैं। इतिहास साक्षी है कि जब-जब समाज में अधर्म, पाप-अत्याचार बढ़ा है, धर्म की हानि हुई है तथा मानवीय मूल्यों पर कुठाराघात हुआ है, तब-तब धर्म एवं समाज की रक्षा हेतु किसी-न-किसी संत-महात्मा का पृथ्वी पर आविर्भाव हुआ है। शायद रविदास जी का जन्म भी इन्हीं आवश्यकताओं की पूर्ति के लिए हुआ था।

रविदास कालीन मध्ययुग में अस्पृश्यता व जातिवाद चरम सीमा पर था। आलम ये था कि निम्न जाति के लोग निरंतर तिरस्कार और शोषण के शिकार हो रहे थे, उन्हें मानवोचित विकास एवं उन्नति के समस्त साधनों से भी वंचित कर दिया गया था। संत रविदास समाज के उस हिस्से से संबंध रखते थे जो शताब्दियों से शोषण का शिकार था। ऐसे में यह स्वाभाविक था कि समाजिक स्तर पर इस मानसिक यातना को सहन करते हुए संत कवि रविदास की मानसिकता विद्रोह के लिए बाध्य हुआ हो जिसकी अभिव्यक्ति उनके काव्य रचना में परिलक्षित होती है। समाज कल्याण के उच्च मूल्यों में बाधक तथाकथित कर्मकांडियों द्वारा स्थापित पाखंड का भी उन्होंने तीखे शब्दों में विरोध किया। अपने रचना के माध्यम से धार्मिक संकीर्णता व संस्थागत धर्म की आलोचना करते हुए उन्होंने धर्म के मानवीय पहलू को उभारा। संतकवि रविदास जी ने अपनी

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भारतीय संस्कृति में निहित हिंदू-राष्ट्रवाद

डॉ० लाल बहादुर

स्वर्णकार प्रोफेसर, इतिहास विभाग, स्वामी श्रद्धानन्द कॉलेज (दिल्ली विश्वविद्यालय) नई दिल्ली।

इतिहासकारों ने जिस तरह 'हिंदू' शब्द को भारत में रहने वाले सभी लोगों की संस्कृति से जोड़कर देखने का प्रयास किया है, उसी तरह हिंदू-राष्ट्रवाद, जो हमारे वेदों में निहित है उसकी चर्चा करते समय सभी विद्वान् यहाँ के निवासियों को भरत के वंशज मानकर चलते हैं। इतिहासकारों का मानना है कि 'हिंदू' शब्द सिंधु-सभ्यता में रहने वालों लोगों को ईरानियों द्वारा सम्बोधित करने वाला शब्द है। इससे स्पष्ट होता है कि 'हिंदू' शब्द सबसे प्राचीन प्रमाणित सभ्यता से जुड़ा हुआ है। इसी कारण इसको 'हिंदुस्थान' कहकर आज भी पुकारा जाता है। 'हिंदू' सिर्फ धर्म का नाम नहीं है, यह एक संस्कृति है जो विश्व की प्राचीनतम और महत्त्वपूर्ण संस्कृति और राष्ट्रीयता है।' अतः धर्म के नाम पर हिंदू, सिख, मुसलमान और ईसाई- किसी को भी अलग नहीं किया जा सकता। इसी परम्परा को हमारे वैदिक साहित्य, मौर्य-साहित्य जिनमें कौटिल्य के अर्थशास्त्र तथा उनके राजाओं- चन्द्रगुप्त मौर्य तथा अशोक महान् द्वारा निभाया गया। इसी कारण चाणक्य ने एक महान् हिंदू राष्ट्र की कल्पना को सार्थक बनाया था जिसे हम भारतीय वैदिक साहित्य में देख सकते हैं, जिसकी श्रेष्ठता, महत्ता और उदारता का प्रतिपादन सभी विद्वानों ने किया है। न केवल भारतीय विद्वानों ने अपितु विदेशी विद्वानों तथा आलोचकों ने भी वैदिक साहित्य और भारतीय संस्कृति की प्रशंसा की है। इसमें प्रमुख हैं मैक्समूलर, ए० कगाई, विंटरनिट्ज और हेनरिक जिमर आदि। आधुनिक समय में अनेक मार्क्सवादी विद्वानों में वेद और वैदिक संस्कृति की आलोचना करने का एक फैशन बन गया है। अनेक भारतीय विद्वान् पाश्चात्य प्रभाव से अभिभूत होकर वेद एवं वैदिक संस्कृति का मजाक उड़ाने में लगे हैं जिनमें जेकोटे हॉक्स और सर लियोनार्ड वूल हैं। हिंदुओं को विदेशी, बर्बर एवं आक्रमणकारी कहना उनके लिए गौरव का विषय बन गया है। किन्तु उनके आरोप निराधार एवं भ्रामक प्रमाणित हो चुके हैं।

स्वातंत्र्योत्तर भारत में अनेक बुराइयों, दोषों एवं कुरीतियों ने तेजी से जड़ जमाया है। इन बुराइयों ने राष्ट्र की प्रगति एवं एकता को अत्यन्त प्रतिकूल ढंग से प्रभावित किया है। ये दोष हैं- राजनीतिकता एवं अनैतिकता, अराजकता, जातिवाद, भ्रष्टाचार, साम्प्रदायिकता, द्वेषभाव, हिंसा एवं आतंकवाद। राष्ट्रीय एकता का प्रयोग यहाँ विशेष भौगोलिक परिवेश, सांस्कृतिक एकता व सामाजिक समरसता के सन्दर्भ में किया गया है। आज 'भिन्नता में एकता' मात्र पुस्तकों तक ही सीमित रह गई है। महात्मा गाँधी ने जो रामराज्य और राष्ट्र की कल्पना की थी, वह कहाँ रह गई है। सुभाषचन्द्र बोस ने जो एक हिंदुस्थान की कल्पना की थी, वो क्या यही है? "आजादी के बाद देश में सर्वत्र भ्रष्टाचार, लूटपाट व स्वार्थपरक राजनीति का वातावरण छा गया। इनका कारण 'चारित्रिक संकट' है।

आज आवश्यकता है देश में स्वामी दयानन्द, स्वामी विवेकानन्द एवं बंकिमचन्द चट्टोपाध्याय-जैसे सांस्कृतिक पुनर्जागरण आन्दोलन की और यह आन्दोलन वैदिक संस्कृति के अनुपालन से सम्भव है। वेदों में राष्ट्रीय एकता एवं राष्ट्रवाद की प्रगति के लिए अनेक सूक्त व मंत्र दिये गये हैं। इनको सुविधा की दृष्टि से कुछ महत्त्वपूर्ण भागों में विभक्त किया गया है। राष्ट्र में एकता अर्थात् राष्ट्रवाद अथर्ववेद के बारहवें काण्ड का प्रथम सूक्त भूमिसूक्त अथवा पृथिवीसूक्त के नाम से प्रसिद्ध है। राष्ट्रप्रेम और वीरभाव से ओतप्रोत इस सूक्त में 63 मंत्र हैं जिनमें मातृभूमि की विविध रूपों में महत्ता प्रकट की गई है। 12वें मंत्र में माता भूमिः पुत्रोऽहं पृथिव्याः' कहकर मातृभूमि पर रहने वाले समस्त मनुष्यों को मातृभूमि की सन्तान कहा गया है। इसी प्रकार 10वें मंत्र 'माता पुत्राय मे पायः' कहकर मनुष्य का राष्ट्र से और बेटे और माँ का संबंध बताया गया है। 35वें मंत्र में 'मा ते ऋदयम् अर्पितम्' कहकर राष्ट्र को नुकसान से बचाने के लिए कहा है। दूसरे शब्दों में सभी नागरिकों के लिए राष्ट्र का हित सर्वोपरि बताया गया है। आन्तरिक व बाह्य ख़तरों की सुरक्षा करना नागरिकों का परम धर्म कहा गया है। विघटनकारी तत्त्व राष्ट्रद्रोही के रूप में दिखाये गए हैं। यजुर्वेद के एक मंत्र में राजा कहता है, 'विशो मे अंगानि सर्वतः' अर्थात् प्रजाजन ही मेरे शरीर के सब प्रकार के अंग और अवयव हैं।' प्रजाजनों का शासक के अंग होने का अर्थ है कि जनता का दुःख शासक का दुःख है जिसे राजा को दूर करना चाहिये और आवश्यकता पड़ने पर जनता के घर भी जाना चाहिए। राजा को समस्त नागरिकों के साथ एक-सा व्यवहार करना चाहिए, उसे भेदभाव से दूर रहना चाहिए। ऐसा ही आदर्श कौटिल्य ने राजा के लिए प्रस्तुत किया था।[6]

राजसभा में एकता

ऋग्वेद के अन्तिम मण्डल में राजसभाओं में एकता का अत्यन्त प्रभावकारी वर्णन प्रस्तुत किया गया है[7]

'सङ्गच्छध्वं सं वदध्वं सं वो मनांसि जानताम्।
देवा भागं यथा पूर्वे संजानानानां उपासते।'

अर्थात्, 'हे मनुष्य आप सब लोग एक साथ मिलकर चलें, मिलकर समान वचन बोलें और एक जैसा सोचें। जैसे कि आपके विद्वान् पूर्वज सब सत्कर्मों को जीवन में एक होकर करते रहे हैं, वैसे आप भी करते रहें।' इसी मण्डल व इसी सूक्त के चौथे मंत्र में राष्ट्रीय एकता व सद्भावना से रहने के लिए जोर देते हुए कहा गया है?[8]

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Review
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DNA Barcoding for Identification and Detection of Species

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Abstract: Identification is a very important part of the taxonomy. Since a species represents the basic unit of biological classification, identifying species is important to understand the systematics and the precise phylogenetic position of particular species. In recent years, species identification and delimitation have seen major improvements because of the incorporation of DNA sequence data. This review provides a comprehensive list of commonly employed nuclear and chloroplast regions used for the barcoding of plants.

Keywords: cytochrome C oxidase 1 (Cox1); nrITS; *trnH-psbA*; Rubisco Large subunit *(rbcL)*; *matK*.

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1. Introduction

DNA barcoding is a technology for species-level identification and detection. It relies on DNA sequence variations in selected and small regions of nuclear and/or cytoplasmic genomes to provide unique molecular recognition tags to species. Thus, DNA barcodes are short sequences of DNA from standardized and globally agreed-upon locus/loci of either nuclear or cytoplasmic genome or both. These can be from coding or non-coding regions. The concept of DNA barcoding was introduced by Paul Hebert of the University of Guelph in 2003, based on his pioneering study on 200 closely allied Lepidopteran species and subsequent investigations on birds, fishes, and insects [1–4]. DNA sequence that was found to be effective in his pioneering and subsequent studies on insects, fishes, and birds, "Folmer's region" at 5' end of cytochrome C oxidase 1 (Cox1) having 658 base pairs was proposed as the universal barcode for all eukaryotes [3,5–7]. Short standardized gene regions (DNA barcodes) such as the 5.8S ribosomal RNA gene and flanking internal transcribed spacers 1 & 2 (ITS) region have been employed for the rapid and accurate identification of many species [8,9].

DNA barcoding had shown tremendous progress in global research programs since its beginning in 2003. Initially, the major drawback in applying DNA barcoding was its dependence on reference databases which was limited primarily. Now millions of barcode sequences have been produced, and a good amount of reference databases is available for researchers. The advantage of DNA barcoding over the current taxonomic identification methods is that a species can be identified even if a small amount of its tissue/DNA is available.

Within two years of promulgating the concept, it was realized that because of the low substitution rate of nucleotides present in plant mitochondria, cox 1 and other regions in the mitochondrial genome cannot be used for DNA barcoding of plants, except for some

Yoo 215

डॉ. विनीता कुमारी

निराला और उनकी रचना 'तुलसीदास'

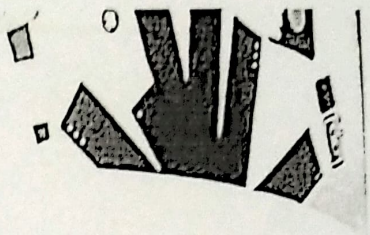
छायावाद के प्रमुख आधार स्तंभ, क्रांति के अग्रदूत, निर्भीक एवं मानवतावादी भावों का ष करने वाले सूर्यकांत त्रिपाठी निराला द्वारा रचित खंड-काव्य 'तुलसीदास' एक अंतर्मुखी काव्य है। इसका प्रकाशन सन् 1938 ई. में हुआ। यह रचना निराला जी की प्रौढ़तम त्मक रचनाओं 'सरोज समृति', 'राम की शक्ति पूजा' के समकक्ष अपना विशिष्ट स्थान है। इसका कथानक जन-सामान्य में प्रचलित तुलसीदास के जीवन में घटित उस मुख्य पर आधारित है, जिससे तुलसीदास के भौतिक जीवन में अकस्मात् परिवर्तन आता है। ने कथासूत्र को आधार बनाकर निराला ने तुलसी के मानसिक संघर्ष को मनोवैज्ञानिक के उद्घाटन द्वारा काव्यात्मक उत्कर्ष की ऊँचाई तक पहुँचा दिया है। निराला ने तुलसी पना आदर्श माना है और इस काव्य में आध्यात्मिकता, दार्शनिकता, रहस्यवाद और जीवन पक्षों का समावेश कर कवि ने विषय-वस्तु में नए प्रतिमान स्थापित किए और अपनी तिभा का परिचय दिया।

तुलसीदास' में कथा की अपेक्षा चिंतन का विस्तार अधिक है। इसके कथानक को स्थूल तीन भागों में बाँटा जा सकता है। प्रथम भाग में सांस्कृतिक ह्रास एवं तुलसी के जन्म ान है, इस भाग को कथा की पृष्ठभूमि भी कह सकते हैं। दूसरे भाग में प्रकृति द्वारा दायिनी प्रेरणा और पत्नी के प्रति आसक्ति का चित्रण है। अंतिम भाग में पत्नी की से भोगविमुख तुलसीदास का रामोन्मुख एवं सत्योन्मुख होना चित्रित है। इस भाग में ी कटु उक्तियाँ उसके ज्ञान का कपाट खोल देती है और वह अज्ञात भाव से अनंत र बढ़ते चले जाते हैं।

थानक की दृष्टि से यदि हम 'तुलसीदास' रचना को देखते हैं तो इसकी कथा अत्यंत । कवि का उद्देश्य तुलसीदास का जीवन-वृत्त चित्रित करना नहीं रहा है। निराला की नसीदास से संबंधित जन-सामान्य में प्रचलित कथा में से उस मनोवैज्ञानिक स्थिति को की रही है, जिसके कारण तुलसी गृह-त्याग कर सके। तुलसी के मानसिक द्वंद और ं के कारण कथा-भाग क्षीण है। काव्य के प्रारंभ में कवि मुगल संस्कृति के आलोक । पड़ती हुई आर्य संस्कृति का चित्रण करते हैं। एक ओर भारतीय संस्कृति का सूर्य है और दूसरी ओर मुस्लिम संस्कृति का चंद्र उदित हो रहा है। इस विषम परिस्थिति

row 242

आज़ादी का अमृत महोत्सव



मीडिया के बदलते प्रतिमान

– डॉ. ऐश्वर्या झा

साहित्य को समाज का दर्पण माना गया है [illegible] अलग-अलग पक्षों को देखा जा सकता है [illegible] 'पत्रकारिता 'भी समाज का ऐसा दर्पण है जिसमें [illegible] आस -पास घटने वाली समस्त सत्य घटनाओं को देखा जा सकता [illegible] यदि यह दर्पण मैला हो जाये या टूटने लगे अर्थात [illegible] निष्पक्षता संदेहास्पद हो जाये तो समझ लेना चाहिए कि [illegible] चौथा स्तम्भ खतरे में है। 'उदन्त मार्तण्ड 'से उदित हुआ हिंदी [illegible] का सूर्य लगातार अपनी चमक बिखेर रहा है, इलेक्ट्रॉनिक [illegible] इंटरनेट के प्रसार, डिजिटल क्रांति ने उसकी रोशनी में वृद्धि [illegible] परन्तु उसकी चमक भी कई बार मद्धिम होती दिखाई देती है [illegible] प्रमुख कारण पत्रकार और सम्पादकों का व्यवसाय केंद्रित [illegible] समाज और समाज के सन्दर्भ में सजग रहकर नागरिकों में [illegible] कराने की कला को पत्रकारिता कहते हैं ... असत्य, अशिव और [illegible] पर सत्यम्, शिवम्, सुंदरम् की शंख ध्वनि ही पत्रकारिता है।'

पत्रकारिता का उद्देश्य इससे इतर कुछ हो ही [illegible] पत्रकारिता के प्रारम्भ से ही उसकी स्वतंत्रता, उसकी [illegible] समाज के प्रति उसके कर्तव्यों पर लगातार बहस होती रही है। [illegible] इक्कीसवीं सदी में जब इंटरनेट के प्रसार के कारण और [illegible] क्रांति के कारण हर व्यक्ति पत्रकार होता जा रहा है, ऐसे [illegible] में अख़बारों और चैनलों की आपसी प्रतिस्पर्धा, खुद को [illegible] बेहतर दिखाने की होड़ पत्रकारिता को एक दलदल में फंसाती रही है। आज जब हम स्वतंत्रता का अमृत महोत्सव मना रहे हैं इस पर विचार करना और भी आवश्यक हो जाता है कि लोक का चौथा स्तम्भ आज क्यों प्रश्न के घेरे में है या जन सरोकार भावना क्यों समाप्तप्राय है। पत्रकारिता का [illegible] अतीत क्यों

"जनता को जानकारी देना, उसे जागरूक बनाना हर समय में पत्रकारों की ज़िम्मेदारी है। लेकिन आज की स्थिति विपरीत होती जा रही है। अब यह 'पुनीत वृत्ति' नहीं, बल्कि विज्ञापन के जाल में उलझी नौकरी बन कर रह गयी है।पत्रकार का न्यायाधीश के समान निष्पक्ष और सिपाही के समान निडर होना अपेक्षित है। सरकार के द्वारा या अन्य संस्थानों की बनायी आचार संहिता की बजाय उसे स्वयं की आचार संहिता को लागू करना चाहिए।संकल्प, प्रतिबद्धता, जनसेवा, कर्तव्यनिष्ठा कभी पत्रकार और पत्रकारिता के उद्देश्य रहा करते थे। पत्रकार कभी राजनीति या पूंजीवाद के मोहरे नहीं बनते थे। उनका काम जनता को जागृत, सूचित करना था। स्वतंत्रता से पूर्व के पत्रकारों ने ब्रिटिश साम्राज्यवाद से बिना डरे लोहा लिया था। हिंदी पत्रकारिता के पितामह कहे जाने वाले गणेश शंकर विद्यार्थी ने अपने पत्र 'प्रताप 'के पहले अंक में ही 'प्रताप की नीति 'शीर्षक लेख से पत्रकारिता के मानदंड ही निर्धारित कर दिए थे।"

row 267 link

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Carbon–Carbon Bond Formation for the Synthesis of 5-Aryl-2-Substituted Furans Catalyzed by $K_3[Fe(CN)_6]$

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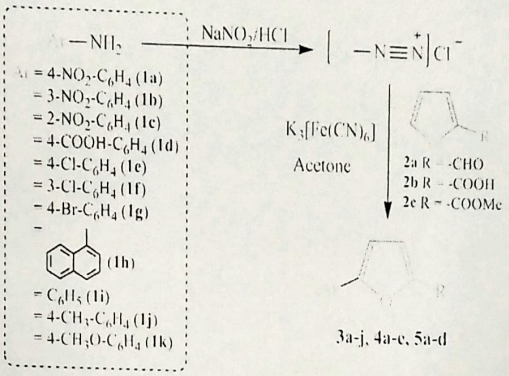
Abstract

An efficient method for the carbon–carbon bond formation at C-5 position of 2-substituted furans to provide a range of π-diverse 5-aryl-2-substituted furan derivatives in 58–80% yield has been reported. The method employs several advantages such as use of catalytic amount of $K_3[Fe(CN)_6]$ under mild conditions and short reaction time with high yields. Also, a variety of anilines with a variety of functional groups can be employed for the synthesis of 5-aryl-2-substituted furans.

Graphic Abstract



Keywords Aryl furans · $K_3[Fe(CN)_6]$ · C–C bond formation · Catalysis · Cross coupling reaction · Lipoxygenase inhibitors

1 Introduction

The carbon–carbon (C–C) bond formation is an important class of reaction in organic synthesis due to which it has drawn attention of a number of researchers [1]. There are several methods for aryl C–C bond formation; the most common are Mizeroki-Heck, Suzuki–Miyaura, Meerwin reaction and Gomberg reaction [2–5]. These reactions require many transition metals as promoters and catalysts including copper, palladium, nickel and iron [6–8]. Palladium and nickel are broadly employed in these reactions but high cost and toxicity limits their application [9, 10]. Therefore there is an urgent need of catalyzing reagents for cross coupling reaction. Iron is one of the most abundant and environment friendly metals on Earth [11]. Iron(III) salts are known to oxidize electron-rich centers to provide the formation of radical species [12]. They are efficient in the oxidation of aromatic systems or a carbanion which undergoes C–C bond formation to yield the coupled products. $K_3[Fe(CN)_6]$ is a mild oxidant with the Fe(III) center bound in octahedral geometry to six cyanide ligands. Recently, $K_3[Fe(CN)_6]$ has been used as re-oxidant in the osmium catalyzed asymmetric

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ORIGINAL RESEARCH

Classification and yield prediction in smart agriculture system using IoT

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Abstract
The modern agriculture industry is data-centred, precise and smarter than ever. Advanced development of Internet-of-Things (IoT) based systems redesigned "smart agriculture". This emergence in innovative farming systems gradually increases crop yields, reduces irrigation wastages and making it more profitable. Machine learning (ML) methods achieve the requirement of scaling the learning performance of the model. This paper introduces a hybrid ML model with IoT for yield prediction. This work involves three phases: pre-processing, feature selection (FS) and classification. Initially, the dataset is pre-processed and FS is done on the basis of Correlation based FS (CBFS) and the Variance Inflation Factor algorithm (VIF). Finally, a two-tier ML model for an IoT based smart agriculture system is proposed. In the first tier, the Adaptive k-Nearest Centroid Neighbour Classifier (aKNCN) model is proposed to estimate the soil quality and to classify the soil samples into different classes based on the input soil properties. In the second tier, the crop yield is predicted using the Extreme Learning Machine algorithm (ELM). In the optimized strategy, the weights are updated using a modified Butterfly Optimization Algorithm (mBOA) to improve the performance accuracy of ELM with minimum error values. PYTHON is the implementation tool for evaluating the proposed system. Soil dataset is utilized for performance evaluation of the proposed prediction model. Various metrics such as accuracy, RMSE, R^2, MSE, MedAE, MAE, MSLE, MAPE and Explained Variance Score (EVS) are considered for the performance evaluation.

Keywords IoT · Sensors · Agriculture · Machine learning · Classification · Crop yield prediction

1 Introduction

IoT is an advanced technology for monitoring and controlling devices anywhere in the world. In many fields, it creates a remarkable mark due to its easy accessibility. Few technologies developed by IoT, such as remote sensors, drones and robots have made people's lives easier and more beneficial. Moreover, these technologies have experimented on fundamental needs such as food that is obtained from the agricultural field. From the recent survey of World Bank, it is approximated that more than 50% of food is required to cultivate before 2050 based on present population rate. However, such huge production of the crop is a challenging task because of the current climatic changes. In such cases, Smart agriculture system plays a vital role to increase the yield by monitoring and predicting the production of the crops. IoT based crop yield prediction enables the farmers to enhance productivity. In general, an IoT based smart farming system is deployed in an agriculture field for monitoring the crop field with the help of sensors namely DHT11 (temperature and humidity sensor), TOC (Total Organic Carbon) and nitrogen, phosphorus, and potassium (NPK) sensors. Using this setup, farmers can monitor the field conditions from anywhere. Gateways are responsible for receiving data from the crop area and forward them to the storage unit. The prediction engine is used to predict the results and sends information to the notification server. Agricultural supervision, particularly crop yield observation is essential for examining the food security in a region. Manually predicting crop yield is a challenging task due to several difficult aspects. Based on the water quality as well as availability, pest infestations,

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THE EUROPEAN PHYSICAL JOURNAL PLUS

Regular Article

Multipole polarizabilities and dipole oscillator strengths of H-atom in nonideal classical plasmas

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Abstract We have solved the time-independent Schrödinger equation to evaluate energy eigenvalues and eigenfunctions of spherically confined H-atom embedded in nonideal classical plasma (NICP) potential and Debye-Hückel potential (DHP). Screening parameter (α) and nonideal plasma coupling parameter (γ) are calculated for a wide range of plasma electron density (n_e) and plasma temperature (T_e), which are further used to evaluate dipole oscillator strengths and static multipole polarizabilities of the H-atom for both the plasma potentials. In comparison to the Debye-Hückel potential, nonideal classical plasma potential significantly affects the multipole polarizabilities at low T_e and high n_e. Our results clearly indicate that, as T_e increases or n_e decreases, the polarizabilities corresponding to both the plasma potentials become almost equal. We have studied the effect of size of enclosing spherical boundary (r_0) on the multipole polarizabilities. The size of the spherical boundary strongly controls pressure experienced by the H-atom. At a fixed α, the multipole polarizabilities are found to increase sharply as γ approaches its critical value.

1 Introduction

The electronic structural properties of an atom embedded in finite density plasma at a certain temperature are well known to differ from the free state atom. The interaction potentials of the constituent charged particles of the embedded atom are modified by plasma screening. In comparison with the free atom, the embedded atom's stability and other properties, such as energy levels, line shapes, ionization energy, transitions, line merging, and electric dipole polarizability, may undergo significant modifications [1–4]. It is necessary to study the nature of such modifications in order to be able to interpret data from astrophysical, laser-induced, and ultra-cold plasma [5–9]. A quantitative evaluation of such modifications further provides methods for tailoring the structural properties of the embedded atoms by tuning suitable plasma parameters.

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Regular Article

THE EUROPEAN PHYSICAL JOURNAL PLUS

Optical properties of hydrogenic impurity in a distorted quantum disk

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Abstract An on-centre hydrogenic impurity in a $GaAs/AlGaAs$ quantum disk with azimuthal distortion has been considered. The complete energy spectrum as well as the transition matrix elements have been worked out numerically. The linear and non-linear susceptibilities, absorption coefficients and changes in refractive index have been calculated for various configurations of the system. The non-central nature of the potential has been found to alter these optical properties to a great extent. The application of external magnetic and static electric fields as well as disk size have been found to have considerable influence on these properties of the distorted quantum disk. It is believed that the present results would be beneficial in designing of optoelectronic devices.

1 Introduction

Recent advancements in the field of semiconductor nanocrystals synthesis has led to a major breakthrough in terms of improving the performance, flexibility and durability of these materials which can be tailored to possess specific properties. In recent years, there has been a surge of related theoretical as well as experimental studies [1]. Such studies have been steered ahead due to their numerous applications in the fabrication of optoelectronic devices like solar cells, laser diodes, LEDs and Quantum dot photodetectors, in drug delivery and energy harvesting devices [2–4]. A quantum dot of cylindrical shape, with z-axis as the symmetry axis having very small length and comparatively very large radius is called a quantum disk. The particle motion is almost two-dimensional (2D), the confinement represented by a potential well having the form of a thin disk, e.g., 2D electron gas. Synthesis, properties and applications of quantum disks have been described in detail [5–7].

Linear and non-linear optical properties of quantum dots, quantum disks and quantum wells have been well-studied [8–16]. Such properties in differently-shaped Quantum Dots have been explored in detail by several authors [17–21]. The optical properties depend on several factors including the material type, size and geometry of the semiconductor Quantum Dot. In addition, the presence of hydrogenic impurities in such confined materials as well as the influence of external electric and magnetic fields has been a subject of interest [13,16,17,19,22–26]. Yuan et. al. [27] calculated the linear, third-order and total optical absorption coefficients of a hydrogenic impurity located at the center of a spherical Quantum Dot under a parabolic potential with infinite spherical confining potential. Heyn and Duque [26] presented a theoretical study of the optical and electronic properties of cylindrical $GaAs/Al_xGa_{1-x}As$ quantum dots in the presence of tilted electric and magnetic fields and on-center or off-center shallow donor impurities. The effects of the hydrogenic impurity, electric and magnetic fields on the optical absorption of GaAs/AlGaAs ring-shaped elliptical quantum dot has also been investigated [28]. Stevanović, et. al. [29,30] have studied the optical properties of a spherical quantum dot with an on-center hydrogenic impurity in the external static magnetic field. These studies play a very crucial role in development of various optoelectronic devices.

However, such investigations have been carried out for central potentials like harmonic [9], Gaussian [31] and parabolic confinement potential [12,27,32,33]. Taking into account the non-uniform growth of semiconductor heterostructures [34,35], the investigation of such systems under the effect of angle-dependent potentials [36] seems imperative. The non-central potentials may represent the structural deformation. For example, an electron in a one-dimensional distorted quantum ring in the presence of external static and laser field has been studied by Silotia et. al., where the distortion has been taken care of by a geometrical factor [37]. The size-dependent deformation potentials of CdSe quantum dots have also been studied [38]. In the present work, we consider azimuthal distortion modelled with the help of ϕ-dependent potential.

The present work deals with the linear and non-linear optical properties of a hydrogenic impurity in a distorted Quantum Disk. In addition, the presence of the external static electric field as well as the confinement due to the external magnetic field are considered, both of which modify the energy spectrum as well as the transition matrix elements which control the dynamics of the system. The size of the Quantum Disk given by the confinement radius is also varied which serves as one of the factors affecting the optical

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LORD RAMA : A STUDY IN HISTORICAL PERSPECTIVE

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According to the Indian traditions Lord Rama is regarded eight incarnation of Vishnu, Rama is said to have been born to Kaushalya and Dasharatha in Ayodhya, in the second aeon (yuga) known as Treta, the ruler of the Kingdom of Kosala.Rama is especially important to Vaishnavism. He is the central figure of the ancient Hindu epic Ramayana.(1)

Lord Rama in Literature

According puranic source the chapter 4 of Vishnu purana, chapter-112 of Padma Purana, chapter 143 of Garuda purana and chapters 5 through 11 of Agni purana also summarise the life story of Rama, Additionally the Rama story is included in the vana parva of the Mahabharata.(2)

The Mahabharata episode later than The Ramayana, this is also supported by the occurrence of Ramayana story called there Ramopakhyanaparvan in the Vanaparvana and the causal manner in which the Mahabharata refers to the Ramayana episodes should leave absolutely no doubt about the priority of the Ramayana to the Mahabharata both as episodes and texts(3).

The epic Ramayana enshrines the legend of Rama and his adventures when exiled to the forest, it culminates in the great battle when the Rakshasa Ravana is defeated and punished for his abduction of Rama's wife Sita. The original version was composed by a sage called Valmiki, but the version of the Valmiki Ramayana now extent was undoubtedly composed over several centuries between perhaps 500 BC to and 300 AD.It is now divided into seven kandas or book, each comprising between 66 and 116 sargas or chapters. The seven kanda of Ramayan like Balakanda, Ayodhyakanda, Aranykanda, Kiskindhakanda, Sundarakanda, Yuddhakanda, Uttarakanda, All kanda tell the story behind the Rama childhood to marriage with Sita and fulfill his Father command departure to forest and then Ravana king of Lanka , whom she incites to abduct Sita and then started journey to search Sita and find the place to help of Hanuman where Sita was

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REVIEW ARTICLE

Potential roles of phytochemicals in combating severe acute respiratory syndrome Coronavirus infection

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Abstract

Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), the causative agent of the current ongoing global pandemic COVID-19 is yet far away from the clutches of contemporary western medicines. With the lack of conventional drugs for this deadly disease the scope for the development of herbal formulations and Ayurvedic medication is finding a sound basis in the current scenario. The past two years has witnessed detailed and focused investigations on the biologically active constituents derived from a range of medicinal plants and their potential antiviral properties against SARS-CoV-2. The promising results of these investigations have intrigued the medical and plant experts in pharmacognosy enough to consider herbal medicines and plant-based products as they are more effective in combating the COVID-19 crisis. However, a large-scale application of the same would require more focused and thorough research on this matter. This review is an attempt to describe the current and future prospects of using medicinal plants and herbal compounds as natural and sustainable alternative for treating COVID-19. The current article evaluates the various strong evidences from biochemical and molecular studies that have been investigated so far for the development of herbal formulations to combat COVID-19 with detailed focus on the most potential phytochemicals of medicinal plants studied in this regard namely, *Withania somnifera* (L.) Dunal, *Cinchona officinalis* L., *Curcuma longa* L., *Ocimum sanctum* L., *Azadirachta indica* A. Juss. and *Tinospora cordifolia* (Willd.) Miers.

Keywords

COVID-19, herbal drugs, phytochemicals, phytomedicine, SARS-CoV-2.

Introduction

The world today is dealing with one of the deadliest pandemics, COVID-19, which has not only resulted in more than 5.5 million causalities globally but is also the reason behind the great global economic recession and depression. The official name COVID-19 was given by the World Health Organisation on 12th of February 2020 and was declared as a pandemic in the next month (1). Severe acute respiratory syndrome Coronavirus-2, abbreviated as SARS-CoV-2, the causative agent of COVID-19, shows structural similarity with most of the previous coronaviruses belonging to the family of Coronaviridae (2).

The current situation of this pandemic has led to a revolution in the

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Women entrepreneurship in India: An insight into problems, prospects and upliftment

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Abstract
According to a recent World Bank report, India can experience double-digit growth if more women participate in the country's economic sector. Women are sharing responsibilities with their male counterparts in today's modern world, whether they work in the public or private sector. In fact, one can find a growing number of women in nearly every sector. In this context, the increasing numbers of women's in organisation shows that women must be regarded as active participant in the nation development process. The position of women has greatly shifted from pastoral society to modern information and global society. For female entrepreneurs, there is still more work to be done. Empowerment simply refers to having equal standing, access to opportunity, and freedom. Giving women the ability to make their own decisions and improving their status in society is known as "women empowerment." Education and entrepreneurship are two crucial components needed for the empowerment of Indian women.
In our nation, parents of girl children make it a priority to prioritise domestic duties in order to prepare their daughters for taking on family responsibilities. But in reality, it is equally urgent that they enable her to learn how to create money because doing so is necessary for their financial independence. If they want to convert their talent into a job, they should make a conscious effort to consider entrepreneurship as a career option.
The issues, difficulties, and barriers that women business owners in India must overcome will be highlighted by this study. This also makes an effort to examine the government and financial aid that is readily available funding programmes to support female entrepreneurs. The study is based on the secondary sources. The goal of the study is to identify the main forces or push factors that have increased the number of female entrepreneurs and to provide some pertinent recommendations.

Keywords: entrepreneur, women, empowerment, financial initiatives, upliftment

Introduction
Setting up a new firm to take advantage of fresh prospects is referred to as entrepreneurship. Entrepreneurship is the fundamental component, and women are now successful in it because they possess traits that are advantageous to the growth of entrepreneurship. Women would be better suited to entrepreneurship than to traditional employment. Nowadays, more women than ever before are interested in entrepreneurship. The mental growth of the women has been enormous. There are several prospects for women due to the country's growing reliance on the service sector. In the past two decades, more and more Indian women have started their own businesses and changed the way that business is conducted. Recently, women have become more interested in starting their own businesses. Due to their combined responsibilities as wage earners and homemakers, women in the entrepreneurial process encounter a variety of challenges. The majority of housewives in India desire to launch their own businesses, but they confront numerous obstacles. Their dual function frustrates them. The government launched a number of programmes to train women entrepreneurs. Training programmes pique the interest of women and aid in developing their abilities as well as their social attitudes and levels of confidence.
Indian Women are effectively establishing themselves in the corporate sector and entering the sphere of entrepreneurship. They are shattering social barriers and using their intelligence, they made moves for outstanding entrepreneurship performance. According to a Fortune India study, female entrepreneurs like Zia Mody, Kiran Mazumdar Shaw, Mallika Srinivasan, and Renuka Ramnath serve as role models for other women in society.
Even Nevertheless, according to data for the fiscal year 2020–2021, the percentage of women entrepreneurs in India is only about 19.9%, which is extremely low when compared to men. Their lack of knowledge of the financial and loan perks available for operating a business may be the cause. Our countries' hard reality at the time was that girls' children were slain and viewed as a burden for the entire family even after birth. However,

MULTIPLE REGRESSIONAL AANALYSIS FOR THE DETERMINATION OF SIGNIFICANT PREDICTOR OF ORGANISATIONAL CLIMATE

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ABSTRACT

The issue of the organizational climate in the work setting is a contemporary topic of interest. One value of the climate concept is that multiple dimensions of behavior within an organization and can be studied and considered under a global concept (**Seehneider**, 1972). According to **Ali** (1986) the concept of organizational climate is generally viewed as an important variable for understanding the behavior of the organizations and their members.Job satisfaction establishes the inner contentment that a job holder felts by doing the job well. It is an amount of pleasure associated with a job. It influences the behavior, attendance and length of service. Job satisfaction reflects the overall attitude of workers towards the work, co-workers, the organization, the culture, the environment and the social group at large. *This paper is an attempt to find the significant predictor towards overall organizational climate. Job Satisfaction, Job stress, and many others variables have been applied as independent factor for the identifying the major variables which contributes for the construction of organizational climate perception. A sample of 360 employees respondents as sample drawn from the four different units located in Himachal and Punjab states. The Bhakra-Beas Management Board was undertaken as universe for the present study .The study was conducted during 2008 to 2010.A questionnaire consisting of socio-economic and Organizational Climate Inventory, propensity to stay at job, occupational stress, self-esteem etc. job satisfaction and others has been applied. The questionnaire was pretested and found valid as well reliable. Thetabular, mathematical and specially statistical measure multiple regression analysis has been applied to test the proposed hypothesis.*The null hypothesis (Ho) proposed has been rejected and it can be inferred that significant contributor to the perception of organizational climate can be Identified.

Keywords: Job Satisfaction, organizational climate, commitment to stay at job, *multiple regressinal analysis.*

CONCEPTUAL AND THEORETICAL FRAMWORK:

The perception of the organizational climate in the work environment is a contemporary topic of interest. One value of the climate concept is that multiple dimensions of behavior within an organization can be deliberate and considered under a global concept (**Seehneider**, 1972). According to **Ali** (1986) the concept of organizational climate is generally viewed as ansignificant variable for understanding the behavior of the organizations and their members. It can be viewed that many

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FUTURE ENTREPRENEURS: - UNDERSTAND THE ROLE OF WOMEN ENTREPRENEURS IN THE INDIAN SOCIETY

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Abstract

India is a country with well-diversified culture and traditions. Today, we are living in the modern era where women are participating in the workforce they are reaching heights in the country. The modern era/time demands more women's participation in the entrepreneur culture because without them, India couldn't succeed as much as possible. It was observed that males have been dominant in the culture of entrepreneurs. The point is here that we remember the name of Ratan Tata, Mukesh Ambani, Aziz Premji, Birla, Adani, Mahindra and so on. Women are always looking into underrated situations. A comprehensive literature review was conducted on women entrepreneurs. Lastly, some of the major issues facing women entrepreneurs in India are mentioned. Describes the status of successful women entrepreneurs in India as a factor affecting women entrepreneurs and the views of women entrepreneurs from all walks of life.
The present study evaluates the structure of women's entrepreneurship in Indian society. This paper aims to review understanding of the challenging of this issue and how individual & government policies working on the issue to solve it.

Keywords: Entrepreneurship, Women Entrepreneurs, Ease of doing business, FDP, Startup India, Self Help Group

INTRODUCTION

Women make up roughly half of the world's population. This is also true in India. They were restricted to the four walls of households in primitive societies, completing household tasks. They have come out of the four walls to partake in a variety of activities in modern society. The evidence from around the world supports the fact that women have excelled in various fields such as academia, politics, administration, social work, and so on. They have now begun to venture into industry as well, and are successfully running their businesses. A 'woman or group of women who initiate, organize, and operate a commercial enterprise' can be defined as a 'women or group of women who initiate, [illegible] business enterprise.' Women who create, imitate, or adopt a business activity are referred to as "women entrepreneurs"

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A Study about Entrepreneurship in India: With Special Reference to Start-up India Initiatives

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ABSTRACT

Entrepreneurship plays an important role in the economic development of any country. Entrepreneurship acts as a pillar for the economic wealth of a nation as it leads to the creation of employment, contribution to national income, rural development, industrialization, technological development, export promotion, etc. In India, several initiatives have been taken by the government from time to time for entrepreneurship development in the country. Entrepreneurship has attracted the attention of policymakers in India. A series of high-level initiatives, including Start-up India, has been launched to promote private sector development. However, the role of entrepreneurship in development remains a mystery for many policy observers. The main purpose of this paper is to study about Entrepreneurship in India, with special reference to Start-up India initiatives. This study was done based on secondary data collected from multiple sources of evidence, in addition to books, journals, websites, and newspapers.

Keywords: Entrepreneurship, Start-up, Entrepreneur, Innovation, Development and Promotion

1. INTRODUCTION

According to A.H. Cole, "Entrepreneurship is the purposeful activity of an individual or a group of associated individuals, undertaken to initiate, maintain or organize a profit-oriented business unit for the production or distribution of economic goods and services". There are three main conceptual approaches to entrepreneurship. The first approach is functional which is concerned with the dynamic actor that makes key decisions on investment, production, innovation, location, research and development. From this perspective, entrepreneurship is a psychological trait referring to dynamism, creativity and originality. The approach also includes managers in MNCs, state owned enterprises, profit/non-profit organization and a variety of dynamic entrepreneurs within organizations. The second approach focuses on the firm as the key economic factor. The firms included here are owner operated firms, incorporated joint stock companies, state owned joint venture firms and subsidiaries of multinationals. These firms are the units that make the key decisions on investment, on branching into activities or sectors, or relocating to other countries. The third approach focuses on owner operated enterprises. Within

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भारत, रत्नभद्र और ताबो मठ

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आज जो सत्य है, कल वही इतिहास हो जाता है और अपने अवशेष छोड़ जाता है। सभ्यताएँ-संस्कृतियाँ पलने-पनपने में यदि सदियाँ लग जाती हैं तो उन्हें मिटते हुए भी उतना ही समय लगता है। कहा जाता है कि कोई भी इतिहास अपने पीछे बहुत से चिह्न छोड़ जाता है जो स्मारी धरोहरें हो जाती हैं जिन्हें पकड़कर हम सुदूर पूर्व में अपने इतिहास के साथ जुड़ते हैं। यहीं से जन्म लेती हैं दंतकथाएँ। इन दंतकथाओं के साथ कुछ सत्य और कुछ अनुमान जुड़े होते हैं, क्योंकि वास्तविकता पर तो समय की धूल पड़ चुकी होती है जिसे हटाना आवश्यक होता है। इन धरोहरों के साथ कुछ किस्से-कहानियाँ जुड़े होते हैं, जिन्हें हम वर्तमान में उपस्थित बुजुर्ग पीढ़ी से सुनते और अपने तरीके से अर्थ निकालते हैं।

भारत उतना ही नहीं है जितना हम जानते हैं या जितना पुस्तकों में पढ़ पाते हैं। वह तो इतना विशाल और अगम्य है कि हमारा जीवन बीत जाता है और इसके यथार्थ और विशालता की एक झलक पाना फिर भी शेष रह जाता है। इसी यथार्थ और विशालता के साथ जुड़ जाता है इतिहास। भारत का एक बहुचर्चित प्रदेश है हिमाचल प्रदेश। हिमाचल प्रदेश में बौद्ध धर्म, हिंदू मत के साथ-साथ चलता प्रतीत होता है। तिब्बत के बौद्धों के अतिरिक्त भी जिला किन्नौर में बहुसंख्या में बौद्धधर्म को मानने वाले यहाँ के मूल निवासी हैं। भारत के इस भाग में बौद्धधर्म के प्रचार के लिए नौवीं शताब्दी के अनुवादकों का बहुत बड़ा योगदान है, जिन्हें लोचावा कहा जाता है। लोचावा शब्द संस्कृत के लोकचक्षु से बना है। इन लोचावाओं के इतिहास में रत्नभद्र एक महत्वपूर्ण नाम है।

बौद्धधर्म के प्रचार-प्रसार के लिए हिमाचल में रत्नभद्र का नाम इसी प्रकार आदर से लिया जाता है जिस प्रकार सम्राट अशोक के पुत्र महेंद्र और पुत्री संघमित्रा का लिया जाता है। 'रत्नभद्र स्वयं में एक आश्चर्य थे। मूर्तिकला, भित्ति-चित्रकला, थङ्का (तत्कालीन पट-चित्रकला) के निर्माता, बौद्ध धर्म दर्शन, तंत्र के ज्ञाता एवं स्थानीय लोकभाषा जंङ-जुङ, भोट व संस्कृत के मूधन्य विद्वान थे। इन्हें महानुवादक अथवा लोचारिन पोछे के नाम से याद किया जाता है।'

1. हिमाचल प्रदेश में आज भी इनके बनवाए हुए अनेक बौद्ध विहार अपनी भव्यता का प्रदर्शन करने में सक्षम हैं, इनमें से अधिकांश क्षतिग्रस्त हो चुके हैं, किंतु बहुत से हिमाचल सरकार के उपक्रम से अच्छी स्थिति में हैं। इन बौद्ध मठों या महाविहारों में 'ताबो महाविहार' का नाम उस समय बड़ी तेजी से आमजन के सामने आया, जब ईस्वीं सन् 1996 में अचानक ही हिमाचल प्रदेश में बौद्ध मतावलंबियों के आगमन से क्षेत्र में गहमा-गहमी अचानक बढ़ गई। कारण था–बौद्ध धर्म अनुयाइयों का उत्सव कालचक्र, पूरे हिमाचल में अचानक ही ताबो मठ का नाम गूँजने लगा।

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स्वतंत्रता आन्दोलन में जनजातियों की भूमिका

डॉ साधना कुशवाहा
असिस्टेंट प्रोफ़ेसर, स्वामी श्रद्धानंद कॉलेज, दिल्ली विश्वविद्यालय

सारांशः
जनजातीय समूह भारतीय जीवन का एक महत्वपूर्ण और अभिन्न हिस्सा थे। इनके सहयोजन और तत्पश्चात् इन्हें अंग्रेजी प्रदेशों में सम्मिलित किए जाने से पहले इनकी निजी सामाजिक और आर्थिक प्रणालियाँ थीं। यह प्रणालियाँ पारंपरिक प्रकृति की थीं और जनजातियों की आवश्यकताओं को संतुष्ट करती थीं। प्रत्येक समुदाय का एक मुखिया होता था जो उस समुदाय के सभी मामलों के प्रबंधन मे पूरी तरह स्वतंत्रा होता थे। जमीन और जगल उनकी जीविका के मुख्य संसाधन थे। जीवित रहने के लिए जिन बुनियादी चीजों की उन्हें आवश्यकता होती थी उनकी पूर्ति जंगलों से होती थी। जनजातीय समुदाय गैर–जनजातीय समुदायों से बिलकुल अलग–अलग रहते थे। अंग्रेजी नीतियाँ जनजातीय समाज के लिए बहुत हानिकर सिद्ध हुई। इसने उनकी अपेक्षाकृत आत्म–निर्भर अर्थव्यवस्था और समुदायों को नष्ट कर दिया। विभिन्न प्रदेशों के जनजातीय समूहों ने अंग्रेजों के खिलाफ विद्रोह कर दिया। उनके आंदोलन गैर–औपनिवेशिक प्रकृति के थे क्योंकि वे सभी औपनिवेशिक प्रशासन के विरोध में चलाये गये थे। जनजातीय लोग पारंपरिक हथियारों, विशेष रूप से धनुष बाणों का प्रयोग करते थे और अक्सर हिंसक हो जाते थे। अंग्रेजों ने इनका सख्ती से दमन कर इन्हें अपराधी और समाज विरोधी घोषित कर दिया। इनकी सम्पत्ति पर कब्जा कर लिया गया।

मुख्य शब्दः स्वतंत्रता आन्दोलन, जनजाती; समूह, आंदोलन

प्रस्तावना

स्वतंत्रता आन्दोलन में आदिवासियों की भूमिका समझने के लिए उसकी पृष्ठभूमि को समझना जरूरी है। यह सच है कि आदिवासियों द्वारा चलाये गए आन्दोलन स्थानीय परिस्थितियों के अनुसार स्थानीय स्तर पर ही लडे गये। पूरे भारत की स्वतत्रता के लिए आदिवासियों ने कभी अंग्रेजों के विरूद्ध युद्ध नहीं लड़े, इसका प्रमुख कारण है आदिवासी कई उपजातियो और समूहों में बटा हुआ था। आज भी भारत में 428 जनजातियाँ अधिसूचित हैं जबकि इनकी वास्तविक संख्या 642 है। जनसंख्या की दृष्टि से एशिया में सबसे ज्यादा आदिवासी भारत में निवास करते हैं।2011 की

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भारतीय संघ में रियासतों का विलय एकीकरण तथा ब्रिटिश नीतियां

डॉ साधना कुशवाहा

असिस्टेंट प्रोफ़ेसर, स्वामी श्रद्धानंद कॉलेज, दिल्ली विश्वविद्यालय

र

ययन भारत में रियासतों का विलय एकीकरण कर ,भारत की एकता को प्रदर्शित किया है 1857 के के बाद, भारत की रियासतों के प्रति अंग्रेजों का रवैया धीरे–धीरे बदल गया। भारत की रियासतों के थ ब्रिटिश नीतियों का अध्ययन भी है। भारत सरकार अधिनियम 1935,भारत के संवैधानिक इतिहास में ली बार इस अधिनियम ने राज्यों के लिए संघीय ढांचे में आने का रास्ता खोला। इस अधिनियम के दो थमिक भाग थे, एक प्रांतीय स्वायत्तता से संबंधित था और दूसरा भारत संघ के साथ। स्वतंत्रता के बाद रत में रियासतों का एकीकरण कर भारत की एकता को मजबूत किया ।

ख्य शब्द:- रियासतों, एकीकरण

स्तावना

ारत के राजनीतिक एकीकरण ने कई रियासतों, औपनिवेशिक प्रांतों और संपत्ति से सदियों में पहली बार क संयुक्त राष्ट्र की स्थापना की। विभाजन के बावजूद, एक नए भारत ने विभिन्न भौगोलिक, आर्थिक, , भाषाई और धार्मिक पृष्ठभूमि के लोगों को एकजुट किया। राजनीतिक अभियानों, संवेदनशील कूटनीति और सैन्य संघर्षों की एक महत्वपूर्ण श्रृंखला के माध्यम से 565 रियासतों के एकीकरण के साथ 1947 में प्रक्रिया शुरू हुई। भारत स्वतंत्रता के बाद राजनीतिक उथल–पुथल और जातीय असंतोष के माध्यम से बदल गया था, और इसकी विविधता के लिए स्वाभाविक रूप से एक संघीय गणराज्य के रूप में विकसित हो रहा है। इस प्रक्रिया को हिंदुओं और मुसलमानों के बीच संवेदनशील धार्मिक संघर्षों, विविध जातीय आबादी के साथ–साथ भू–राजनीतिक प्रतिद्वंद्विता और पाकिस्तान और चीन के साथ सैन्य संघर्षों द्वारा परिभाषित किया गया है।

जब भारतीय स्वतंत्रता आंदोलन 15 अगस्त 1947 को ब्रिटिश राज को समाप्त करने में सफल रहा, तो भारत के नेताओं को औपनिवेशिक शक्तियों द्वारा संगठित मध्यकालीन युग के राज्यों और प्रांतों के बीच खंडित एक राष्ट्र विरासत में मिलने की संभावना का सामना करना पड़ा। भारत के सबसे सम्मानित स्वतंत्रता सेनानियों में

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प्रारंभिक मध्ययुगीन कश्मीर में सामाजिक और सांस्कृतिक स्थिति

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सार
यह अध्ययन प्रारंभिक मध्ययुगीन काल के दौरान जम्मू कश्मीर की संस्कृति और सामाजिक व्यवस्था का वर्णन किया गया है कश्मीर के विभिन्न शासकों का वर्णन तथा कश्मीर की बौद्ध वास्तुकला लक्षित अवधि में बहुत विकास और प्रगति का चित्रण करती है। कश्मीर के प्राचीन मंदिरों में भारत के अन्य हिस्सों की तुलना में कुछ अनूठी विशेषताएं हैं क्योंकि वास्तुकारों ने मंदिरों के निर्माण के लिए कई नई शैलियों डिजाइनों और तकनीकों के साथ-साथ आधार से ऊपर तक स्थानीय सामग्री का उपयोग किया है अतः कश्मीर ने विभिन्न धार्मिक संप्रदायों के विकास को देखा था। सूत्रों से पता चलता है कि इस अवधि के दौरान कई देवी-देवताओं की पूजा की गई थी। कुछ लोकप्रिय संप्रदाय नागा बौद्ध धर्म वैष्णववाद, शैववाद आदि थे। नागा पूजा को प्राचीन काल से स्रोतों में सदर्भित किया जाता है।

मुख्यशब्द : कश्मीर संस्कृति, सामाजिक

प्रस्तावना

कश्मीर के प्रारंभिक मध्ययुगीन समाज ने प्रकृति के साथ सामंजस्य की भावना से जीवन और वास्तविकता के प्रति अपने दृष्टिकोण को प्राप्त किया। इसने एक आध्यात्मिक और सांस्कृतिक माहौल को जन्म दिया जिसमें विभिन्न धर्म बिना किसी विरोध के साथ-साथ फले-फूले है। कश्मीर ने विभिन्न धार्मिक संप्रदायों के विकास को देखा था। सूत्रों से पता चलता है कि इस अवधि के दौरान कई देवी-देवताओं की पूजा की गई थी। कुछ लोकप्रिय संप्रदाय नागा, बौद्ध धर्म, वैष्णववाद, शैववाद आदि थे। ऐतिहासिक परिप्रेक्ष्य में कश्मीर का क्षेत्र हमेशा अपने भूगोल के कारण महत्वपूर्ण रहा है, जिसने इसे विदेशी आक्रमणों के खिलाफ दृढ़ता से संरक्षित किया। प्राचीन कश्मीर जम्मू और कश्मीर के समान नहीं था, जो सिंधु नदी के पूर्व से रावी नदी के पश्चिम तक फैला है, लेकिन एक अनियमित अंडाकार घाटी है, जिसकी लंबाई 84 मील और चौड़ाई 20-25 मील है, जो 330 से 330 के बीच है। यह 12000 से 18000 फीट की ऊंचाई पर अलग-अलग बिंदुओं पर अलग-अलग पहाड़ों की एक शृंखला से घिरा हुआ है। घाटी की भौतिक विशेषताएं इसके बर्फ से ढके पहाड़, सुंदर झीलें और नदियाँ और हल्के लाल करेवा हैं। रक्षा दीवार के रूप में इन पहाड़ों का महत्व निवासियों और विदेशी पर्यवेक्षकों द्वारा पूरी तरह से पहचाना गया है।

उत्तर भारत के बाकी हिस्सों की तरह प्रारंभिक मध्यकालीन कश्मीर में समाज कई जातियों और पेशेवर समूहों से बना था, जिन्हें एक वर्ग कहा जा सकता है। हमारे काल की संस्कृत साहित्यिक कृतियाँ इन जातियों और वर्गों की सामाजिक स्थिति का बहुत स्पष्ट चित्र प्रस्तुत करती हैं। कल्हण की राजतरंगिणी प्रदर्शित करती है कि कश्मीर की जनसंख्या में विविध जातियाँ शामिल थीं, जिनमें कैवर्त,

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भारतीय समाज में श्रीराम के मायने

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प्राचीन काल से ही भारतीय समाज और संस्कृति की आधार भूमि अध्यात्मिक रही है | इस आध्यात्मिक भावना को काल के परे ले जाने का कार्य दो कालजयी भक्त कवियों सूरदास एवं तुलसीदास ने किया। महाकवि सूरदास ने अपने आराध्य लीलाधारी श्री कृष्ण को चुना तो लोकवादी तुलसीदास ने अपना आराध्य मर्यादा पुरुषोत्तम श्री राम को चुना। भारतीय समाज में युगों-युगों से इन महापुरुषों के गुणों का अनुकरण किया जाता है। लेकिन जिस प्रकार प्रभु श्री राम की समाज में स्वीकार्यता है उसके पीछे महाकवि तुलसीदास के 'रामराज्य की परिकल्पना' का विशेष योगदान है। जिसमे महाकवि श्रीराम को केंद्र मानकर रामराज की जो अवधारणा प्रस्तुत करते हैं | उस रामराज्य में कोई भी व्यक्ति दुखी और दरिद्र नहीं हैं | इसी कारण से 'रामचरितमानस' एवं उसमे वर्णित श्रीराम का चरित्र विश्व समाज के लिए अनुकरणीय हैं | फलत: विश्व के अनेक महापुरुषों के प्रिय एवं आदर्श चरित्र श्रीराम हैं | जिससे वह प्रेरणा ग्रहण करते रहे हैं। जैसाकि नेल्सन मंडेला और बराक ओबामा की प्रिय पुस्तकों में से एक रामचरितमानस है। भारतीय संदर्भ में बात करें तो राष्ट्रपिता महात्मा गांधी की भी प्रिय पुस्तक 'रामचरितमानस' थी। इसके अतिरिक्त विदेशों में बसे भारतीयों के प्रयासों से विश्व के अनेक देशों में श्री राम के मंदिर स्थापित हैं और वहां निरंतर रामचरितमानस का पाठ होता रहता है। इस प्रकार विश्व के अन्य देशों में श्री राम की महत्ता ही इसके मायने तय करती हैं।तुलसीदास ने लिखा है कि-

कलियुग सम जुग आन नहिं जौ नर कर विस्वास |
गाई राम गुन गन बिमल भव तर बिनहिं प्रयास |

भारतीय समाज में या यूं कहें कि भारतीय लोक जीवन में व्यक्ति के दिन का आरम्भ श्री राम से शुरू होता है और श्रीराम के नाम पर ही समाप्त होता है। भारत के किसी भी घर में पुत्र का जन्म होता है तो लोग कहते हैं कि कौशल्या के घर राम के समान पुत्र पैदा हुआ है या राम का जन्म हुआ है-

भये प्रगट कृपाला दीनदयाला कौसल्या हितकारी।
हरषित महतारी मुनि मन हारी अद्भुत रूप बिचारी।।

'यह अद्भुत बात है कि जिस बालक को श्रीराम के जीवन और मूल्यों का बोध तक नहीं है उसके व्यक्तित्व में श्रीराम समाहित

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वैश्विक परिदृश्य की चुनौतियाँ एवं भारतीय वांग्मय

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वर्तमान विश्व कोरोना महामारी से जूझ रहा है| विश्व इतिहास में इससे पूर्व ऐसा संकट देखने को नहीं मिलता है | जिससे विश्व का हर देश पीड़ित और प्रभावित हो | आज से पहले भी वैश्विक समाज ने अनेक संकटों का सामना किया है |लेकिन यह संकट उन सभी सभी संकटों से भिन्न है | पूर्व की समस्यायों से कुछ देश ही प्रभावित रहे हैं | लेकिन कोरोना महामारी से तो संपूर्ण विश्व प्रभावित है | मानव को समझ में नहीं आ रहा कि इस संकट से निकलने का मार्ग क्या है ? हालांकि अन्य संकटों की तरह यह संकट भी समय के साथ मानव द्वारा हल कर लिया जाएगा | यद्यपि यह अनेक समस्याओं और चुनौतियों को जन्म देगा | क्योंकि मानव कई महीनों से अपने घरों में कैद हैं | और बाहरी दुनिया से कटा हुआ है | लेकिन जब हालत सामान्य होंगे और मनुष्य अपने घरों से बाहर निकलेगा तो उसको कई प्रकार की चुनौतियों का सामना करना पड़ेगा | क्योंकि प्रकृति में इतने दिनों में अनेक बदलाव दृष्टिगोचर हुए हैं, यह होंगे | इन बदलावों से पशु-पक्षी एवं मानव कैसे अपना सामंजस्य स्थापित करेगा| विश्व मानव समाज के सामने यह एक बड़ी चुनौती है |

कोरोना महामारी से न केवल भारत बल्कि विश्व समाज में अनेक परिवर्तन होंगे | उन परिवर्तनों से समाज के सामने संकट उत्पन्न हो जाएगा | किसी भी समाज के लिए संकटों का सामना करना एक बड़ी चुनौती होती है| हालांकि विश्व का समाज पहले भी अनेक चुनौतियों और संकटों से जूझ रहा था | चिंता इस बात की हैं कि कोरोना महामारी से उत्पन्न संकट समाज के ताने-बाने को ही न छिन्न-भिन्न कर दे | जबकि पहले से ही विश्व के समाजों में जाति, धर्म, रंग और संप्रदाय के आधार पर भेदभाव मौजूद है| जिसकी वजह से विश्व के समाजों में विभेद पैदा हो रहा है | यह मानवता के लिए एक खतरनाक संकेत है | अब कोरोना की वजह से इस भेदभाव को बढ़ने का एक और कारण मिल जाएगा | विश्व का समाज इस समस्या का समाधान कैसे करेगा | यह विचारणीय प्रश्न है ?

कोरोना महामारी की वजह से एक बड़ी समस्या लोगों की बड़ी संख्या में शहरों से गांव की तरफ पलायन है | गांव जहां पहले ही सामाजिक, आर्थिक और सांस्कृतिक समस्याओं से जूझ रहे थे | समाज के लिए पलायन करके पहुंचे गांव ही व्यक्ति एक बड़ी समस्या बन गए हैं | ये वे लोग हैं ,वर्षों पहले अपना गांव छोड़कर शहर जा चुके थे | गांव उनको भूल चुका था | अब गाँव अपने भौगोलिक और सामाजिक संरचना में इनका सामंजस्य कैसे बिठाए | यह गांव के सामने एक बड़ी समस्या है| गांव में पहले ही रोजी और रोजगार की समस्या है | अब इन प्रवासी व्यक्तियों को गांव अपने में कैसे समाहित करके रोजी और रोजगार की व्यवस्था करें | अब जब गांव में रोजगार के साधन कम है तो निश्चय ही समाज में रोजगार की

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जायसी के साहित्य में सांस्कृतिक एकीकरण

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मलिक मुहम्मद जायसी सूफी काव्यधारा के महत्वपूर्ण कवि है | उनकी रचनाओं में **सूफी धर्म** और दर्शन का प्रभाव मिलता है | जायसी ने हिन्दू घरो में प्रचलित कथा -कहानियों को आधार बनाकर 'पद्मावत' की रचना की | भक्तिकालीन इतिहास में सूफी कवियों का यह अद्भुत प्रयोग है | जहाँ उन्होंने सूफी दर्शन की चाशनी में लपेट कर हिन्दू घरो की कथा -कहानियों को तसव्वुफ़ शैली में प्रस्तुत किया है | इससे इनकी रचनाओं में प्रेम की जो मिठास है वह उस समय के समाज के कड़ुवाहट भरे माहौल में एक मिठास घाल रहा है | हिन्दू और मुसलमान आपसी वैमनस्य को भुलाकर एक दूसरे को गले लगा रहे है | इससे न केवल **सामाजिक-समरसता** को बढ़ावा मिल रहा है बल्कि दो संस्कृतियाँ आपस में घुल मिलकर भारतीय **सांस्कृतिक एकीकरण** को मजबूत बना रही है | इस दृष्टि से जायसी की रचना 'पद्मावत' का अतुलनीय योगदान है | निश्चय ही सूफी संत महाकवि मलिक मुहम्मद जायसी जहां एक ओर काव्य, संस्कृति, कला और भारतीय संत परंपरा के प्रकाशमान नक्षत्र में रहे हैं, वहीं दूसरी ओर उन्होंने दो भिन्न संस्कृतियों और धार्मिक परंपराओं को पूर्ण आस्था और विश्वास के साथ अपनाते हुए 'समन्वयकर्ता' और अपार सहिष्णुता धर्मी कवि होने का परिचय भी दिया है। प्रख्यात विद्वान वासुदेव शरण अग्रवाल ने लिखा है की "'पद्मावत काव्य का अनुशीलन करते हुए जिस बात की गहरी छाप मन पर पड़ती है, वह यह कि कवि ने भारत भूमि की मिट्टी के साथ अपने को मिला दिया |"1

'पद्मावत' की रचना उस समय हुई जब विदेशी शासकों के बढ़ते हुए आतंक ने जनता के साथ-साथ साहित्य को भी अस्थिर कर रखा था। विदेशी शक्ति के भय से **'वीरगाथा काल'** वाले **चारण कवि** राजस्थान में सिमट के रह गए थे। परंतु सूफ़ियों के प्रवेश से हिंदु-मुसलमान दोनों के दृष्टिकोण में बदलाव आया। पं रामचंद्र शुक्ल लिखते हैं की -"पंडित और मुल्लाओं की तो नहीं कह सकते पर साधारण जनता राम और रहीम की एकता मान चुकी थी। साधुओं और फकीरों को दोनों संप्रदायों के लोग आदर और सम्मान की दृष्टि से देखने लगे थे। भारतीय जनता की प्रवृत्ति भेद से अभेद की ओर हो चली थी। एक ओर भक्तिमार्ग के आचार्य महात्मा भगवत्प्रेम को सर्वोपरि ठहरा चुके थे और दूसरी ओर सूफी महात्मा मुसलमानों को "इश्क हकीकी का सबक पढ़ा रहे थे।"

वस्तुतः मलिक मुहम्मद जायसी का समय 1477 ई 1542 का रहा है। यह राजनीतिक एवं धार्मिक दृष्टि से भारत में उथल-पुथल का समय था, जिसमें लोदी एवं मुगल वंश के साम्राज्य थे। जायसी ने बाबर के समय से पहले पद्मावत कृति की शुरुआत करके शेरशाह सूरी के शासनकाल में इसको पूरा किया था। जायसी के जन्म एवं मृत्यु के समय के बारे साहित्यकारों के मत भिन्न हैं, किन्तु अपने जन्म या निवास स्थान के बारे में जायसी ने स्वयं ही स्पष्ट उल्लेख अपनी रचना 'आखिरी कलाम' में किया है -

'भा अवतार मोर नौ सदी। तीस बरिख ऊपर कवि बदी।।" (आखिरी कलाम 4)

YOU 292

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Work Force Participation Of Women in Mountain Region: A Case Study of Saikot village of Chamoli District, Uttarakhand

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Abstract

As our society and nation transform from more rural traditional economy to urban globalized economy; the question of women workforce participation is crucial to answer. The data from recent studies shows the declining trend of women participation in workforce from 33.9per cent in 2005 to 27per cent now. This paper tries to articulate and empirically study the structure of women labour force participation in mountain through the case study of Saikot Village of Chamoli district in Uttarakhand in north part of India. Contrary to popular understanding the factors of education level, skill and traditional knowledge of women plays substantive role in boosting rural economy. In rural society women plays the central role from carrying the burden of living to household unpaid work. It has been found that the overall female work force participation in Saikot Village, Chamoli, Uttarakhand has declined marginally during the last few decades. Women collect fuelwood and fodder from the adjacent forest region known as Khajiri Jungle which is 5 to 15 km from the village and fetch water from the nearby spring which is located 1 to 2 km from the village. Fuelwood was gathered from the Khajiri Jungle, a local mountain forest area. On a daily basis the majority of the population travel 5 to 10 km to gather it. They spend almost the entire day gathering fuelwood. They travelled varying distances depending on their age groups, sometimes 4 to 5 km, sometimes 6 to 10 km and even more than 10 km. they had to travel further in the off season due to lack of fuelwood.

Key words: *Women, Workforce participation, Fodder, Fuel, Saikot*

1. Introduction

The work force participation is function as when the population of a country in which

row 293 link

RESEARCH PAPER

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Demographic Dividend: An Asset for India

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Abstract

Demographic dividend is the acceleration in the economic growth which is brought about as a result of a fall in fertility and mortality rate in the population of a country. This leads to a subsequent change in the age structure of the population of a country. With the decline in the birth rate, the young dependent population of the country declines in relation to the working age population. Due to an increase in the productivity of working population, the per capita income of a country rises. It is the period during which the population of the country experience the age structure that is highly favourable for development. India has more than half of its population falls in the age group of working population which is young, i.e. 15 to 64 years and also the most potential and productive as a human resource. Hence, demographic dividend can be an asset if it is used reasonably and rationally. This will lead to expanding the labour force, the level of urbanisation and industrialisation and henceforth creating rapid development of the country. The expanded workforce increases the efficiency of the country's economy. The main aim of the paper is to discuss the trend of demographic dividend with respect to population structure and composition in India and also to understand the existing governmental policies and programmes for promoting youth to benefit as demographic dividend for economic growth of the nation. For this study, population data from various sources such as Census Data of India and world population data for various years has been collected. The data is then tabulated, analysed and represented through line graph, bar graph and pyramids.

There are certain challenges which India will face during this phase of demographic dividend which includes informal economy, low human capital, and even demography and unskilled labour. Various suggestions to combat these challenges have been suggested.

Keywords: *Demographic Dividend, Fertility, Mortality, Economic Growth, Urbanisation, Asset*

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Introduction

According to United Nations Population Fund (UNFPA), the dividend of demography is the growth in the economy that is because of the changing population age structure with a large section of people belonging to the working age population as compare to the non-working population.

Nations like Singapore, Taiwan and South Korea have proactively shown us how the dividend can be used for economic development by making forward-looking policies and programs for youth empowerment with regards to their schooling, abilities and wellbeing decisions. It has been noted that the world's population is growing day by day. The largest bulk of their population is in the working age group (15 to 60 years). This group bulge is largely because of decline in fertility rate in most developing nations of Asia. The increasing trend in working population will give a boost to the economy of India. The group generate income, save and invest much more then population in age groups - children and old population. The dependent age groups are relaying on working population for their

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A Study on Assessment of Post-Liberalization Effectiveness on India's Microscale Companies

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Abstract

In many countries worldwide, small enterprises are the driving force behind economic expansion. 'New millennium national growth, particularly in India, has been greatly aided by it. Because of their ability to create jobs, foster entrepreneurship, utilize local resources, and strengthen the industrial backbone of the economy, they are a popular choice with politicians and the general public. More than five decades of industrial growth in India have been attributed to the small-scale sector, particularly through (SSIs), which have been regarded as essential to the country's economic well-being. The Indian SSI sector has made a significant contribution to GDP growth in job creation, foreign exchange profits, and the proportion of industrial output and contribution to national income. India's central and state governments provide a wide range of advantages and incentives to their citizens. Additionally, the incentives motivate entrepreneurs in the SSI sector to create enterprises, but they also contribute to the economy's entrepreneurial foundation. New entrepreneurs face numerous difficulties due to a lack of adequate support services and infrastructure.

Keywords: Small Scale Industries, Small Business, Sales profit, Sales to Working Capital.

Introduction

India's definition of small business is vague; the only concept that exists is a small ancillary or micro-industry tied to the purchase of machinery and plant. In certain countries, micro businesses are referred to as SMEs (SMEs). The number of employees, annual revenue, and fixed investment all plays a role in defining a small or medium-sized business (SMB). While this may not always be a reliable indicator of a company's size, it does appear to be a common practice. From Rs.62 L to Rs.3 Cr. in 1997, the investment restrictions for small-scale industries (SSDs) were enhanced. Afterward, the amount was reduced to Rs.1 crore in 1999. For 41 goods comprising two primary categories of hosiery and hand tools, the investment cap has been raised to Rs.5 crores. Ancillary to large-scale activities, small production units sell atleast half of their manufactured good stoone or more industrial units. Despite this, there is a significant distinction between the modern small industry and the older ones. Other historic minor industries, such as

YOU 295 Unk

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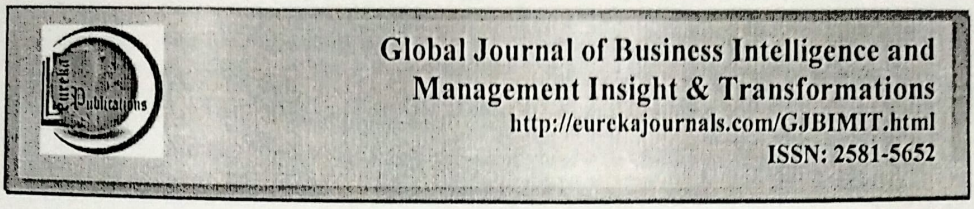

A Study on the Rise of Online Learning Platforms and their Impact on Higher Education amidst COVID-19 in India

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Abstract

COVID-19 has a wide-ranging influence on all walks of society. Especially in the case of education, which has been the most severely affected by the epidemic. Many powerful nations were compelled to implement lockdown, effectively halting all activity for a while. The Pandemic has wholly changed and destroyed old business methods from large corporations to educational institutions. The educational industry has struggled to stay afloat throughout the recent economic downturn. This epidemic has fundamentally changed the teaching, learning, and assessment techniques. The purpose of this research is to assess the impact of COVID-19 and its advantages and disadvantages. In higher education, there is much talk about online learning. This study also examines the free online platforms that the government provided to ensure education in India's higher education sector. Secondary data obtained from books, national and international journals, government papers, and other websites concentrating on different aspects of COVID-19 on higher education is extensively used in this study.

Keywords: COVID-19, Education, Higher Education Sector, Online Learning.

Introduction

COVID-19 had an impact on people in nearly every country. The virus is wreaking havoc on economies, companies, entertainment, education, private and governmental sectors, and, of course, everyday activities. Schools and colleges had to react quickly when COVID-19 was initially implemented throughout the world. The internet was used for classes. The students had to attend classes online after the schools and colleges were shut down due to the pandemic. Everyone made a concerted effort to become acclimated to video conferencing software like Zoom, Google meets, etc. It is unclear how long the trial will continue. With India's internet penetration rate anticipated to surpass 55% by the end of 2025, education digitalization remains a top priority for our government. Many e-learning portals have sprouted up in reaction to the epidemic, and many are thriving as more students enroll in online courses-the new normal post-

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RE-CONCEPTUALIZATION OF WATER SCARCITY: A REVIEW OF RESEARCH STUDIES

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Abstract
Reports that "the next conflict may be over water" or that "approximately forty countries may not have enough water resources in the near future" reflects the seriousness of the water issue that exists or may emerge in the near future, particularly in developing nations. Scarcity of water has become a significant barrier to socio-economic progress and a risk to way of life in many regions of the world. Hydrologists, social scientists, environmental scientists and economists are collaborating to develop various integrated approaches that fully reflect the multifaceted nature of scarcity of water. Research studieson water scarcity has attracted a lot of public and political interest since the 1980s. The current study seeks to re-conceptualize the term, water scarcity and to offer a summary of the water scarcity researches done in the world to capture various aspects of water scarcity during 1990-2010.The technique used consists of obtaining the studies from the Scopus, Science Direct, and Google Scholar databases that are pertinent to the topic of interest. Then reviewing the articles that were recovered after separating the studies that primarily focus on water scarcity. The study showed that throughout the years, there have been an increasing number of studies in this field. The majority of early research were on identifying and characterizing different notions of water scarcity, but as the field has gained popularity, water scientists has started exploring its different domains along with various methodologies to assess water scarcity.

Key words: Water Scarcity, Water Availability, Hydrological Cycle, Demand-Supply Gap.

1. Introduction:

Water is a natural resource that only exists on Earth.Water availability is becoming a major problem in many developing nations, including India. Water is a common property resource that belongs to everyone, yet its supply and availability are unequal because not everyone has access to it at all times.This causes a water shortage, which is when there is not enough water available to meet demand. However, problems with the availability of water and how people can access it are equally essential in terms of social and political perspective(UNDPI,1998).

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In Silico study using Toxtree (TT) Cramer decision tree scheme for different Isomers of Resmethrin -a Type-I Synthetic Pyrethroid

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ABSTRACT

Synthetic pyrethroids are widely used in household, public places and agriculture as insecticides but have harmful effect on human and the environment. The Cramer classification scheme (decision tree) is the best-known approach to estimate the Threshold of Toxicological Concern for a chemical substance based on its chemical structure. In present article we have used *In silico* tool Toxtree to get the Cramer class for isomers of Resmethrin. The stereochemical relationships and toxicologic and environmental effects are also discussed.

Key Words: Pyrethroids, Resmethrin , Toxtree , Cramer decision tree , Threshold of Toxicological Concern (TTC)

INTRODUCTION

Natural pyrethrum extracted from the *Chrysanthemum cinerariaefolium* has been widely used as a natural insecticide [1,2]. In general, it is considered to be less harmful to humans and the environment. Its low toxicity may be due to a fast biotransformation in higher species. Its readily/rapid degradation in sunlight does not allow it to be used commercially for agricultural and other applications.

VOL 303

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Augmentative role of *Piriformospora indica* fungus and plant growth promoting bacteria in mitigating salinity stress in *Trigonella foenum-graecum*

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Key words:
Photosynthesis, stomatal conductance, transpiration, internal CO_2, carotenoids, chlorophylls, protein, nitrogen

ABSTRACT

An experiment was conducted to evaluate the role of *Piriformospora indica* and plant growth promoting bacteria (PGPB) in mitigating salinity stress in *Trigonella foenum graecum*. Plants were subjected to three different levels of salinity, viz., 0, 70, and 150 mM NaCl (electrical conductivity value 0.01, 7.67, and 15.50 mS cm^{-1}, respectively) using a completely randomized design experiment. The *P. indica* and PGPB showed positive effects in mitigation of salinity stress in fenugreek plants and elevated various growth responses, viz., shoot and root length, shoot and root dry weight, leaf area, and number of leaves as compared to uninoculated plants. Microbial inoculation significantly enhanced the physiological responses, viz., photosynthetic rate, stomatal conductance, transpiration and internal CO_2 as compared to uninoculated plants. Biochemical aspects like carotenoids, chlorophylls, nitrogen, and protein content were also increased in the microbial inoculated plants as compared to uninoculated plants. However, PGPB was more effective than *P. indica* in mitigating salinity stress in fenugreek plant. The findings of this study revealed that *P. indica* and PGPB inoculation can help the plants to overcome the deleterious effects of salinity stress in fenugreek plants.

1. INTRODUCTION

World agriculture is facing a crucial challenge of meeting the food demand of rising global population, which is currently growing at around 1% per year world population prospects revision. Several biotic and abiotic stresses have a significant impact on the growth productivity, yield, and food quality of plants [1,2]. Damages or diseases caused by a variety of pests or pathogens are referred to as biotic stresses, whereas salinity, rising temperatures, declining freshwater supplies, heavy metals, and other chemical pollutants are example of abiotic stresses which necessitate an integrated solution, collective intervention and extensive research in order to combat these stresses [3].

Soil salinity is one of the most harmful stress among all the abiotic stresses [4]. Salinization of agricultural land happen mainly because of the deposition of salt ions in soil (chlorides, sulphates, nitrates, calcium, sodium, potassium, and magnesium) [5] and is viewed as the most significant constraints on agricultural production and food security since crops react to soil salinity in a variety of ways and while growing in salinity conditions these factors completely influence their ability to sustain and achieve a sufficient amount of production [6]. NaCl is the most common salt found in soils which hampers soil water conductance, porosity, and aeration [7,8]. Salinity affects over 20% of agricultural land worldwide [9]. An estimate number of 6.7 million hectares of land in India is also salt affected with Gujarat having the largest volume of almost 71% of the overall salty soils in India.

Horticultural crops (spinach, potatoes, tomatoes, and lettuce) and cereals (maize, wheat, rice, and legumes) are sensitive to salinity stress which reduces the yield up to 50%–75% [5]. A plant that is under the influence of salt stress goes through series of morphological, physiological, and molecular modifications, eventually obstructing its maturation [10]. Photosynthesis is affected by soil salinity, which results in a reduction in leaf area. With extended salt tension, old

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700 306

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NATIONAL EDUCATION POLICY 2020: A PERSPECTIVE ON LANGUAGE, CULTURE AND TRADITION

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Abstract:
Many factors decide the growth of a nation, such as socio-economic, cultural, traditional, ethical value systems, political and educational. The education system provides a direction to the stakeholders on which the overall development of a nation depends. All these policies need a review from time to time, depending on the need of the time. A close look at the present education policy shows that though it has fulfilled the need according to growing globalisation and open market policy but falls short on many aspects necessary for the holistic growth of the young generation. The National Policy 2020 takes care of the economic aspect and moral and ethical values by including our traditional educational system. Our traditional education system is based on the policy of inclusion and a multidisciplinary approach striking a unique balance between subjects of sciences, humanities and polity. This is precisely the need of the present times when most of our energy is being spent on acquiring skills for material comfort only, and that has made our life stressful. But life and growth cannot be defined only based on economic parameters; mental and emotional health is equally important. Our rich cultural traditions and pedagogical approaches cater to these needs. The gap between the present learning outcomes and what is required would be bridged through our rich, tried and tested educational system.
Keywords: Education; Growth; Education; Language; Culture; Pedagogy; Curriculum; Inclusive; Holistic; Policy.

Introduction:

Education plays a vital role in the growth of a nation. It affects and shapes all aspects of the development of an individual; physical, mental, emotional, spiritual and ethical. It gives direction to the thought process of a person. In other words, education shapes the overall personality of an individual. That is why both education policy and its role are critical. The education system in India has seen many changes over some time. Traditionally, the knowledge was imparted in the sylvan surroundings of ashramas by Gurus. Economy, polity, philosophy, moral education etc., were all integral parts of the education system. The purpose of education was the overall growth of students. They were trained according to their interest and aptitude. The entry of East India Company and other foreign traders impacted India's overall social milieu, including education.

Initially, the company came for trade but ultimately established itself as the ruler. The British rulers started bringing changes in India, including education, to make the natives civilized as we know that during British rule, the education policy was formulated in such a way as to assist the colonizers in running the country to their advantage. Ajit Mondal has observed, "The needs of the colonial powers determined the development of education system during the British period." (p. 1). Without dismantling the native languages and indigenous system of knowledge, it was not possible. Lord Macaulay played an essential role in promoting western knowledge in India and English as a medium of instruction. He advocated that the resources should be spent on promoting Western science and literature in English. There was a complete disregard for Sanskrit and Arabic. He did not have any knowledge of the Indian language or literature. Macaulay felt that the native languages did not contain either literature or scientific information. Rejecting these languages would have multiple effects-being colonisers; it would help them maintain a sense of superiority by way of promoting their language and literature; it would popularize their knowledge system and hence, a sense of inferiority among natives about their language and culture; natives, educated in English, would act as good communicators between them and local people. Also, since British officers in India and back home in England were not conversant with local languages, it would save them the unnecessary hassle of learning these. So, promoting their literature and knowledge was the obvious choice. The role of language was essential for effective communication. Hence, English as the medium of instruction fitted well into the working culture.

A sense of elitism came to be attached to it, which automatically took people away from their languages. The knowledge of English helped people materially also. Suresh Chandra Ghosh has rightly observed, "With increasing clerical posts in the growing British establishments, including some mercantile establishments which were fast coming up since the beginning of the nineteenth century, the knowledge of English proved to be useful" (25). Replacing the native language and literature with English implied that it was backward, and natives needed to be civilized to make progress. For them, India was a colony, a market and full of resources to be exploited. It was not only a territorial invasion but also cultural and ideological. This argument is based on Macaulay's clarification on using the words, language and literature in clause 43 of the Charter Act of 1813.

The Charter Act of 1813 laid the foundation of the state education system in India. Orientalists and Anglicists could not decide on the medium of instruction in education. Orientalists argued that Sanskrit should be the medium of instruction because it was the classical language of India and that the Ancient Indian past was glorious. It was not that education did not occur in India before the British rule. Regarding the love of Indians for education, Ghosh has mentioned an observation by F. W. Thomas: "There is no country where the love of learning had so early an origin or has exercised so lasting and powerful an influence. From the simple poets of the Vedic age to the Bengali philosopher of the present day, there has been an uninterrupted succession of teachers and scholars" (6). It was classical as well as spiritual in nature. But Anglicists favoured English and wanted that one lakh rupees allotted

YOU 306

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MOTHERHOOD AND FAMILY IN GLORIA NAYLOR'S *THE WOMEN OF BREWSTER PLACE*

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Abstract: The history of the Blacks in America reveals that the life of Black people in general and Black women, in particular, was very vulnerable during slavery. The vulnerability percolated in every sphere of their life-personal, family as well as community as a whole. The sale and resale of slaves disrupted the family units. So, there was frequent restructuring of family. Black women played a pivotal role at this juncture. She extended her motherly care and compassion beyond her own family. The writings of either black or white writers have not reflected on the contribution of black women. They are only on the margins in their writings. Finding herself at the margins and merely as shadows in the works of Black male writers, the Black women writers wrote about their own stories. They have brought into light their triple whammy because of race, class and gender in their writings. Their major role as fighters, protectors, mothers and binding link in the family has been the central idea. Black women writers place themselves at the centre of their works. Also, they acknowledge the role of their foremothers as guiding force behind their indomitable spirit as mothers and binding force in within the family and community at large as we see in the novel of Gloria Naylor.

Keywords: Black history; Race; Class; Gender; Patriarchy; Black woman; Motherhood; Family.

The journey of the struggle of women for the recognition as individual identity has been long and arduous. This has been done through resistance, protests, writings. But this struggle has been particularly difficult for black women. While white women were fighting against the notions of patriarchy, black women were struggling to be considered not as subhuman. This repressive image of subhuman gave society the reasons to exploit to its advantage. Suiting to their needs, White masters appropriated her as mammy, mule and concubine whereas black men exploited within their own family. Paule Marshall has opined that" the purpose behind such portrayal ...was to deny the black woman her humanity. For if she was less than human, all sorts of crimes could be continued against her and yet, one would go unpunished. She could be exploited in the fields, kitchens, her body freely used, and her children taken away from her, her man castrated before her eyes" (114). This is because of the triple whammy of race, class and gender. Black women had to fight against racism, sexism and poverty. The organised struggle in the form of feminist movements against patriarchy initially did not think about the cause of black woman's plight. Talking about the inhuman treatment of black woman by society, Sandy Russell quotes Sojourner Truth, an ex-slave, from her speech at women's convention in Ohio in 1851, who asked," Ain't I a woman? .... That man over there says that women need to be helped into carriages, and lifted over the ditches, and to have the best place everywhere. Nobody ever helped me into carriages, or over mud puddles, or gives me any best place. Ain't I a woman? Look at me, look at my arms, I have ploughed and planted...no man can head me...and bear the lash as well.... I have borne 13 children and seen most of them all sold into slavery. And when I cried with my mother's grief none but Jesus heard me. And ain't I a woman? (7). These questions not only changed the established notions of 'woman' but also pushed the boundaries of gender. It gave a whole new dimension to Feminism; Womanism. It implies that the feelings of nurturing are deeply ingrained in them. The idea of womanism located individual identity within family and motherhood and not separate from that. Even after slavery no one, including black male writers, was telling their stories. She was only on the margins in the glorification of their roles against slavery and resultant freedom. Her role was completely unacknowledged.

So, black women had to fight in order to stand up for their cause. But in her quest for her own

TOD 307

Research Articles

GENDER, CLASS AND CASTE IN INDIRA GOSWAMI'S *THE OFFSPRING*

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Abstract:
Gender is a socially constructed identity based on the age-old institution of patriarchy. It gives men the primary position, whereas women exist in relation to them as secondary. This stance allows men to control the social spaces while women are relegated to the domestic sphere and are kept away from social, traditional, religious, economic and political power. The control of these resources gives a superior position to men than women. It paves the way for the oppression and exploitation of women. The role of women is appropriated by men in society. The gender-based oppression and exploitation cut across all classes and castes. Gender exploitation is situated within the caste hierarchy. Caste divisions are deeply rooted structural hierarchies based on social, religious and cultural notions. Also, women face gender-based oppression within and outside class and caste.
Keywords: Gender, Class, Caste, Patriarchy, Subjugation, Exploitation, Traditions.

Men and women in society live different lives. Men live a life of supremacy, while women live a subjugated life. It is derived from their gender identities, a socially constructed identity that defines life for both men and women. The problem of women's subjugation and oppression directly relates to gender. Women constitute a sizable population and are given equal status by the constitution. But the problem arises out of patriarchy, the basis on which most societies have been formed. It is rooted in religious, traditional, cultural and social practices. The status of a woman is appropriated by patriarchy, and it is 'secondary', the man being 'primary'. He is the 'subject', and she is the 'object'. Simone de Beauvoir has explained woman's position as the 'Other'. Man is basically the provider. The patriarchal structure renders men political, social and economic power, while women are relegated to domesticity and drudgery. The division of labour, access to empowerment tools, and access to public spaces are all associated with gender identities. This leads to the subjugation of women. Women have to depend on them for everything and are totally under their control. Kamala Bhasin opines that it is not just pervasive but also systemic. Women have taken different stances in their struggle against oppression depending on the need of the changing times. But patriarchy and gender have always been problematised. This seems to be the standard argument in women's writings. The reason is that there is a disparity between what is theoretically available and the social reality. In patriarchal hegemony, women are oppressed and subjugated through gender, caste, and social and cultural traditions. I seek to explore the turmoil in the life of women characters in Goswami's *The Offspring* because of gender, class and caste.

Goswami brings out the conflict in the life of Damayanti, a poor brahmin widow, at various levels based on gender, class and caste in *The Offspring*. It focuses on the complexity of a woman's life at multiple levels- gender, class, caste- overlapping. Patriarchy rests on the gender identity based on the binary of mind and body, public and private. A man's existence centres on the mind and that of a woman on the body. This binary shows that women are incapable of caring for themselves and must be looked after. The basic unit of the family is the reflection of the larger social picture, where the traditional roles are identified based on gender. Men earn, and women look after the needs of the family members. Her role as mother and nurturer is of primary importance to the husband's needs. This is revealed through women characters in the story.

The story opens with the problem that Pitambar Mahajan faces. He has money and status in society but doesn't have any children. He married for the second time after the death of his first wife. The second wife is sick. Pitambar is highly dissatisfied on account of the failure of his wife to give him an heir. The villagers rub salt in his wounds by constantly reminding him of this. The thought of dying without an heir

YOWD 309

Journal Publications

SPECIAL ARTICLE

Assessing Marine Plastic Pollution in India

SAUDAMINI DAS, PRABHAKAR JHA, ARCHANA CHATTERJEE

The rampant use of plastics in India and inefficient waste management practices have led to plastic waste being either piled up on dumpsites or finding their way into the open sea, contributing to the global problem of marine plastic pollution. Marine plastic pollution is a threat to the well-being of marine creatures and humans, and there are heavy economic costs as well. Providing a picture of the situation along India's coast, this study points to the dire consequences in store if no or limited action is taken.

The seriousness of plastic pollution in India was evident when the country celebrated the United Nations (UN) Environment Day 2018 with the theme "Beat Plastic Pollution." Plastics are omnipresent in our daily life; in almost everything we produce and consume. While human existence has become inseparable from plastic in modern times, the lack of a sustainable disposal mechanism for plastic waste has resulted in it piling up in many parts of the world, including the oceans, and assuming the magnitude of a global threat (Borrelle et al 2017).

Marine plastic pollution is on the rise, both in developed and developing countries (Jambeck et al 2015; Kaladharan et al 2017; Kirkley and McConnell 1997). Approximately 5.25 trillion plastic pieces (including a huge amount of microplastics) are estimated to be floating in the world's oceans, weighing more than 2,50,000 tonnes (Eriksen et al 2014). Marine debris originates mostly from land sources (80%) such as municipal and industrial waste dumped into the sea and from littering by tourists in coastal areas. But some come from the marine environment itself—waste disposed from ships and boats, and lost or discarded fishing gear (Lee 2015; Katsanevakis 2011). In 2010, 275 million metric tonnes (MMT) of plastic waste were generated in 192 coastal countries, according to Jambeck et al (2015). Of this, 4.8 MMT to 12.7 MMT ended up in the oceans. Boucher and Friot (2017) hold that more than 300 million tonnes of plastic are produced globally every year and around 8 million tonnes of it go into the oceans as plastic waste.

Oceans provide a bundle of provisioning, supporting, regulating, and cultural ecosystem services, which are provisionally valued at $29.5 trillion a year, more than the United States' gross national product in 2015. Some of these services face threats from plastic pollution, especially habitat services. For example, damage to coral reefs from plastic pollution can result in the loss of fish because corals help in the growth of fish stock by providing a habitat to fish juveniles. Trucost, a research arm of financial information provider Standard and Poor, has estimated that marine litter costs $13 billion a year, mainly through its adverse effect on fisheries, tourism, and biodiversity.[1]

India is described as the 12th largest contributor to marine plastic pollution in the world with coastal urbanisation and population increasing fast (Jambeck et al 2015). At the same time, there are almost no plastic waste treatment plants in the country (Kripa et al 2016). This paper makes an attempt to estimate the amount of plastic debris originating on land and the share of it going into the sea, while projecting some future scenarios under different assumptions. After presenting some general information

This study was facilitated by Mangroves for the Future, International Union for the Conservation of Nature (IUCN), India country office, New Delhi. The IUCN facilitated travel, provided research assistance, and arranged stakeholder meetings. The views expressed are those of the authors, not of IUCN India.

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row 310 Link

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SOIL CONTAMINATION: A PHYCO-CHEMICAL ANALYSIS NEARBY RIVERS AT BALOTRA AND PALI WESTREN RAJASTHAN, INDIA.

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Abstract:

Soil parameter of the present sites was also evaluated because the effluent not only affects the water but also it can also impact on soil quality. Some of the general soil parameters are also examined. The water holding capacities (WHC) of the both the sites are calculated seasonally and it is found that the maximum values in winter and rainy season and minimum in summer.

Key Words: *Soil, River, Pali, Balotra*

Introduction:

Irrigation often involves application of moisture in excess of the storage capacity of the soil. This excess water flows along the surface of the irrigated areas and some of it percolates into the subsoil towards the low-lying areas. If the drainage of this excess water is not taken care of, problems of water logging, salinity and alkalinity of the irrigated land arise leading to heavy loss of agricultural production. This soil survey deals with the nature of this problem and the step that must be taken to keep it under control. Broadly speaking, these steps are as follows:-

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Leaf senescence and its regulation with phytohormones and essential elements: An overview

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Aging, cell death, oxidative stress, remobilization of nutrient

ABSTRACT

Leaf senescence is a crucial developing phase that requires the orderly disassembly of macromolecules in order to transport the nutrients from leaves into other organs and is life-threatening for plants capability. The leaf senescence is the result of a multifaceted and highly regulated mechanism involving the corresponding activities of several pathways. A lot of progress has been made recently in understanding signaling pathways of senescence, as well as how to complete the orderly process of degeneration. This paper mainly covers recent developments in the senescence of leaf and describes the function of phytohormones and essential elements from the molecular network dynamics.

I. INTRODUCTION

The term "aging" can be defined as the increase in age, leading to age-dependent degradation of tissues and species in later stages of life in both plants and animals [1]. However, senescence refers to the highly regulated expression of gene and the presence of cellular degradation in plants and animals with somatic/germline. Two forms of aging exhibit in plants: mitotic and post mitotic senescence [1,2]. Mitotic senescence occurs in meristematic tissue when cell or replication division is stopped. Post-mitotic ensues in plant organs such as leaves and floral petals after the cell differentiation and development which follows a dynamic and programmed deteriorating progression [3]. This is crucial and normally occurs in various plant tissue forms, viz., leaves, reproductive organs (stamens and style), root cap, and germinating seeds. Senescence and programmed cell death (PCD) both reflect the mechanisms that contribute to loss of individual cells. The senescence can therefore also be considered as one of the examples of PCD [4].

The process of leaf senescence develops regularly, in which the plant structures and biomolecules are broken down and then transported to various other plant parts like fruits, seed, and apical leaves. Leaf senescence is based on age-dependent and accelerates in transition from vegetative to reproductive development.

Senescence process is genetically regulated which involves significant changes in the pattern of expression of genes leading to cell degradation and reallocation of resulting products to the newly developed organs. Several senescence-associated genes, encode enzymes that participate in protein degradation and emphasize the importance of nitrogen recycling. In several species, mutants that show delayed leaf senescence have been identified and are very useful in the study of cell maturation and cell death. All these mutants maintain the color of leaves for a prolonged period of time. Functional mutants which are combined with a delay in senescence and metabolic ability preservation are conveniently distinguished from those that maintain green color but have the behavior of natural aging. The progression and initiation of leaf senescence process is correlated with environmental factors as well as developmental cues (Fig. 1). In fact, senescence may be caused by darkness, abiotic stresses, and microorganisms in otherwise young leaves [5].

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YOLO 313 Mark

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Effect of dust grains on the parametric coupling of a lower hybrid wave driven ion cyclotron wave in a tokamak plasma

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ABSTRACT

In this article, the effect of dust charge fluctuations on the parametric upconversion of a lower hybrid wave into an ion cyclotron wave and a side band wave in a two-ion species tokamak plasma is studied. When the oscillatory velocity of plasma electrons is a few percent of the sound velocity, the lower hybrid wave becomes unstable and decays into two modes: an ion cyclotron wave mode and a low frequency lower hybrid side band wave. Furthermore, a ponderomotive force by a lower hybrid pump and a side band wave is exerted on the existing electrons, which drives the ion cyclotron decay mode. The presence of negatively charged dust grains and their shape, size, radius, and density influence the instability. The growth rate of instability is calculated by considering typical existing D–T (Deuterium–Tritium) dusty plasma parameters, and it is observed that the growth rate increases with the relative density of dust grains, number density of dust grains, oscillatory velocity of electrons, and amplitude of pump waves. However, the normalized growth rate increases with the unstable wave frequency, and it also increases as we increase the ratio of deuterium to tritium density. Here, the growth rate decreases with the increase in the size of dust grains and electron cyclotron frequency. The theoretical results summarized in the present study are able to efficiently elaborate the complexity produced in plasma properties in a tokamak due to the dust–plasma interactions, which are briefly discussed here.

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I. INTRODUCTION

Complex plasmas, space plasmas, and plasmas in fusion devices contain many ions species, e.g., positive ions, negative ions, electrons, and negatively charged dust grains. The addition of dust grains modifies plasma properties and wave behaviors and leads to the occurrence of additional wave modes. Dispersion relations for these wave modes become more complicated due to the wave–particle interactions in the plasma. The interest in studying the effect of dust grains on the parametric instabilities of large amplitude pump waves, lower hybrid current drive, and heating inside a tokamak and in small plasma devices is growing very fast these days. The lower hybrid waves (LHWs) are highly electrostatic with a large wave propagation vector $\vec{k}$ along the magnetic field, which makes them attractive for radio frequency heating of tokamak devices and fusion plasmas. Initially, high power lower hybrid waves having a frequency range of 500 MHz to 1 GHz were the strong candidates for heating a magnetized plasma to thermonuclear temperatures, but in recent years, the large amplitude lower hybrid waves are useful at higher frequency (1–5 GHz) for driving non-inductive currents in tokamak plasmas. Hence, it opened the possibility of running tokamak in the steady state. Experimental observations[1–4] show that the parametric instability occurs and a relationship exists between ion heating and parametric instabilities. The propagation of lower hybrid wave (LHW) instability in a non-uniform medium was studied by Porkolab, and linear theory of lower hybrid parametric instabilities via a non-uniform pump wave in a uniform plasma was explained by Berger *et al.*[5] Nishikawa and Liu[6] found that a traveling pump wave produces instabilities with a finite frequency shift from pump waves. Anomalous heating of a plasma near the

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GREEN MARKETING: A PATH TOWARDS SUSTAINABLE DEVELOPMENT

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ABSTRACT

Environmental issues have gained attention of people all over the world due to increase in the level of carbon emission and pollution. As consumers became more conscious of the environmental issues, they are changing their behavior for the protection of environment. People are now giving preference to green products as they are eco-friendly and help in the protection of environment.

As resources present on the earth are finite and human wants are infinite, it is essential for the marketers to employ these resources efficiently for their operations to attain company's objectives on one hand and making these resources sustain and available for the future generation also. So, green marketing is inevitable.

Green Marketing is an important step in the sustainability of the environment. As a result of environmental consciousness throughout the world, businesses are adopting green marketing as an imperative strategy in the present business scenario by promoting and selling eco-friendly products as consumers mindset and preferences has also shifted towards "Green Products".

Green Marketing is a strategy in which marketer needs to satisfy the needs and wants of the consumer without harming the environment.

The present paper is an attempt to study the significance of green marketing for sustainability. The study also throws light on various matters related to green marketing practices and how

YOW 319

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ASSESSMENT OF GANGA RIVER

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ABSTRACT: To Hindus ,the Ganges river is the most sacred body of the water in the word with scared pilgrimage sites and cities along its banks. Many of the stories from Hindu scripture occurred along the river and more than once Hindu gods drank from it.The river itself is also the embodiment of the goddess Gangs, daughter of Himalaya, the mountain god. Gangs Jal the name of the waters of the Ganga possesses sacred power capable of cleansing the soul and healing the body. Hindus use the water to cleanse ritual objects , symbolically purify themselves before ritual objects, symbolically purity themselves before rituals and prayers and even drink the water to help with illnesses. Now is depleted in flow and polluted due to discharge of untreated municipal and industrial waste, dams and barrages, floral offerings, cremation of dead bodies on its bank. The present review shows that, discernible improvementdespite the problem of operation and maintenance the river water quality over the pre gap period. There is a fluctuating trend of water quality attributed to the flow conditions in the river which depends on rainfall and water abstraction.

Keywords: Ganga river,RiverPollution,India,UnethicalPractice.

INTRODUCTION:

The Ganges is the largest river in India with a profound religious significance. It is known by several names,includingJahnavi,Ganga,Shubhra,Sapteshwari, Nikita,Bhagirathi ,Alaknanda and Vishnupati.Nothing can match the everlasting divinity of the holy river Ganga,the sacred river is true mother by all means. The pollution of the Ganga is a huge challenge .It has already shown Its adverse impact on the environment, ecosystem, and animal and human health.About 40% of India's population across 11 states is dependent on the river for its water,but unfortunately the water is severely polluted with industrial contaminated and human waste.Ganga is one of the major rivers flowing east through the gangeticplain of North India and finally into BangladeshThe river flows through India, Nepal,Bangladesh.Itrises 2510 km in the western Himalayas in the Uttarakhand state of India and drains into Sunderban Delta into Bay of Bengal.The 2510 km or 1557 km rivers originates at the Ganga glacier in the Indian state of Uttarakhand.The major cities along Ganga are HaridwarAllahabad,Kanpur,Patna,Vanarasi.Our national river is also one of the most polluted river in the country and one of the most threatened river basins in the world.The quality of Ganga's water is steadilyworsening.Now not only is the water unfit for drinking,but it would be harmful to use for agriculture purposes,Thelevel of coliform bacteria,a type of bacteria that indicates the purity of water,should be below 50 for drinking and below 5000 for agriculture use.The present level of coli form in the ganga atHaridwar is 5500.A study conducted by the Uttaranchal Environment protection and Pollution Control Board slotted river water into four categories,A being fit for drinking,B for bathing,C for agriculture and D is for excessive pollution level.Dueto the copious availability of water throughout the year it has played a major Role in the growth of Indian civilization and economy (Paul et. al 2013).It accounts for 25% of Indian's water resources .The Ganga basin is among the most heavily populated areas in the world with an average density of 520 persons/km/s(Das. et.al 2012).The basin sustain more than 300 million people in India.Nepal and Bangladesh(Gopal et. al.2000).The basin of river Ganga which has very rich heritage, cultural and religious values,drain about 10,60,000 km/square area and it is the fifth largest in the world(Welcommeet.al.1985) The river system drains about one fourth of the Indian subcontinents.In Indian the river Ganga passes along 29 classical cities ,23 class Ii cities and approximately 50approximately towns because of which different type wastes such as industrial,sewageect.are release into this mighty river ecosystem(Agrawal et.al.2010,Biswas et.al.2015).In present day river pollution is a serious and emerging problem in the majority of developing countries.Due to rapid industrialization, there has been an

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Pressure- and temperature-dependent EIT studies in a parabolic quantum dot coupled with excitonic effects in a static magnetic field

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Abstract. The present paper analyses the electromagnetically-induced transparency (EIT) in a three-level ladder-type system in an excitonic three-dimensional quantum dot (QD) with a parabolic potential in the presence of a static magnetic field, a resonant probe field and a coupler field. Eigenvalues, wave functions, dipole matrix elements and selection rules of the quantum system are calculated analytically within the effective mass approximation by solving the corresponding Schrödinger equation and taking into consideration both the confinement and Coulomb potentials of the electron–hole pair. To illustrate the interaction with the optical fields, the analytical expressions for the complex electric susceptibility, absorption, dispersion, group index (GI) and the combined effects of external factors such as magnetic field, hydrostatic pressure, temperature and dimensions of the QD are examined.

Keywords. Quantum dot; exciton; magnetic field; non-linear effects; electromagnetically-induced transparency; susceptibility; absorption; dispersion; group index.

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1. Introduction

Electronic and optical studies in semiconductor heterostructures have gathered considerable attention due to versatile device applications. Various studies have been carried out on III–V semiconductor heterostructures, particularly, $GaAs/Ga_{1-x}Al_xAs$ semiconductor systems. The strong interaction of these heterostructure systems with light induces novel optical phenomena that are important to comprehend the conceptual physics underlying non-linear optics in these structures. The presence of manifold transition pathways, inhomogeneous broadening, enhanced nonlinear optical properties, design flexibility, ease of synthesis, etc. motivate researchers to study interesting phenomena including non-linear optical properties [1,2], Rashba spin–orbit coupling [3], STIRAP [4], terahertz signal detection [5], Kerr nonlinearity [6], etc. in various semiconductor systems. Electromagnetically-induced transparency (EIT) is one of those phenomena where, using quantum interference effects, an ultranarrow transparency window (TW) opens up to a probe field beam in the presence of a strong coupling laser. The study of EIT allows for many new applications, including quantum information processing [7], efficient non-linear mixing [8], nanosensor [9,10], refractive index sensor [11], slow-light device [12] and optical switch [13] to name a few. The process of EIT was first found theoretically and was then established experimentally by Imamoğlu *et al* [14,15] in atomic systems. Thereafter, both theoretical and experimental researchers have written various research papers based on the study of EIT in semiconductor quantum nanostructures. Phillips and Wang [16] reported experimental studies of EIT arising from exciton spin coherence in the transient optical response of GaAs quantum wells. Gumber *et al* studied EIT in the two-dimensional quantum ring and its application in enhancing the output of the sum-frequency generation process [18]. Niculescu discussed the effect of the electric field process of EIT in a quantum disk under highly intense laser radiation [19]. Bejan has discussed the effect of electric and magnetic fields on the occurrence of EIT in a double quantum dot (QD) system [20,21]. Very recently, Sahebi *et al* investigated EIT in a four-level C-model of GaAs cylindrical QD with parabolic potential [17].

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Generation of ion cyclotron instability by parametric coupling of gyrating ion beam with lower hybrid wave in a complex plasma

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ABSTRACT

In a two-ion species tokamak plasma, with the help of gyrating ion beam was to investigate the impact of dust charge fluctuations on the parametric up-conversion of lower hybrid wave (LHW) into an upper side band wave and an ion cyclotron wave. On the existing electrons, through an upper side band wave and lower hybrid pump, a ponderomotive force has been exerted which in turn drives the ion cyclotron decay mode. The growth rate of instability is calculated by considering typical existing D-T (Deuterium-Tritium) dusty plasma parameters and observed that with an increment in amplitude of pump waves, wave number of ion cyclotron mode, number density of dust grains and relative density of dust grains, an enhanced growth rate is reported. However, a reduction in the growth rate has been detected with enhancing dust grain size and electron cyclotron frequency. The findings of this work can play an imperative role in magnetized plasma sources used in plasma material interaction / surface processing. The tokamak operation is severely affected by the various sizes and density of dust grains, which in turn, considerably affect the choice of material requisite in tokamak.
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1. Introduction

In several plasma devices as well as in tokamak, a vital role has been played by the parametric instability of lower hybrid wave (LHW). In the recent years, it has become high-profiled research to analyze heating and lower hybrid current drive in tokamak. Radio waves of frequency lies in lower hybrid range are used for heating and current drive in tokamak. The non-inductive current drive in Alactor C-Mod tokamak [1–4], HT-7 (Hefei Tokamak-7) [5] and the fully non-inductive discharge of up to 3.6MA in JT-60U [6], 3MA in JET [7], as well as 0.5 MA in Tore Supra [8] tokamak was explored adopting LHWs. The radio frequency heating and current drive in large W7-AS, TFTR tokamak devices [9–12] is reported with the help of neutral beam injection. Adopting LHW in two-ion species plasma, Ahmad [13] has investigated the ion-ion hybrid mode's parametric excitation. With an increment in the wave number of the mode an enhanced growth rate has been observed by Ahmed [13]. A lower hybrid side band and an ion cyclotron mode or quasi-mode have been involved in three-wave parametric decay process. The most dominant process is two stream instability in four wave parametric decay process. Another effecting process is the resonant decay in two LHWs [14–17].

When a material surface comes in the contact with plasma then a thin layer of charged species is formed, designated as sheath. The formation of sheath at the interface of plasma and material has been investigated by Dhawan and Malik under different plasma conditions [18–20]. This sheath has momentous applications in several industries to improve material properties such as corrosive resistance, fatigue resistance, hardness, and many more. The growth rate of instabilities [21] can also be altered due to the formation of sheath. LHWs excitation with the help of gyrating ion beam in a negative ion [22] plasma and higher harmonics generation by a spiraling ion beam in collision less magnetized plasma was explored by Sharma [23]. Here, the expression of growth rates and unstable wave frequency are derived. The experimental investigation of plasma instabilities and observation of parametric drift wave instabilities in an electron cyclotron resonance ion source was studied by [24–25]. The phenomena of generation of whistler wave by parametric decay of lower hybrid wave in a complex

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Effect of repeated exposure of Auxin (indole 3 acetic acid) in Pleurotus Sajor -caju Mushroom Cultivation: A case study

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Abstract - Mushrooms have long been used for medicinal and food purposes. Pleurotus sajor- caju is edible mushroom species. In present study, Pleurotus sajor -caju was cultivated on wheat straw and during its growth various doses of indole 3 acetic acid (IAA) a plant hormone at 10ppm, 50ppm and 100ppm were sprayed in mushroom substrate. Thereafter its effect on the growth and yield of all three flushes were recorded. Results showed that IAA was able to induce stimulation in growth and ultimately increase in yield is also recorded. Various doses of IAA resulted in increased biomass production from 14% to 30 % with reference to control. This study suggest that exposure of the hormone to substrate can be important tool to increase the production of mushroom and thereby increase nutrition demand can be fulfilled.

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INTRODUCTION

Mushrooms have been reported as good source of nutrition and other health benefits substances. Mushroom possesses several vitamins, minerals and high energy level therefore can be exploited as good food source across the world.

India is known for the commercial production of mainly three species includes *Agaricus bisporus, Volvariella volvacea and Pleurotus*. Several health related benefits (medicinal and nutritional values) (Dunkwal et al., 2007) have been observed in these species. Mushrooms are known to have antioxidant potential, thus mushroom intake may reduce oxidative stress level in body hence mushroom show protective properties also (Adams et al., 1999). Earlier studies reported that plant based food products protect us from many diseases such as cancer, cardiovascular diseases and also plays immunomodulatory role (Halliwell & Gutteridge., 1984).

Pleurotus species which are usually known as oyster mushroom, are mainly edible mushroom and also have commercial importance. *Pleurotus* mushrooms are highly rich in protein minerals and vitamins therefore considered to be healthy source of food (Feeney et al., 2014). It has been taken as functional food due its several advantages i.e. high medicinal value, nutrition substances and good taste and aroma. important species due to its medicinal, nutritional and commercial advantages and hence it is being cultivated globally (Knop et al., 2015).

Agricultural based countries are facing issue in order to manage the agricultural residue. Oyster cultivation attracted world due its ability to use agricultural residue as substrate to grow thus address the nutritional scarcity on one hand and environmental protection in other hand. More than 900 million tons of agro waste is being produced worldwide such as wheat, paddy and various cereals straw. The cultivation of the *Pleurotus* mushrooms helps in recycling the agricultural wastes and also became an alternative food source to combat with nutritional scarcity globally, especially in developing countries where growing population is major challenge in order to provide nutritional food. Thereafter, utilized substrate rich in protein content can be further used for different purpose includes production of biogases, cattle feed and also as organic fertilizer (Kakon et al., 2012). Low cost production techniques are being employed for the production of the *Pleurotus* species (Jegadeesh et al., 2018). All edible mushroom are reported to be delicious however, *P. sajor-caju* is one of the most cultivated species among all (Zhang et al., 2002). Zadrazil 1980, reported that *pleurotus* can make its colonies in sterilized wheat straw which is pasteurized (60°C-90°C and fermented (55°C, 120 days) since it has high saprophytic colonizing properties. Unsterilized

Yoro 326 Link

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Few generalized entropic relations related to Rydberg atoms

Kirtee Kumar[1,2] & Vinod Prasad[3]✉

We calculate the analytical and numerical values of the position space Shannon entropy, momentum space Shannon entropy, and total Shannon entropy, S_ρ, S_γ, and S_T, respectively, of free and trapped Rydberg hydrogen-like atoms. The influence of atomic number Z, the principal quantum number n, and energy E on the Shannon entropy of the Rydberg atoms are illustrated. The scaling properties of Shannon entropy with energy of states E and the principal quantum number n have been reported for the first time to the best of our knowledge. Our work explains how Shannon entropy indicates localization-delocalization of the wavefunction. The total Shannon entropy as a measure of the number of nodes in the trapped Rydberg atom's wavefunction is also discussed. We show why an uncertainty relation based on Shannon entropy is superior to Heisenberg uncertainty for Rydberg atoms.

Rydberg atoms are atoms in which one or more valence electron can be excited in states with extremely high principal quantum numbers n[1,2]. The valence electron is predominantly affected in such an atom by the positive charge of the ionic centre, not by its composition. These atoms that demonstrate the consistency of thought between the world of classical mechanics and quantum mechanics are important to study the correlation of classical and quantum regime. Although the study of Rydberg atoms has a long history, the advancement of laser technology has led to great experimental advances for researchers and has revived interest in such studies. Rydberg atoms are also significant in many research studies of astrophysics. These states in theory, give some advantages that could be exploited in the research for new applications. The special properties of Rydberg atoms, *i.e.*, their extreme polarizability, long-range interaction, and long lifetime, have positioned them at the centres of highly active research areas of modern atomic physics and quantum information technology. In 2000, Jaksch et al. proposed a method of generating a fast phase gate using Rydberg atoms, which was the first proposal to use the blockade for quantum information[3]. It was further extended to a mesoscopic regime of many-atom ensemble qubits[4]. Rydberg blockade and antiblockade has also been suggested as a way to generate many-particle entanglement[5–12]. Carr and Saffman have proposed and analysed an approach for preparation of high fidelity entanglement and anti-ferromagnetic states using Rydberg mediated interaction with dissipation for two atom singlet[13]. It was further extended to a stationary three-dimensional entanglement between two-individual neutral Rydberg atoms[14] and maximally entangled states via dissipative Rydberg pumping[15]. In the excitation spectra of ultra cold atoms of Rubidium and Cesium in their Rydberg states, dipole matrix elements and relevant energies were calculated using quantum defect theory[16]. So, there are many studies related to Rydberg atoms which are promising platform for quantum state engineering, quantum metrology, quantum simulation[17,18], quantum information[21], quantum computing[19,20,22], sensing and imaging and quantum optics[23].

Firstly, Michels et al. introduced the idea of study of confined atom. They studied spectral broading of the hydrogen atom inside an impenetrable spherical cavity[24]. The trapped atoms show enhanced response to external perturbation compare to free atoms. In recently, mostly experiments are performed with Rydberg atoms in optical dipole traps and arrays of optical dipole traps. The atoms are temporarily excited to Rydberg states using resonant laser radiation. Typically, the ground-state atoms are trapped by off-resonant trapping radiation, but Rydberg atoms are not trapped. Rydberg atoms are repelled by the Laser-induced ponderomotive potential[25] and transversely trapped in the light tube for times up to 10 *ms*. The experiments of trapping Rydberg atoms have been reported in recent years[26–32]. The theoretical description of trapped Rydberg atoms and their interaction with light and with each other is commonly performed using conventional quantum mechanical approach based on Schrodinger equation. The trapped Rydberg atoms have more quantum information than the free Rydberg atoms because the free atoms interact only at very short range[33]. The trapped Rydberg atoms open up new possibilities for applications of quantum optics and quantum information[34,35]. Therefore, trapped Rydberg atoms have taken importance in recent studies[36].

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ASSESSMENT OF THE IMPACT OF COVID-19 ON GST COLLECTION IN INDIA

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Abstract

With the origin of COVID-19 in December, 2019 from China, the novel corona virus gradually reached all the countries of the world and has caused severe loss of human lives and damage to the economy of the country. The global economy has been shattered during this pandemic time. India is no exception and various sectors of Indian economy have witnessed severe pandemic consequences. Virus has affected GDP, employment, tax collections and various other aspects of Indian economy. GST which is a combined format of various indirect taxes in India is a significant indicator of economic activities important for the economy of the nation. The present study has been designed to analyze the impact of corona pandemic on GST collections during the period between January 2018 and December 2021, which is a pivotal marker for assessment of the economy.

Keywords: *COVID-19, Pandemic, GST, Economy*

INTRODUCTION

The first case of corona was reported from Wuhan, China in December 2019.Covid-19 is an infectious disease that can easily pass from an infectious patient to another healthy person. SARS-CoV-2 virus has a bad effect on the respiratory system of humans, which is fatal. The developed, developing and under-developed countries around the world have been severely affected by this deadly disease. India is no exception and the impact of coronavirus pandemic has been largely disruptive in economical and health related aspects. It has caused severe damage not only to the Indian economy but has resulted in large number of death. During this pandemic, there was an increase in the demand for domestic goods, but the supply and production of goods were disrupted due to Lockdown and other reasons. Due to this, where there was a boom in the export of Indian goods before the pandemic, but there was a huge decline in it after the pandemic. As Goods and Services Tax (GST) is an important aspect of the Indian Economy. The current study is an attempt to analyse the effects of Covid on GST collection during pandemic times.

GOODS AND SERVICES TAX (GST) - A PIVOTAL ECONOMIC MARKER

According to Article 366(12A) of Indian Constitution, GST is basically an indirect tax. The Central Government and the State Governments tax the supply of goods and services in the form of CGST and SGST respectively. However, it does not include alcohol intended for human consumption. such as Central Sales Tax (CST), State Value Added Tax (State VAT), Excise Duty and Service Tax. All these have now been replaced by a single tax i.e. GST. After the approval of the GST Council for various bills like CGST, IGST and UTGST

Yoo 328 link

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Research articles

Polaronic corrections on magnetization and thermodynamic properties of electron–electron in 2D systems with Rashba spin–orbit coupling

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ABSTRACT

Magnetic and thermodynamic properties of two electron system confined in 2-D quantum structures submitted to an applied magnetic field are studied taking into account the spin–orbit and electron–phonon interactions. The confinement is considered as a harmonic potential and the electron–electron interaction is taken as coulombic. We have first solved the Schrödinger equation to obtain energy levels and then obtain all the thermodynamic functions using canonical ensemble. The numerical calculation of our formalism is applied essentially for the GaN and InAs which are (III–V) compounds. Our results show that even at $B = 0$ T, the susceptibility of *GaN* shows diamagnetic behavior for all temperatures. However, with an increase in the magnetic field, susceptibility increases and the system shows paramagnetic behavior for both cases associated with and without polaron effect. We demonstrate that taking into account the Rashba spin–orbit interaction leads to a shift of the cutoff magnetic field Bc (value of B for which the magnetic nature of the dot changes from diamagnetic to paramagnetic) to the higher magnetic field with an increase in temperature. We also show that by taking into account the polaronic effect, Rashba spin–orbit interaction lowers the mean energy of the system. The heat capacity curve shows a peak at a low temperature (Schottky anomaly) and shifts toward high temperature with an increase in confinement and magnetic field strength. The consideration of the polaron effect shifts the heat capacity curve to lower temperatures.

1. Introduction

Recently, the progress and the mastery of the phenomena related to the spin and its interaction with the electronic system motion will certainly open the way to new applications in the spintronic area. Nowadays, spin-based nanodevices for optoelectronic applications and quantum transport constitute a challenging area for many researchers [1]. Based on the spin character instead of the charge carriers (electron and hole), this emerging field of spintronic devices use as a principle the interaction of the spin motion with the carrier orbits in semiconductor nanomaterials known as spin–orbit interaction (SOI) [2–5]. This concept is really impressive in confined systems and leads to more possibilities to discover other extraordinary non-conventional properties both in optoelectronic and in transport phenomena such as Qbit for memory and computing, coding the information, spin field-effect transistors, spin switch, spin LED, spin batteries, and many others devices [6].

Strictly speaking, the concept of spin–orbit interaction (SOI) can be considered as the result of the collective behavior of charge carriers and spin in asymmetrical systems. This coupling can occur through two situations: The first one corresponds to the Dresselhaus SOI (DSOI) induced in the case of bulk inversion asymmetry which corresponds to non-centrosymmetric crystal growth as in III–V and II–VI Zinc Blend and Wurtzite crystal structures [7]. The second situation is known as Rashba SOI (RSOI) takes place only in low dimensional structures and is caused by the asymmetry during the growth process especially in the heterostructure or by an external perturbation [8]. These two effects cause important changes in the optoelectronic, thermodynamic and

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THE EUROPEAN PHYSICAL JOURNAL PLUS

Regular Article

Hydrogenic impurity in a distorted quantum disk: effects of hydrostatic pressure and temperature on the optical properties

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Abstract The structural non-uniformity of the fabricated Quantum Disks is modelled in terms of a non-central potential having azimuthal distortion. The time independent Schrödinger equation for an on-centre hydrogenic impurity in a circular Quantum Disk is solved by employing a combination of Bessel Basis Set method and the Finite Difference method. The resultant energy spectrum and wave functions are used to determine the linear and non-linear optical properties using the compact-density matrix approach. The focus is on the role of azimuthal distortion in modifying the effect of hydrostatic pressure and temperature on the optical properties. The study is performed both in the presence and absence of external magnetic field. The result of varying various control parameters, viz., pressure, temperature, magnetic field and strength of distortion, is studied in the form of shift in the photon frequency corresponding to maxima of observed properties as well as change in their magnitudes. The observations predict appreciable dependence of the optical properties on these parameters.

1 Introduction

The charge carriers may be confined in low-dimensional quantum heterostructures or Quantum Dots (QDs) of different shapes. For example, electrons may be confined in carbon nanotubes and fullerenes. The restriction on the movement of charge carriers in nanomaterials leads to quantized energy levels of these structures like those of atoms. The properties of such materials can be experimentally tailored for specific applications by manipulating their dimensions and composition. The awareness of the realistic nature of various types of confinements enables the theoretical modelling of such trapped particles in nanostructures by employing different kinds of potentials. The choice of the potential depends on the size and geometric shape of the QDs, both of which can be experimentally controlled.

Many authors have studied QDs subjected to various types of central potentials such as Rosen-Morse potential [1], Generalized Hulthén Potential [2], Manning-Rosen potential [3] and a combination of parabolic and inverse squared potential functions [4]. The application of non-central potentials to these quantum heterostructures is also studied, e.g., for ring-shaped non-spherical oscillator potential [5] and Double Ring-Shaped Quantum Dot potential [6]. Since such potentials lack spherical symmetry and may depend on the polar and/or azimuthal angles, they are more appropriate to represent structures with angular asymmetry resulting from geometrical deformations. In the case of lateral confinement in two dimensions, such a study is more realistic due to the fabricated structures having non-homogeneous geometries [4]. The process of assembling Quantum Rings by anisotropic redistribution of the QD material may result in elongated ring-shaped islands on the surface with craterlike holes in their centres [7,8]. The self-assembled Quantum Rings (QRs) usually do not have perfect azimuthal symmetry. There may be variations in their height with respect to the azimuthal angle. This lack of rotational symmetry may be represented by an azimuthal asymmetric potential characterizing the height anisotropy. This along with the interparticle Coulomb interaction potential is employed to theoretically simulate the influence of inherent structural asymmetry and imperfection by Lin et. al. [9].

The study of optical and electronic properties of low-dimensional structures is a very important and interesting field of study since it facilitates the choice of materials for fabrication of nano-devices and has numerous applications in opto-electronic and photonic devices [10]. The optical properties of the QDs with central [1–3,11,12] as well as non-central potentials [5], of Quantum Disk [13,14] and Quantum Ring [4,15], are studied in detail. The optical properties are a function of many factors like material type, size and geometrical shape of the semiconductor Quantum Dot. Moreover, the external factors like hydrostatic pressure and temperature significantly alter the binding energy as well as the linear and non-linear optical response of the semiconductor nanomaterials [13,16–19]. This is due to the dependence of the effective electron mass as well as the relative dielectric constant on the pressure and temperature [13,17–19].

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ORIGINAL ARTICLE

Inter project defect classification based on word embedding

Sushil Kumar[1] · Meera Sharma[2] · S. K. Muttoo[3] · V. B. Singh[4]

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© The Author(s) under exclusive licence to The Society for Reliability Engineering, Quality and Operations Management (SREQOM), India and The Division of Operation and Maintenance, Lulea University of Technology, Sweden 2022

Abstract Defect classification is a process to classify defects based on predefined categories. It is time consuming and manual process. Many automatic defect classification methods have been proposed to speed up the process of defect classification. However, these methods have not utilized the inter relations among the defect reports. In the literature for defect classification, Term Frequency-Inverse Document Frequency and Bag of words based approaches have been proposed. In this paper, we have proposed word embedding based model for the defect classification which is proven to be better in comparison with the existing methods. We have also proposed models for inter project defect classification by considering combination of different datasets of the same domain. We tested the proposed approach on 4096 defect reports using K nearest neighbor, Random forest, Decision tree, Support vector machine, Stochastic gradient descent and Ada boost classifiers in terms of accuracy, precision, recall and F1-score. Experimental results show that Decision tree achieves highest accuracy 98.21% while trained and tested on GloVe word embedding. We have also generated new word embedding using the bug reports corpus. Further, we compare the proposed model with Lopes et.al., 2020 and results show that our model outperforms.

Keywords Word embedding · Orthogonal defect classification · Word2vec · GloVe · Automatic classification

1 Introduction

Inspite of efforts made during software development process, the failures are still a major concern. Defect classification can help in many ways to manage the software development process. A more accurate classification of defects can be used to facilitate defect prioritization, improve the defect prediction models, analysis of module, faster resolution of defects and to identify the quality of components (Endres 1975; Grady 1992; Wagner 2008; Card 1998). Defect classification is a time consuming process which is carried out manually by the experts. Researchers have proposed many approaches to automate the process of defect classification based on their type and impacts. Defect impact directly relates to the customer satisfaction (Hernández-Gonzalez et al. 2018) analyzed and classified the defects based on defect impact.

Understanding the impact of defect; developers can take significant steps to improve the software development process in terms of cost and time. This allows to be focused on reducing the defects that most significantly impact customer satisfaction as opposed to blindly reducing the total number of defects. Software industries are also interested in knowing the impact of their product on customers. Moreover, various approaches have been proposed to

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Electromagnetic Weibel instability in spatial anisotropic electron-ion plasmas

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ABSTRACT

The Weibel instability due to temperature anisotropy of electrons and ions in a plasma in the presence of cold and warm ions is reported. Numerical calculations of the normalized growth rate are carried out when the frequency of electromagnetic waves is greater than or less than the thermal velocity of electrons for typical existing plasma parameters. The normalized growth rate increases with an increasing normalized wave number, and after attaining maxima, it decreases due to thermal effects. Therefore, a parabolic plot is obtained for the growth rate. The threshold values of the growth rate depend on the anisotropy parameters. On increasing the value of the temperature anisotropy ratio of either plasma component, the observed growth rate increases. There is a considerable and contrasting effect of the presence of cold and warm ions on the growth rate of the Weibel instability in the plasma. The addition of cold ions stabilizes the instability and reduces the maximum growth rate values, while the addition of warm ions to the plasma increases the instability with a considerable decrease in the domain of instability. Our theoretical investigations of the effect of temperature anisotropy on the growth rate of the Weibel instability are in good agreement with the existing experimental results.

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I. INTRODUCTION

The temperature anisotropy driven Weibel instability (WI), which provides an efficient mechanism for generating a magnetic field, plays a vital role in several astrophysical phenomena, dense quantum plasmas, and laser-fusion experiments. Weibel[1] in 1959 first introduced an instability present in nearly homogeneous plasma by using the bi-Maxwellian electron distribution function. The author reported the WI as an electromagnetic instability present in the plasma having anisotropy in momentum space, which converts the kinetic energy of streaming electrons into magnetic energy and produces a collisionless shock. In 1959, Fried[2] observed that due to superposition of several counter-streaming electron beams, instability similar to the two-stream instability is created. Krall and Trivelpiece[3] obtained the expression of the growth rate for an electromagnetic (EM) wave propagating in a bi-Maxwellian plasma. Later, Zaki[4] found the condition for the excitation of EM instability when a relativistic electron beam (REB) propagates in an infinite collisionless plasma. Shokri and Ghorbanlilu[5] observed that the growth rate obtained for a relativistic case is greater than that obtained for the non-relativistic case and depends on the plasma frequency and the electric field strength. Davidson *et al.*[6] observed that the Weibel instability (WI) can be created in an unmagnetized plasma with the help of kinetic energy anisotropy and counter streaming motion. In the WI, magnetic field generation with the help of an electron beam, EM radiation, and thermal anisotropy is reported in the literature.[7–11] The generated magnetic field can be calculated in the presence of relativistic shocks as well.[12] WI destruction when particles present in the plasma start to gyrate in the magnetic field has been explained.[13] The WI at the peak of the super intense femtosecond laser pulse was the most significant observation by Krainov.[14] Later, the behavior of an electron beam propagating in a plasma during the Weibel instability was reported by Siemon *et al.*[15] The WI driven-anisotropy in different simulations have been observed by Morse and Nielson,[16] and the WI driven with the help of temperature anisotropy in a 2D particle-in-cell simulation was observed by Ghorbanalilu and Abdollahazadeh.[17] The PIC simulations of the temperature anisotropy-driven WI were also reported,[18] where the

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Research paper

Total Biomass Benefits due to a Plant Hormone (Kinetin) Application on Oyster Mushroom (*P. Sajor-caju*) Cultivated on Wheat Straw

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ABSTRACT

Pleurotus sajor-caju is an important edible mushroom species due encompassing significant medicinal and nutritional values, popularly cultivated worldwide. It contains several essential components such as proteins, fiber, vitamins, and minerals. Therefore, present study evaluated the growth and yield of oyster mushroom (*Pleurotus sajor-caju*) after the treatment of various doses of a plant hormone, Kinetin. *Pleurotus sajor-caju* was cultivated on wheat straw and sprayed with different doses of kinetin i.e. 10 ppm, 50 ppm and 100 ppm three times. All three flushes were collected and measured for total biomass production of mushroom. The results indicate that the hormonal treatment was able to enhance the biomass production in mushroom. Yield was found to increase from 8% to 27% as compared to control and the mushroom biomass from various treatment was 10 ppm (414 g), 50 ppm (482 g) and 100 ppm (298 g).

1. Introduction

Mushrooms are widely known for their wild availability and are being cultivated and harvested in natural condition at outdoor fields (Gupta, 1986). However, due to the increased mushroom consumption and its high nutrition values, indoor cultivation has been started where environmental condition can be controlled for the better productivity of mushrooms as it may provide suitable climatic and other conditions for its growth and development (Sarker & Chowdhury, 2013).

Mushrooms have long been used for medicinal and food purposes. Mushrooms are known to be rich source of proteins, minerals and vitamins (Caglarirmak, 2007). Protein content in mushroom is commonly 19 to 35% which is higher whereas fat content is reported to be very low with respect to the carbohydrates (Wani et al, 2010). *Pleurotus* species contain high potassium to sodium ratio, which makes

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AGEING POPULATION: AN IGNORED HUMAN CAPITAL IN THE PATH TOWARDS SUSTAINABILITY

-1000 334

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Abstract

The demography of the world is changing although regional variations are part of this process. One common change that is occurring in many countries of the world is the change in proportion of ageing population compared to the adult working age group. Some countries are terribly worried about this trend which they think is going to affect their growth rates. While others are preparing in advance. Though the traditional economic theories find the increase in ageing population to be disturbing the balance between productive and dependent population, the policies are also shifting keeping in mind this change. The biggest challenge lies in providing health infrastructure for these people who are viewed to be in state of physical decline. Also, they are believed to be non-contributors to the economy. Every country sooner or later is going to face this challenge. But there is a way out by first acknowledging this truth. Then by positive engagement of both the adults in changing their outlook towards the old; also bringing the elderly within the mainstream of economic activities and make them feel worthy. In the Indian system there has been a tradition of greater positions for the older population in the Indian household and the youth was always taught to respect them. In the present day this system may be dwindling in the cities yet it gives a hope that revival of such values may still be possible. In the sustainable context one can relate to the indigenous and traditional wisdom that comes from these systems and how most education about life and nature was transferred. It can also play a very important role to counter the consumerist lifestyle trending in the cities.

Key word- Demographic trend, Ageing population, Sustainability, Indian Experience.

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MINI REVIEW
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Understanding the Trauma of Menstrual Irregularity After COVID Vaccination: A Bird's-Eye View of Female Immunology

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The intricacies in various signaling routes involved in the menstrual cycle can be impacted by internal as well as external stimuli, and the role of stress, be it physical, psychological, or social, in disturbing the process could be debilitating for a woman. The global endeavor of vaccination rose to protect individuals from the severity of COVID-19, but a conjunction of a short-lived menace of menstrual disturbance in the female population came out as an unsettling side effect. An understanding of the immunological panorama in the female reproductive tract (FRT) becomes important to fathom this issue. The close-knit microenvironment in the FRT shows active microbiota in the lower FRT, but the latest findings are ascertaining the presence of low-biomass microbiota in the upper FRT as well. Concerted signaling, wherein inflammation becomes an underlying phenomenon, results when a stressor elicits molecules of the inflammatory cascade. Learning lessons from the gut microbiota, we need to address the exploration of how FRT microbiota would impose inflammation by manipulating the immune response to vaccines. Since there is a prominent sex bias in the immune response to infectious diseases in women and men, the role of sex hormones and cortisol becomes important. The treatment regimen may be considered differently in women who also consider their ovarian cycle phases. Women exert robust immune response to antigenic encounters *via* cell-mediated and humoral arms. The inclusion of women in vaccine trials has been marginalized over the years, which resulted in unwanted high dosage administration of vaccines in women.

Keywords: COVID-19 vaccine, menstruation, immunology, inflammation, microbiota

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INTRODUCTION

The complex function of regular menstruation is under the systemic endocrine control of secretions from the hypothalamus, pituitary gland, ovaries, and uterus endometrium. Methodical ovulation and hence menstruation gauge the overall wellbeing of a female body, which has been indexed as the "fifth vital sign." The intricate chemistry of various signaling events occurring during menstruation

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REVIEW ARTICLE

Colorectal cancer: risk factors and potential of dietary probiotics in its prevention

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Abstract
Cancer is the leading cause of human death worldwide. In spite of medical advancements, cancer cases are rising globally where Colorectal Cancer (CRC) frequency is third in position in males and second in females. Colorectal cancer (CRC) is a disease where abnormal growth of cells occurs in the colon and rectal area of the alimentary canal. Factors like food habits, smoking, alcohol consumption, obesity, gut dysbiosis, etc. increase CRC risk. The CRC patients suffer not only from painful surgical treatments but also bear the side effects of palliative radiotherapy, chemotherapy, and therapeutic drugs used for the same. Dietary probiotics have great potential in the prevention and management of CRC due to their anticancer properties. The present review discusses the various risk factors of colorectal cancer and important role of probiotic supplements to prevent it. It highlights some of the proposed mechanisms of probiotics for their protective role against CRC. The prevention through modifiable risk factors and probiotic dietary supplements can save the patients from the trauma of the disease. Probiotics regulate gut dysbiosis and prevent CRC through different mechanisms, so more research work and clinical trials in humans with respect to it are expected in the future.

Keywords Colorectal cancer · Gut microbiota · Dysbiosis · Probiotics · Anti-cancer · Dietary supplements

Introduction

Colorectal cancer (CRC) is a cancer of the large intestine which is third in position with respect to its occurrence and fourth in the rate of the mortality worldwide (Brenner et al. 2014) It has a high rate of morbidity and mortality which is increasing each year throughout the world (WHO), so it is essential to check its occurrence by studying and applying our knowledge of the disease, its risk factors, and different interventions to prevent it. It is important to emphasize the ways that can check the development and progression of the disease, especially in high-risk individuals. Thus, there is a need to identify all types of causative factors, control and modify them for their prevention and also look for novel, better, easy, cheap, and effective options that may improve the gut health to defeat the occurrence of the disease. The modulation by probiotics as a dietary supplement which is considered to be one of the options directed to improve the gut epithelium, its microbiota, and the health of the intestine should be evaluated to prevent and treat CRC. The present review discusses the potential and possible mechanisms of probiotics in maintaining the gut homeostasis to prevent CRC with an account of different risk factors which drive to this pathological condition.

Colorectal cancer is a multistage disease with different molecular pathways and a result of accumulated sequential mutations involved in its initiation and progression. Genetic and epigenetic alterations tend to disturb the regulation of some conserved signaling pathways which have an important role in the proliferation, differentiation, survival, and apoptosis of colon and rectal cells. The genes APC, KRAS, BRAF, DCC/SMAD4, MLH1, MSH2, and P53 etc. are involved in CRC, and signaling pathways for the initiation and progression of CRC are epidermal growth factor receptor (EGFR)/mitogen-activated protein kinase (MAPK), (Wnt)/β-catenin,

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HIV : CHARACTERISTICS, CURRENT STATUS OF INFECTION AND A THIRD-GENERATION m RNA VACCINE APPROACH AS A PROMISING ALTERNATIVE TO TRADITIONAL VACCINES

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ABSTRACT : The infections by viruses are a great threat to our immunity but an array of powerful vaccines have successfully protected mankind from the attack of many of them. HIV is a tough enemy of the human body as it eludes the immune system by various mechanisms. It attacks immune cells causing a disease that gradually progresses to AIDS in some infections. Despite the success of ART, which has converted its infection into a manageable chronic condition, it is a major global health problem as 37.7 million people worldwide are HIV infected. ART is a lifelong treatment where a variety of drug options are designed to replace its resistant forms. Vaccines can protect from the stigmatized disease of HIV and control it in the absence of ART. In stark contrast with the speed with which the Covid-19 vaccines were developed in two years of the pandemic, an effective vaccine for HIV is still a challenge after decades of ongoing research. Coincidentally, both HIV and SARS-CoV-2 are pandemic causing mRNA viruses, which have spilled from animal sources. They mutate and attach to their host cells with their surface spikes. The paper is a review of the status of the HIV/AIDS pandemic, the unique challenges of the complex structure of the virus for the development of vaccines and a hope from the novel game-changing mRNA vaccine. After the recent success of the mRNA vaccine for Covid-19, it may become a promising tool to defeat HIV also by providing RNA-based HIV immunogens to trigger the body's immune response.

Key words : HIV, AIDS, mRNA vaccine, ART, Immunogen

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INTRODUCTION

Vaccines are very effective tools to protect individuals from disease and have helped in the control and eradication of some deadly pathogens like polio, smallpox, etc. The continuous efforts to bring a safe and effective vaccine for HIV, which attacks our own defense cells are still in progress for the last three decades. It is a retrovirus causing Immunodeficiency in humans and comes under the group of Lentiviruses (Weiss *et al*, 2004). Based on genetic characteristics and differences in the antigens of HIV, it is classified into HIV-1 and HIV-2 where HIV-1 is predominantly occurring in humans and is more pathogenic to men. HIV-1 infection progresses to a disease called Acquired Immune Deficiency Syndrome (AIDS) which was first reported in the USA in 1981. HIV-1 arose through several independent zoonotic transmissions of Simian Immunodeficiency Viruses (Cleghorn *et al*, 2005) and has evolved from chimpanzees which belong to regions of Central Africa (SIVcpz) where HIV-2 has a different origin that is from Mangabey of Western Africa (SIVsm) (Gao *et al*, 1999 and Faria *et al*, 2014). The HIV-1 has a variety of strains which are classified as Major, New, and Outlier, abbreviated as M, N, O and K. Besides the above groups and subgroups, recombinant forms also appear from different subtypes and are called Circulating Recombinant Forms or CRF (Jia *et al*, 2014 and Pessoa *et al*, 2014).

Anti-Retroviral Treatment (ART) and Highly Active Antiretroviral Therapy (HAART) are advised for infected individuals worldwide. Though, it has checked the progression of infection and disease, it results in a significant economic burden on the patient as its treatment must be taken lifelong and is expensive because a large amount of money is spent on costly medication, care of the patient and preventing its spread. There is an increase

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POTENTIAL OF PROBIOTICS IN IMPROVING SARCOPENIC MUSCLE TARGETING 'GUT-MUSCLE AXIS' THROUGH GUT MICROBIOTA : A SOLUTION FOR HEALTHY AGING

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ABSTRACT : Sarcopenia is a geriatric condition of a skeletal muscle with its major hallmarks of myofiber atrophy, hypoplasia, inflammation, mitochondrial dysfunction and insulin insensitivity resulting in poor locomotor ability. Gut microbiota improves the sarcopenic muscle condition in different ways and the "Gut-muscle axis" has an important role to play in muscle health. Akt1, mTOR, and FoxO signal pathways check imbalance in the levels of signal molecules like IGF-1, insulin, etc. Microbial metabolites like SCFA released by gut microbiota modulate age-related changes through these signal pathways. The optimal concentration of gut microbiota composition impacts protein synthesis in the muscle and reduces inflammation. The present review focuses on the promising potential of probiotics in tackling sarcopenia by replenishing and modulating aging gut microbiota and enhancing their functionality thus moderating muscle atrophy. As most of the work is reported on animal models, it is suggested that well-controlled human intervention studies using advanced techniques of metagenomic and meta-transcriptomic will throw more light on interactions between probiotics and gut microbiota in sarcopenic conditions which can be corroborated by the biochemical and histochemical analysis of muscle. Probiotics derived from the gut microbiota or customized Next Generation Probiotics (NGP) may be considered a more novel and fruitful strategy to address sarcopenia for healthy aging in the future.

Key words : Sarcopenia, geriatric, atrophy, microbiota, gut-muscle axis, probiotics, muscle homeostasis, atrophy, hypoplasia, inflammation, mitochondrial dysfunction, insulin insensitivity.

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INTRODUCTION

Sarcopenia is a geriatric condition of the skeletal muscle when it progressively atrophy, with hypoplasia of myofibers resulting in its poor strength and performance. It is an important health issue worldwide as it results in physical discomfort giving weak locomotor ability with loss of stamina resulting in poor quality of life of the affected person. This puts on more demand for public health care and increases the economic cost of living for the person (Stenholm *et al*, 2008 and Janssen *et al*, 2004). Certain diseases aggravate the sarcopenic changes in the muscle. The characteristics of sarcopenic muscle other than atrophy and hypoplasia are inflammation, mitochondrial dysfunction, insulin insensitivity, decrease in the number of satellite cells and reduced capillary network (Fig. 1). Metabolically, sarcopenia is a result of an imbalance between anabolic and catabolic processes of muscle cells and is a result of factors mainly related to disease outcome, anorexia, inactive lifestyle, nerve-muscle weakness, oxidative stress, etc. A muscle is an important insulin-responsive tissue, the decrease in its physical activity may increase the accumulation of the visceral fat and loss of skeletal muscle mass, which may lead to insulin resistance and sarcopenic obesity (Schrager *et al*, 2007). The risk of different diseases like cardiovascular (Riechman *et al*, 2007) and other disorders of metabolism may be increased in the sarcopenic patient (Ryan *et al*, 1999) reducing the person's chance of survival (Stenholm *et al*, 2008). There are histochemical changes observed in sarcopenic muscle as there is atrophy of fast glycolytic type II fibers and the number of satellite cells, and the motor units decrease (Brown *et al*, 1997; Larsson *et al*, 2019 and Janssen *et al*, 2002).

२०७ 342

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WOMEN EMPOWERMENT & GENDER INCLUSION FUND: EQUITABLE AND INCLUSIVE VISION IN THE NATIONAL EDUCATIONAL POLICY 2020

Dr. Aishvarya Bansal*
Dr. Poonam Bewtra**

ABSTRACT

The National Education Policy, laying down a road map for the next two decades, has been adopted in the midst of a pandemic and a lockdown. The New Education Policy (2020) is a ray of hope recognizing equitable inclusive education: Learning for All. Today 'Beti Padhao, Beti Bachao' has reached new heights and with the advent of NEP 2020, greater emphasis is being laid upon education of women. The GOI constituted a "Gender Inclusion Fund" to provide quality and equitable education for all girls. The fund will focus on ensuring 100% enrolment of girls in schooling and a record participation rate in higher education, decrease gender gaps at all levels, practice gender equity and inclusion in society. Gender imbalance has been noticed under many areas, especially the rural. The inclusion of transgender students in "Gender Inclusion Fund" is particularly significant in the backdrop of Transgender Persons (Protection of Rights) Act. The NEP now states that the "Gender Inclusion Fund" will be available to states to implement priorities determined by the central government critical for assisting female and transgender children in gaining access to education (such as the provisions of sanitation and toilets, bicycles, conditional cash transfers, etc.). Study is based on primary data which was collected via well-structured questionnaire to various schools in Delhi/NCR region. Finally, data was collected from 19 schools shared via Email ID with the administrators of schools and the collected data was analysed using secondary sources available on HRD Ministry website, UGC website, CBSE website, and other official websites of Government of India, online resources, research papers, journals and periodicals. The data collected was summarized using charts and tables. The questionnaire was structured in various parts: First part was about school enrolment ratio 2020-2021 to 2021-2022 in Higher Secondary (11-12), Secondary (9-10), Upper Primary (6-8), Upper Primary (6-8), Pre-Primary in various categories (boys, girls, transgender). Second part was about school infrastructure with (9 parameters). Third part collected details about gender equality (2 parameters), gender sensitization (9 parameters). Fourth part collected the details about the implementation of NEP 2020 in schools with (9 parameters). Data from 19 schools in Delhi region is analyzed through charts and tables in order to assess the level of implementation of NEP 2020.

Keywords: *Gender Inclusion Fund, National Education Policy, Transgenders, Women Empowerment.*

Introduction

Women empowerment has been the top priority of the government under the leadership of Honorable Prime Minister Shri Narendra Modi and the government has also launched several schemes in this direction. All the schemes, be it Sukanya Samriddhi Yojana, Beti Bachao, Beti Padhao Yojana, Balika Samridhi Yojana, CBSE Udaan scholarship Yojana, have only one goal; empowerment, literacy, self-reliance and overall development of the girls/women of the country. The Policy recognizing equitable inclusive education: Learning for All.

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CORPORATE LESSONS FROM INDIAN KNOWLEDGE SYSTEM: LEARNING FROM THE GLORIOUS PAST FOR BUILDING A STRONG INDIA

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Abstract

Our ancient Indian Knowledge System holds a lot of significance in the contemporary scenario. It is a summary of all the elements having significant characteristics like logical, scientific-rational, openness, diversity, to its core. It is encapsulation of traditional and cultural values of different generations of different time periods. The spiritual ideology and corporate lessons given in different elements of Indian Knowledge System were highlighted in the whole world by efforts of many great Indian knowledgeable men. The Indian knowledge system was based on achieving higher self through holy spiritual knowledge. One of the biggest gifts of India to the world is Holy Bhagwad Geeta and it a comprehensive knowledge applicable in practical life.

The study attempts to determine the potential of India's ancient knowledge system in providing solutions to the organization's management problems. This study mainly discusses corporate lessons from Bhagawad Gita, Ramayan and Mahabharat. The study was based on secondary data. The study concluded that corporate teachings that are provided by Bhagawad Gita, Ramayan, and Mahabharat are very useful for corporate people as it provides them an aid in increasing their competency, skills and helps them in facing their fear of failure. The adoption of lessons taught in various Indian Knowledge system can escalate the company's effectiveness and efficiency.

Keywords: *Ancient, Indian Knowledge System, traditional, corporate, lessons, scriptures*

INTRODUCTION

India's Knowledge System started from Vedic culture. Vedic culture is comprised of four Vedas: Rig, Yajur, Sama and Atharva. Rig Veda contains 1028 hymns and came into existence earlier before other Vedas. In order to worship God, these hymns were sung.

The Yajur Veda specifies the rules to be considered at the moment of sacrifice. The Sama Veda cites chanting during the period of sacrifice. The Atharva Veda shows rituals. The Dharma Sastras cites the rules to be observed in the everyday life. Six Vedangas viz., *Shiksha, Kalpa, Vyakarna, Nirukta, Chhanda*, and *Jyotisha*, also hold significant place in the Indian Knowledge System. Indian Knowledge System also involves knowledge obtained from *Upanishads, Mahabharta, Ramayana, Puranas, Brahmanas* and *Aranyakas.*

The Upanishads contains philosophical text related with different areas like the creation of world, the absolute, the soul, and the mystery of nature.

Kautilya wrote *Arthasastra* and elucidated the knowledge of governance. The philosophical text contained in *Arthasastra* described numbers of aspects from lower-level management to foreign policy. It offers suggestions to governors and the kings.

Six system of Indian Philosophy viz., *Nyaya, Vaishshika, Sankhya, Yoga, Poorva, Mimansa, and Uttara Mimansa*, are mentioned generally in the domain of philosophical knowledge.

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Rashba effect on linear and nonlinear optical properties of a cylindrical core/shell heterojunction quantum dot

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Rashba effect may play an important role in the nonlinear optical properties of heterojunction quantum dots. In this work, we have theoretically examined the effects of Rashba spin-orbit interaction on an electron in a cylindrical core/shell quantum dot (CCSQD). The modifications of various properties of cylindrical core/shell quantum dot such as transition energies, dipole transition matrix elements and linear and nonlinear optical properties due to change in Rashba coupling parameter, magnetic field and effective Rydberg energy were studied. We solved the Schrödinger equation using numerical methods and obtained energy eigenvalues as functions of the aforementioned parameters. It was observed that, the magnetic field has a considerable effect on absorption coefficients and refractive index. It was also observed that increasing the magnetic field shifts the resonances towards higher energies. Additionally, increasing in the Rashba coupling coefficient (α_R) was found out to result an increase in absorption coefficients and refractive index. Our results demonstrated that, we can manipulate optical properties of cylindrical core/shell quantum dot using an external magnetic field.

KEYWORDS

core/shell, quantum dots, Rashba effect, external magnetic field, nonlinear optical properties

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Advances in Chemical Science

Synthesis of Novel Spiro [imidazolidine- pyrazoline]-2, 4-dione Derivatives

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ABSTRACT

The pharmaceutical importance of spiro-imidazolidinedione derivatives is well established. Here, we communicate the synthesis of new spiro [imidazolidine-pyrazoline]- 2,4-diones in two steps. The first step involves the preparation of 5-arylidene imidazolidine-2,4-dione derivatives by well-known Knoevenagel reaction involving condensation of aromatic aldehydes and imidazolidine-2,4-dione. In the second step, reaction of diazomethane with 5-arylidene imidazolidine-2, 4-dione resulted in formation of new spiro [imidazolidine-pyrazoline] 2,4-dione derivatives. The synthesized spiro compounds were characterized by spectral analysis. Computational studies have been utilized to explain the stability of tautomeric forms of synthesized compounds. The Swiss ADME studies indicate suitable physiochemical properties, drug-likeliness features, and good oral bioavailability.

Key words: Spiro [imidazolidine-pyrazoline]-2, 4-diones, diazomethane, 5-arylidene imidazolidine-2, 4- diones

1. INTRODUCTION

Imidazolidine-2, 4-dione derivatives, commonly known as hydantoin derivatives exhibit diverse biological and pharmacological activities [1,2]. Phenytoin (**1**) [3-5,6a] is an anticonvulsant that is used to control certain type of seizures, by decreasing abnormal electrical activity in the brain. Nitrofurantoin (**2**) [6b,7-9] is an antibiotic and is used to treat urinary tract infections and bladder infections. Mephenytoin (**3**) [6c] is a drug used to control seizures and works by slowing down impulses in the brain. Nilutamide (**4**) [6d,10,11] sold under the brand names Nilandron and Anandron, is a nonsteroidal antiandrogen (NSAA) which is used in the treatment of prostate cancer. Spirohydantoin derivatives constitute one of the important classes of heterocyclic compounds with immense pharmaceutical importance [12-14] and biological activities. For example, autotaxin inhibitor (**5**) [15], Tetratoin (**6**) [16] an anticonvulsant, Sorbinil (**7**) [17] an aldose reductase inhibitor, and Spiromustine (**8**) [18] an antitumor (**Figure 1**).

In the present study, Knoevenagel reaction involving condensation of hydantoin (**9**) and aromatic aldehydes (**10a-d**) has been used for synthesis of 5-arylidene hydantoin derivatives (**11a-d**) [19-21]. The reaction of diazomethane with 5-arylidene hydantoin derivatives (**11a-d**) resulted in the formation of new spirohydantoin derivatives namely spiro [imidazolidine-pyrazoline]-2,4-dione derivatives (12a-d). The synthetic strategy has been summarized in **Scheme 1.**

2. EXPERIMENTAL

The starting materials and reagents were used as obtained from commercial suppliers. The solvents were purified in compliance with normal pre-use procedures. The ^{1}H NMR spectra were recorded on Perkin Elmer R-32 (90 MHz) and Jeol FX 200 MHz NMR instrument using TMS as internal standard and DMSO-d6/$CDCl_3$ as solvent. Chemical shifts are given in parts per million (δ-scale) and coupling constants are given in Hertz. The IR spectra were recorded on a Perkin-Elmer FT-IR spectrometer. Elemental analysis (C, H and N) was taken with Heraeus CHN-rapid analyser and the data showed good agreement between the experimentally determined values and the theoretically calculated values.

2.1. Synthesis of 5-Arylidene Hydantoin Derivatives (11a-d)

2.1.1. General procedure

2.1.1.1. (5E)-5-benzylideneimidazolidine-2, 4-dione (11a)

To a mixture of hydantoin (**9**) (10 mmol, 1.0 g) in methanol (20 mL) containing sodium methoxide (0.5 g), a solution of benzaldehyde (**10a**) (10 mmol, 1.0 mL) in methanol (5 mL), was added drop-wise, with stirring at room temperature. After complete addition, the mixture further stirred for 4 h at room temperature. Solvent was distilled off and to residue ice was added. The mixture was neutralized with dil. HCl. The product obtained was filtered and washed thoroughly with water to obtain 5-benzylideneimidazolidine-2, 4-dione (**11a**) as white solid. The crude product was recrystallized from methanol: Yield: (6.5 mmol, 1.2 g, 63.8%); m. p. 220-222°C [22].

Similarly, **11b-d** were obtained as white solid from corresponding arylaldehydes (**10b-d**).

All melting points recorded were in agreement with the literature values [19-23].

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Girl Education in Rural India- A Perspective

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Abstract:

Despite improvement in the sector of education, we find bid dropout percentage of girl children. This is more so in case of rural areas. There are many schemes to improve the number of girl students in classroom. But we find that efforts are being made first to save the girl child. 'Padhega India, tabhi toh badhega India' would be successful only when the ratio of both boys and girls is equal. The slogans don't project an encouraging picture in this regard. It is not sufficient only for the government to work to empower girls through education, we have to make efforts to various levels to ensure the participation of girls in education and further in the growthof the nation.

Key Words: Girl; Education; Drop-out; Patriarchal control; infra-structure; Social changes.

The Slogan "Beti Bachao Beti Padhao" by the government in 21st century force us to think about the condition of women in our country. We, as a Nation, have been marching toward overall progress but slogans to call people to save girl child, educate girl child, respect women etc. force us to understand the laxity as far as women are concerned. Their inclusion in the economy is essential for the growth of a country. This is possible through empowerment of women. Education plays the most important role in empowering them and also skill development. The need of these slogans imply that more is to be done in this direction.

The status of education of women in India has improvedwith the time. In early times, it was not accessible to women because of socio-cultural value system. The gender appropriation did not allow her access to the male dominated areas such as politics, trade, education etc. Her role was well defined within the four walls of the house. She was supposed to follow the gendered role assigned to her- to look after the needs of all the family members. Opportunities of education for girls were not there because of social and cultural traditions. Whatever education was available to them was dependent on the sole discretion of the patriarch of the family or other male members of the family.Whatever education was imparted to them was in an informal manner. Thewritings by women such as Rassundari Devi and Ramabai Ranade, reveal that women were conscious about their limitations because of their gender. They have described in detail about the difficulties they came across in the form of social traditions in way of learning to read and write.They have talked about how they longed for an opportunity to learn to read and write. It was considered shameful for a woman to have a desire to learn to read and write. However, in the pre-independence times,initiatives were taken to change social environment and educategirls by social reformers like Raja Ram Mohan Roy. Initially, the schools were opened by the missionaries with the intention of imparting education from their own perspective.Later, schools for girls were established to educate them.

Though the needs and challenges for women have changed depending on the changing world but education has been always in the sight of all the struggles for empowerment of girls and women.The demand for equal opportunities for women, across socio-cultural, geographical boundaries, in the field of education has been most importantin all the struggles for empowering themselves. Women such as Ramabai Bai Ranade opened schools for girls and women. Pioneering efforts of Savitribai Phule in the field of education opened doors for under-privileged girlsand children. Despite all the efforts in the field of education, there is a gap in the efforts and the results in this direction. Women's education has not progressed due to many reasons. This paper is an attempt to examine these issues and gaps affecting women's education and how these can be removed.

Post-independence times saw many changes in every field including education. With the transfer of power, Indian Government started making systematic plans for the growth and development of the nation. Constitution provided equal opportunities to all for development. Schools and universities were established in order to impart education to all including girls and women.Education is the tool which is most effective in the overall development of women. Government and other social bodies that work for the welfare of women have been playing active role in this direction.From time-to-time Education Commissions were constituted to give their

Vol 353 link

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Hydrogenic impurity effect on optical properties of Wannier-Mott exciton confined in a spherical quantum dot with Kratzer potential under magnetic field

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Confinement effects of Kratzer potential on a Wannier-Mott Exciton(W-M) are studied in a spherical quantum dot(QD) in the presence of a static magnetic field. Time independent Schrödinger equation is solved numerically to obtain the energy states. The excitonic transitions so realized have been used to explore the non-linear optical properties that are important for optical characterization of materials such as the optical absorption coefficients (ACs) and refractive index changes (RICs). Impact of magnetic field, strength of the laser field and transition parameters using familiar compact density matrix approach are also analyzed. It has been observed that optical properties get radically modified under confinement effects. Also, the shift of degeneracy of different excitonic energy levels with the magnetic field in confinement potential has been reported for the first time for W-M exciton in the spherical quantum dot, the study that may have crucial input to the literature and myriad of practical implications.

Keywords: Wannier-Mott exciton; quantum dot; magnetic field; linear and non-linear optical absorption coefficients; refractive index changes.

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1. Introduction

Nanomaterials grabbed the most attention of the researchers due to their completely different properties from bulk materials. A lot of deliberate research is going on currently due to promising applications of nanomaterials in diverse fields. The reason for this inclination is owing to the fact that as we go in low dimensions as in QDs , without loss of generality, we get single discrete levels instead of the band structure, and hence become the greatest promising nanomaterials for wide variety of electronic applications like solar cells, transistors, LEDs, medical imaging, quantum computing, and hence have been explored both theoretically and experimentally [1-7]. QDs properties lie in between bulk semiconductors and discrete atoms/molecules. QDs can have different shapes and sizes and rapid progress has been made in fabrication techniques of various QDs. We can have spherical, semi-spherical, disk, ring, or elliptical shapes[8-11]. The size of the quantum dot is very crucial in the measurement of energies of the system. Large size QDs emission spectra lie in the red wavelength region and small size QDs in the blue region.

Analog to electron-proton bound systems in solid-state physics, in semiconductor nanomaterials, we have electron and hole pairs whose bound state is called an exciton, which is the result of Coulomb interaction. Between confined electron and hole, the study of exciton in QD breeds a new arena of application as shown by various researchers in earlier studies [20].

For semiconductors, we have a high susceptibility value, which implies less binding energy, so it is fair to consider Wannier-Mott(W-M) exciton with a large radius due to screening of Coulomb force between electron-hole pair. The W-M model- [12] has three assumptions i) Parabolic bands are used instead of real band structure ii)Valance and conduction bands wave function's minute shape is spurned and iii) In real space, localization of dielectric function is considered.

Experimentalists successfully observed exciton in QDs in different materials [13-15], the results of which have been verified by theoreticians as well. QDs have spectacular optical and electronic properties and hence their study is significant in designing optoelectronic devices. Various factors af-

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Review Article

Role of Pyrethroid-elicited Mosquito Behaviour in Control Programmes

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ABSTRACT

This review study envisages the role of insecticide-elicited mosquito behaviour for disease eradication programmes. Changes in behaviour due to insecticides may, at times, be of more practical importance than the actual lethal effect of the insecticide, especially if these changes help to disrupt the contact between man and mosquito. Two important aspects of mosquito behaviour, either repellency or irritability and biting patterns in response to insecticide exposure have been taken into consideration. This paper throws light on the significance of two synthetic pyrethroids, permethrin and deltarnethrin, when impregnated into mosquito nets for self-protection and vector control. The determination of any changes with respect to behaviour of mosquitoes, before and after the introduction of bed nets is reflected in the potential of the mosquitoes to transmit diseases and can be of great epidemiological significance in mosquito abatement programmes.

Keywords: Behaviour, Repellency, Irritability, Biting, Insecticide-treated nets(ITNs), Pyrethroids, Mosquito Control

Introduction

Mosquitoes transmit an ever-lengthening list of human diseases resulting in a major crisis in public health management. Past experiences have convincingly demonstrated that mosquitoes have the ability to elude the chemical weapon as they have developed resistance to most of the synthetic insecticides. A survey conducted in 1985 showed that a total of 113 vector species of mosquitoes are known to resist insecticides belonging to the three major groups of insecticides.[1] In the present scenario with an almost depleted pesticide armoury, the fourth group of insecticides called pyrethroids still have the biological potency to be considered as promising alternative insecticides in combating mosquito menace, though reports of the development of pyrethroid resistance are not unknown. Besides the development of resistance, the selection pressures exerted by insecticide use also lead to a change in the behaviour of mosquitoes, albeit slowly.[2] Though there have been extensive studies pertaining to insecticide resistance in mosquitoes, the evolution of mosquito behaviour is little known.[3]

Pyrethroid insecticides are the synthetic analogues of naturally occurring pyrethrins, which are extracted from the flowers of *Chrysanthemum* species. They are considered to be successful insecticides due to factors such as i) they have unprecedented levels of pest control, ii) their rates of use are low, iii) they are extremely cost competitive, iv) they present very low hazards to users as compared to other pesticides and v) they do not cause major adverse environmental impact.[4] Many synthetic pyrethroids are being considered as candidate chemicals in mosquito abatement programmes all over the world. Among these,

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Shaping the Community's Disaster Resilience through Education and Research

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Abstract:- Indian education system has reached greater heights today and has created a niche for itself in the modern world. There has been a continuous demand for talented and skilled workforce world over. The country is also doing quite well despite many economic hurdles due to the demographic advantage and aspirations of its young population. They have excelled in many fields with their innovative application and technological knowhow keeping pace with internal and external demands. However, some of the disciplines have not received their due recognition. Disaster Management is one such field which has not generated enough interest among the academia. Despite tremendous potential due to its practical application in the society, educational establishments have not created an opportunity for such studies. Through education, research and innovation it is possible to deal with many local and global issues looming at large on our economies. Although hazard related education started to appear after International Decade for Natural Disaster Reduction (IDNDR)in 1990s, not many institutions and universities have been forthcoming in imparting education in disaster management. Wherever they have been able to create opportunities, not much has helped the community in distress due to its extremely slow pace and percolation. Any system of education if it doesn't help the society often loses its relevance.This paper is an attempt to highlight the importance of disaster studies and responsibilities of the educational institutes to work for their community to help them in achieving disaster resilience. It also provides a step wise guide and a working model for making the education system disaster sensitive and inclusive.

Keywords:- *Disaster, Resilience, Education, Model, Community.*

I. INTRODUCTION

Disasters have been affecting our societies since time immemorable. Yet in the last few decades the world has experienced economic and social turmoil borne out of constant fear of disasters. There was a realization that all progress will cease to happen if disasters become a recurrent phenomenon world over. Till 1980s, most of the efforts were concentrated on relief and reconstruction activities post disaster. With increasing incidences of disasters in every part of the world, the global community emphasized the need for Disaster Management during the 1990s with the UN declaration of International Decade for Natural Disaster Reduction or commonly known as IDNDR. The Yokohama strategy in 1994, called for participation by all countries to make efforts to reduce the impact of disasters. Thus, 'Building a culture of prevention' became a worldwide slogan.

International Strategy for Disaster Reduction (ISDR) provided a global framework for building resilient societies which can be possible through raising awareness and creating this culture of prevention and not just limit itself to reactions. The Global Assessment Report (GAR) of 2015, pointed out to the change in perspective needed to create risk knowledge from risk information. The need for education on disaster prevention was highlighted in all texts and research papers. It was increasingly believed that despite past incidences of repeated disasters, ***most disasters are yet to happen*** (GAR, 2015) and thus requires a society which is well aware, concerned and is prepared enough to manage their risks.

The world was gradually moving towards disaster literacy and public awareness since late 1990s and early 2000. Indian education system also started to initiate curriculum changes and adding new courses in Disaster Management in some public and private institutions. Even after its first inception till today, there has been no significant headway on disaster education at all levels and in all institutions. It is still in its beginning stage and not achieved maturity. From schools to universities, adoption of disaster education and training is still lagging behind. Whether it is the school boards or University Grants Commission's agenda, there has been a serious lacuna in its implementation despite some guidelines framed under the Disaster Management Act of 2005 in the country.

Some sporadic efforts have been made lately in context of Disaster Management and its inclusion in the curriculum at school as well as University level. However there has been a general failure to achieve concrete goals in both spreading awareness and generating expertise. Due to lack of integration with the societal demands it has not taken off in the right spirit. Similarly, community level responses have not yet become a formal process.

vol 359 link

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Generation of adiabatic pulses

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ABSTRACT

A two-dimensional GaAs/AlGaAs quantum disk under the influence of a non-central potential resulting in azimuthal distortion, subjected to an external static electric field, is exposed to a linearly polarized laser pulse. Adiabatic magnetic pulses are found to be generated due to the introduction of distortion in the system. The magnitude of distortion is expected to serve as one of the crucial control parameters for the manipulation of the generated magnetic pulses. The production of desired magnetic pulses may prove beneficial in many bio-medical applications.

1. Introduction

Magnetic pulses that rely on adiabatic fast passage, which is a powerful tool for uniformly inverting the direction of magnetization, and fast optical transition are now-a-days in much demand in various applications of biomedical sciences and other interdisciplinary areas such as Magnetic Resonance Sounding which employs pulses of 20–100 ms [1]. In addition, adiabatic magnetic pulses are found to be quite useful in the examination of the cross-relaxation and molecular dynamics in heteronuclear molecular systems [2]. These magnetic pulses are at times difficult to generate, since it is not easy to maintain constant pulse amplitude for a longer time duration. The adiabatic condition for such pulses depends on the type of application they are required for. For example, in nuclear magnetic resonance applications, the pulse duration required is of picosecond range, while some applications require shorter pulses. In strict sense, the adiabaticity depends on the application [3]. The alternating (or adiabatic) magnetic pulses have been used in Magnetic hyperthermia (MHT), a process widely used in therapeutic treatments and also in thermally activated drug delivery [4]. The shape of adiabatic pulses is found to be crucial for application purposes.

There have been many theoretical and experimental studies of various aspects of optical, electronic and magnetic field induced properties of quantum heterostructures. For recent reviews, see [5–7] and references therein. In particular, 2D quantum heterostructures have been given prominence in such studies [8,9]. The 2D quantum disks, or in general, 2D materials are a subject of interest for the development of next generation technologies. The experimental realization of 2D structures was initiated long back following the discovery of single-layer graphene in 2004 [10,11]. But the experimentally grown structures have some structural flaws which at times prove to be beneficial. These inhomogeneities give rise to bizarre electronic properties [12] leading to novel optoelectronic response of devices based on such structures. The structural non-uniformities may be theoretically represented with the help of angular distortion potentials. For example, the distortion may be modeled as

$$V_d(r,\phi) = -\frac{\beta \sin(\phi - \eta)}{2r^2}. \tag{1}$$

where β is the parameter for the strength of distortion and η is the angular position of the distortion [12]. In this case, the angular momentum quantum number is not an integer. When such 2D structures or disk-shaped quantum dots with distortion are subjected to external electromagnetic fields, due to asymmetry in the angular position, the transitions to states, not otherwise allowed in dipole approximation, take place.

In the past 1D quantum rings subjected to external asymmetric half cycle pulses or to external electromagnetic fields have been studied in detail. The focus has been on the generation of the sub-picosecond currents and pulsed magnetic fields [13–15]. Generation of controlled current and magnetization on a picosecond time scale in mesoscopic rings by applying two linearly polarized unipolar pulses is reported [16]. Moskalenko and Berakdar [17] generated a nonequilibrium valley current in a mesoscopic graphene ring along with finite ring magnetization. The generated current is similar to the pulse-current generated

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now 360 link

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AN EMPIRICAL STUDY OF INDIA'S TRAJECTORY AS A $5 TRILLION ECONOMY: CHALLENGES AND FUTURE SCOPE

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ABSTRACT

Agriculture, industry, and services are the three productive sectors and backbones of growth to achieve India's economic goal of $5 trillion economy. The analysis of the growth trajectory of these productive sectors coinciding with the US$ 5 trillion GDP aim becomes more crucial at this difficult time as India's economy is prepared for a recovery after suffering through a second wave of pandemic this year. This research examines the economies and sectorial growth trajectory in light of the pandemic's disruption and provides an important response to the question: "Will India achieve its ambition of a US$ 5 trillion economy, if yes, when and how?" India will enter the US$ 5 trillion club in 2027-2028, three years after the original target date of 2024–2025, according to the findings of empirical assessments. The productive sectors must be continually supported by reforms and stimulus measures in order to maintain this economic trajectory. India needs to grow at 8 % p.a to achieve the said objective for which it needs to increase its exports by 1 trillion dollar. Through this paper we focussed on the factors that stimulate economic growth. The paper will discuss the problems with the present economic downturn and examine the methods required for India to grow to a $5 trillion economy in a world of unpredictability and unrest.

KEYWORDS: *Gross Domestic Product (GDP), Purchasing Power Parity (PPP), International Monetary Fund (IMF), $ (United States Dollar).*

Introduction

The Prime Minister of India has set a visionary goal of turning India into a $5 trillion economy by 2024-2025 (ET, 2019). The current domestic and global economic downturn is associated with domestic price instability, the US-China trade war and most importantly, the current pandemic. These unprecedented health and economic challenges have had a negative impact on global production, employment and trade. With this challenge rises the questions: "Will India realize its dream of a $ 5 trillion economy, if so, when? What should be done?"

A variety of economic activities that may be generally categorised into the three sectors of agriculture, industry, and services all contribute to an economy's GDP, which in turn influences GDP growth. In order to achieve the lofty goal of US$ 5 trillion GDP from the current level, we empirically analyse the productive sectors' composition, growth patterns, and related dynamics. The parts that follow detail the data used for analysis, the study's aims, methodology, and findings in this direction.

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row 361 link

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EMERGING TECHNOLOGIES IN INSURTECH: CHALLENGES AND RISK IN THE INSURANCE SECTOR

Dr. Aishvarya Bansal*
Dr. Poonam Bewtra**

ABSTRACT

The pace at which technological advancements are leading to digitalization is bringing major shifts in all the sectors of the business. These changes are for the benefit of the society at whole making it easier for all the consumers to buy the products and services online at a much competitive and cheaper price with greater convenience. In the Insurance sector, the emergence of new technologies especially online platforms is going to benefit the insurers and the insured in a big way. With these changes moving so fast it has become a challenge for most of the insurers to innovate their digital platforms and the products to build up customer confidence. Today's startups and new businesses are investing millions and billions of rupees in insurance. Tech innovation programs are modernizing the insurance industry using business Automations, chatbots, machine learning, blockchain and internet of things. This gradual digitalization of the insurance portals is helping the insurance companies in minimising the human involvement and optimising the work space and minimising the time to convert a prospect into an insured. It not only minimises the time to underwrite a policy but also minimises the time for the settlement of the claim with the ease of digital platforms. In India, Insurance penetration is very less and to ensure that it increases at rapid pace there is a need to bring big changes in the Insurance sector. This paper will focus on the emerging technologies in insurance sector with the main focus on wearable and smart watches for risk assessment in health and life insurance policies apart from other technologies.

KEYWORDS: *Artificial Intelligence (AI), Fintech, Information Technology (IT), Insurtech, IoT.*

Introduction

What is Insurtech

The term InsurTech refers to, the use of innovative Technologies and digital tools to assess the risk and improve the performance of insurance companies to deliver a good customer experience. The term insurance check is very much related to the term FinTech as it is a step to modernize the digital platforms and take the benefits of the new technologies such as artificial intelligence, internet of things, machine learning, big data or use of portable smart devices in the Insurance sector.

Recent analysis by McKinsey and company on the future of Insurance sector, according to the recent research, insurtech is bringing Innovations and development of new insurance products and services and expanding the insurance model and thereby increasing the efficiency in the insurance industry. This will not only help in innovation; but will also help in distribution, deeper penetration of insurance.

Objectives of the Study

InsurTech is a growing concept in the field of Insurance sector especially with reference to India. It is still an untapped sector in the insurance businesses with regard to insurance brokers and insurance agents. This technology will help the insurance businesses to reduce the human efforts in actual working of estimating the insurance premiums, underwriting insurance policies, risk assessment of various

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इक्कीसवीं सदी के रंगमंच का बदलता स्वरूप

- डॉ. ऐश्वर्या झा

इक्कीसवीं सदी के नाटक एवं रंगमंच को सबसे बड़ी चुनौती सिनेमा, टी.वी. के बाद ओटीटी माध्यमों से मिल रहा है। प्रश्न भी उठाए जा रहे हैं कि मीडिया और इंटरनेट के दौर में रंगमंच का क्या औचित्य है।

रंगमंच ऐसी कला है जो मानव जीवन से जिस रूप में जुडी हुई है। रंगमंच और रंगकर्मी मानव को परिवर्तित और परिष्कृत करने का प्रयास करते हैं। ग्रामीण भारत के लोक नाट्य का रूप संभवत: रंगमंच का सबसे प्राचीन रूप है। देश के प्राय: हर त्योहारों, शादियों में किसी न किसी प्रकार के मंच का प्रदर्शन होता है। चाहे वो दुर्गा पूजा में रामलीला करने की परंपरा हो या गांवों में पुरुषों के बारात जाने के बाद स्त्रियों के द्वारा पुरुषों का अभिनय बात हो। नाटकीयता जीवन का अभिन्न हिस्सा रहो भी देश के कुछ हिस्से ऐसे हैं जहाँ हर उत्सव एवं नि:शुल्क कार्यक्रम का आयोजन किया जाता है। 'रं मानव प्रवृत्ति है-अनिवार्य, आदिम सत्य, जिसको तुल संस्कृति में उपलब्ध कोई अन्य विभूति नहीं कर सव शताब्दियों तक, जीवन की मूलगत, आवश्यक सुवि साधनों के बिना रहे हैं, इसका साक्षी इतिहास है, भी रूप में सही, रंगमंच के बिना हम कभी नहीं इक्कीसवीं सदी अपनी प्रगतिशीलता एवं परिवर्तनश कारण विशिष्ट है। वैज्ञानिक आविष्कारों ने नाटक अ की मूलभूत संरचना में परिवर्तन किया है। इक्कीसव नाटकों के कथानक, संवाद, पात्र, वेशभूषा, मंच स में परिवर्तन आया है। नई तकनीक ने रंगमंच की दशा दोनों बदल दी है। नाटक आधुनिक साहित्यि परन्तु रंगमंच कलाओं का समुच्चय है। 'रंगमंचीय भीतर आवश्यकतानुसार अन्य कलारूपों को स्वी या समाहित करने की विनम्र कोशिशें रंगमंच की शर्त है।'[2] किसी भी कला की उपयोगिता अथवा -दोष की पड़ताल उसमें निहित मानवीय, सामाजि की कसौटी पर होती है। इसके लिए कला समी

भारतेंदु युगीन कविता एवं राष्ट्रीय चेतना

डॉ. ऐश्वर्या झा

राष्ट्र एवं राष्ट्रीयता की अवधारणा आधुनिक नहीं बल्कि इसकी चर्चा वैदिक कालों से होती आयी है। यह अवश्य है कि राष्ट्रीयता की भावना गुलामी के बाद अधिक बलवती हुई। राष्ट्रीयता मानवीय प्रकृति के स्वभाविक वृत्तियों में आता है जिसके क[illegible] व्यक्ति अपने राष्ट्र से एक विशेष प्रेम, सद्भावना रखता है और उसे हर हाल में विक[illegible] एवं समृद्ध देखना चाहता है। इस कारण राष्ट्र एवं समाज अन्योन्याश्रित हैं और समाज और साहित्य भी। प्राचीन काल से लेकर स्वतंत्रता -प्राप्ति तक देश में कई राजनैतिक उतार -चढ़ाव हुए, परिस्थितियां बदलीं और उसी के अनुरूप राष्ट्रीयता का स्वरूप भी बदला। भारत की राष्ट्रीयता का इतिहास उत्थान पतन से भरा हुआ है जिसकी छाप हिंदी काव्य पटल पर स्पष्ट अंकित है। राष्ट्रीयता जैसी उदात्त प्रवृत्तियों के पोषण में साहित्य का योगदान महत्वपूर्ण है। हिंदी साहित्य के उद्भव आदिकाल से ही राष्ट्रीय चेतना के किंचित बीज काव्यधारा में दिखाई देते हैं। राजनैतिक दृष्टि से राजाओं की प्रशंसा में लिखे गए वीर -काव्यों को पूर्णतया राष्ट्रीय तो कहा नहीं जा सकता किंतु इस बात से भी इंकार नहीं किया जा सकता कि राष्ट्रीय भावनाओं को उत्तेजना प्रदान करने में ये सहायक सिद्ध हुए हैं। भक्ति काल में कवियों ने अपने विचारों को आध्यात्मिक स्वरूप प्रदान किया लेकिन अलग -अलग धाराओं के कवियों ने समाज की अखंडता को अक्षुण्ण रखने के लिए कविताओं की रचना की। एकत्व, बंधुत्व की भावना का प्रसार उस समय के काव्य का मुख्य विषय था।

बैठत सभा सबै हरिजू की कौन बड़ो को छोट।
सूरदास पारस के परसे मिटत लोह के खोट।।[1]

हिन्दू तुरक की एक राह है, सतगुरु यही बताई।
कहें कबीर सुनो हो संतों, राम न कहेउ खुदाई।।[2]

इसी प्रकार रीतिकाल में राष्ट्रीयता की व्यापक चेतना तो दृष्टिगत नहीं होती बल्कि देश के अलग -अलग भागों में राष्ट्रीय चेतना उत्पन्न होने लगी थी.यह जातीय प्रेरणा ही राष्ट्रीय प्रेरणा थी क्योंकि जातीय उत्थान में संपूर्ण राष्ट्र का कल्याण निहित था। ऐसे समय में जब अधिकांश कवि श्रृंगारिक रचना कर रहे थे उस समय में भूषण, सूदन, लाल, गंग जैसे कवियों ने अपने आश्रयदाता राजाओं की वीरता का वर्णन कर अप्रत्यक्ष रूप से राष्ट्रीय भावनाओं को पल्लवित कर रहे थे। वीरता से परिपूर्ण ये कवितायें देश के लिए जीवनोत्सर्ग करने वाले वीर पुरुषों की याद दिलाती है और राष्ट्रीयता की भावना का संचार करती है।

तरल तुरंगन की तनक, तुरत बाग झमकाई।
परदल में हाँक्यौं छ्ता, खाई कोट निकाई।।[3]

हिंदी साहित्य के आधुनिक काल में साहित्यिक प्रगति के साथ साथ जनता में राष्ट्रीय

foundations

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Article

Elemental Laser-Plasma Analysis of Pointed Gourd Leaves for Diabetes Management

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Abstract: This interdisciplinary work communicates the identification and quantification of elements responsible for the bioactive potency of leaves from pointed gourd, *trichosanthes dioica*, using laser-induced breakdown spectroscopy (LIBS). Calibration-free LIBS determines the presence of various trace and major elements, their concentrations, and ratios in which they are present in the leaves. The presence of specific elemental ratios of magnesium/sodium and magnesium/potassium could be promising for managing diabetes mellitus. Variable doses of aqueous extract from *trichosanthes dioica* leaves are administered for determination of the most effective one. Based on encouraging results, the extract could be harvested to serve as anti-diabetic medication for diabetes and associated symptoms.

Keywords: optical emission spectroscopy; laser-induced optical breakdown; *trichosanthes dioica*; pointed gourd; diabetes; biomedicine; biophysics

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1. Introduction

Natural remedies offer alternative or complementary treatments for various diseases and are usually considered to be safe. For specific diseases that require lifelong pharmaceutical medication, therapeutic safety is important. For example, diabetes mellitus can be a lifelong disease and is globally of serious concern due to its complications. Several medicinal plants have been studied and scientifically proven to be beneficial for the treatment of diabetes mellitus [1–4]. Plant-based natural medicines are safe and cost-effective. In fact, in addition to bioactive phytochemicals, medicinal plants do have bioactive elements in appropriate ratios, and thus, they are helpful in maintaining a balance of trace elements in disturbed metabolic processes diabetic mellitus [5]. However, medicinal plants need to be scientifically explored for assessment of efficacy and safety. In addition to phytochemical analysis, the detection of phyto-elemental composition and elemental ratios of medicinal plants is expected to play a pivotal role in evaluation of probable medicinal activity [6–19].

Recently, laser-induced breakdown spectroscopy (LIBS) has emerged as a promising analytical spectroscopy for the elemental analysis of samples of interest [20–28]. Although other conventional analytical spectroscopic techniques such as inductively-coupled plasma mass spectroscopy (ICP-MS), X-ray photoelectron spectroscopy (XPS) [29], atomic absorption spectroscopy (AAS), inductively-coupled plasma optical emission spectrometry (ICP-OES), and flame atomic absorption spectroscopy (FAAS) are available for elemental analysis, LIBS shows several advantages. Particularly, LIBS can be rapid, shows minimal

Y010 368 Link

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Polarization Reversal of Oblique Electromagnetic Wave in Collisional Beam-Hydrogen Plasma

Rajesh Gupta[1], Ruby Gupta[2], and Suresh C. Sharma[1, *]

Abstract—Energetic ion or electron beams cause plasma instabilities. Depending on plasma and the beam parameters, an ion beam leads to change in the dispersion relation of Alfven waves on interacting with magnetoplasmas as it can efficiently transfer its energy to the plasma. We have derived dispersion relation and the growth rates for oblique shear Alfven wave in hydrogen plasma. The particles of the beam interact with the Shear Alfven waves only when they counter-propagate each other and destabilize left-hand polarized mode for parallel waves and left-hand as well as right-hand polarized modes for oblique waves, via fast cyclotron interaction. The collisions between beam ions and plasma components affect the growth rate and the frequency of generated Alfven waves, differently for right-hand (RH) and left-hand (LH) polarized oblique Alfven modes. For $(\omega + k_z v_{bo} > \omega_{bc})$, the most unstable mode is the LH polarized oblique Alfven mode, and it is the RH polarized oblique Alfven mode for $(\omega + k_z v_{bo} < \omega_{bc})$, which shows a polarization reversal after resonance condition. Numerical results indicate that the growth rates increase with increase in angle of propagation. The maximum growth rate values in the presence or absence of beam increase due to obliquity of wave.

1. INTRODUCTION

Alfven waves are a type of magneto-hydro-dynamic (MHD) waves which are low frequency waves below the ion cyclotron frequency travelling in a magnetized conducting fluid like plasma existing in space. These waves transport electromagnetic energy and communicate information concerning changes in plasma currents and magnetic field topology. At low frequencies, there are two different modes of electromagnetic propagation i) a compressional wave in which magnetic field strength and density change and ii) a shear wave in which only the direction of magnetic field varies. In the present paper, we are concerned with shear Alfven wave only. The shear Alfven wave propagates with the wave magnetic field vector perpendicular to background field. Gekelman et al. [1] have studied various properties related to shear Alfven waves.

The shear Alfven wave is nearly incompressible and hence, more readily excitable by either external perturbations, e.g., solar wind, antenna or intrinsic collective instabilities (Chen and Zonca [2]). In a cylindrical column, the dispersion of shear wave was determined by Jephcott and Stocker [3]. In last three decades, many experiments on Alfven waves have been done where some fundamental properties of shear Alfven wave have been explored. Oblique shear Alfven wave, which is transverse with strong magnetic field variation perpendicular to the wave motion, can trade energy between the different frequencies which might propagate through plasma. This also means that energy can be exchanged with the particles in the plasma, in some cases, trapping particles in the troughs of the wave and carrying them along.

Plasma instabilities are caused by the energetic ion or electron beams. These beams are ever-present in the variety of space and astrophysical plasmas. Ion beam and interaction of radiation with plasma

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Full Length Research Paper

Structural Correlation of Toxicological and Environmental Effects of Cypermethrin and Cyfluthrin- Type-II Pyrethroids.

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Cypermethrin, Cyfluthrin, Toxtree, Cramer decision tree, Threshold of Toxicological Concern (TTC)

ABSTRACT

Synthetic pyrethroids are widely used in household, public places and agriculture as insecticides but have harmful effect on human and the environment. The Cramer classification scheme (decision tree) is the best-known approach to estimate the Threshold of Toxicological Concern for a chemical substance based on its chemical structure. In present article a brief comparison between two Type-II pyrethroids Cypermethrin and Cyfluthrin has been given. We have used *In silico* tool Toxtree to get the Cramer class for Cypermethrin and Cyfluthrin. Compared to Cypermethrin, the Cyfluthrin has fluorine present in one of the aromatic rings but no additional structural alerts were observed in Toxtree. The LD_{50} values indicate that cypermethrin is more toxic compared to cyfluthrin. The structural correlation of their toxicological and environmental effects is discussed.

Introduction

Synthetic pyrethroids [1] can be classified into two broad categories: Type-I and Type-II pyrethroids. Cypermethrin and Cyfluthrin are broad spectrum Type-II pyrethroid insecticides as they contain a *cyano* group in their structure [2-4]. Chemically synthetic pyrethroids [1,5] are esters of *chrysanthemic acid* and alcohols. The asymmetric centre may be present in acid and /or alcohol moiety. Synthetic pyrethroids have a complex chemical structure and can have two to eight optical isomers.

Cypermethrin was synthesized (Figure-1) by Elliott et al. in 1974 by the esterification of hydroxy(3-phenoxyphenyl) acetonitrile, **1a** with 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid,**2**. Chemically Cypermethrin is [cyano-(3-phenoxyphenyl) methyl] 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropane-1-carboxylate,**3a**. The technical products commonly available contain more than 90% cypermethrin and the ratio of *cis*- to *trans*-isomers varies from 50:50 to 40:60.

Cyfluthrin is synthesized (Figure-1) by the esterification of (4-fluoro-3-phenoxyphenyl) (hydroxy) acetonitrile **1b** with 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, **2**. Chemically Cyfluthrin is [cyano-(4-fluoro-3-phenoxyphenyl)methyl]3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropane-1-carboxylate,**3b**.

Uses and toxicity

Cypermethrin and Cyfluthrin are widely used as broad-spectrum insecticides [6]. Cypermethrin is a potent weapon used for pest control in industrial, commercial, residential sites and crop loss prevention in agriculture against many types of insects. It will kill bedbugs, ants, termites, cockroaches, scorpions and fleas. Cypermethrin is used in agriculture as a foliar application on food and feed crops like cotton, pecans, peanuts, broccoli and sweet corn.

Cyfluthrin is used as an insecticide in homes, outdoors, and in agriculture. It is used to control ants, cockroaches, termites, silverfish, fleas, mosquitoes and flies and impregnating bed net for control of adult mosquitoes to prevent malaria, dengue and all vector control. It also controls leafhoppers, leaf miners, cutworms,

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REVIEW

Insights into the molecular aspects of salt stress tolerance in mycorrhizal plants

Bhawna Saxena[1] · Karuna Sharma[2] · Rupam Kapoor[2] · Qiang-Sheng Wu[3] · Bhoopander Giri[1]

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Abstract
Salt stress is one of the major abiotic stresses that severely affect plant growth and yield, and also affect the livelihood of people all around the world. Arbuscular mycorrhizal fungi (AMF) colonize majority of terrestrial plants, including halophytes, xerophytes and glycophytes, and facilitate their functioning by various physiological, biochemical and molecular processes. In the past two decades, significant progress has been made to understand the role of AMF in mitigating salt stress and improving plant growth and productivity under saline conditions. Several studies focusing on the biochemical and physiological mechanisms that mycorrhizal plants employ to combat salt stress have been carried out. This review reinforces such studies and gives further insights into the molecular aspects of tolerance to salt stress in the plants colonized by AMF. It emphasises on the role of AMF in sensing and signalling salt stress, expression of aquaporin-encoding genes, Na^+/H^+ antiporters and transporters involved in Na^+ exclusion, CNGCs and late embryogenesis abundant proteins in relation to salt stress tolerance. Further, this paper also reviews the accrual of compatible osmolytes, phytohormones and nitric oxide for understanding the benefits of this symbiosis under saline environment, and provides a benchmark information to understand the contribution of mycorrhizal symbiosis at molecular level and will attract attention of researchers to develop and highlight the future research programs in this field.

Keywords Aquaporins · CNGC · Nitric oxide · LEA proteins · Phytohormones · Compatible osmolytes · Transporters & antiporters

Introduction

Salinization of arable soils is gradually increasing throughout the world and emerging as a significant threat to sustainable agriculture (Evelin et al. 2019). It leads to the excessive accumulation of soluble salts (electrolytes of cations and anions) that renders the soil saline and unproductive. A high concentration of dissolved salts in soil not only restricts plant growth, but also makes it difficult for the plants to survive due to disruption of ionic, osmotic, and cell-water homeostasis (Srivastava et al. 2019). The continuing salinization of arable land has been predicted to result in the 30% land loss within the next 25 years and up to 50% by the middle of 21st century. Therefore, it is assumed that crop yield would greatly be affected in coming decades (Evelin et al. 2009; Porcel et al. 2012). The excessive concentrations of soluble salts greatly affect physiochemical properties of soils, and consequently plant growth by creating ion toxicity, decreasing nutrient and water uptake (Ruíz-Lozano et al. 2012; Evelin et al. 2013). Certain ions like Na^+ and Cl^- enter into plant cells and interfere with cell membrane, manifested in the form of reduced cell expansion, membrane functioning, and thereby compromised plant growth (Munns and Tester 2008). The high concentrations of soluble salts disturb water homeostasis in plant cells that is consequential in bringing about physiological drought conditions by restricting the uptake of water and mineral nutrients (Farooq et al. 2015).

Arbuscular mycorrhizal fungi (AMF) colonize roots of more than 85% of land plants (Smith and Read 2008). They constitute a typical system with more proficiency than that of the plant roots alone for acquiring mineral nutrients, and

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Regular Article

Lattice deformation and potential effects on linear and nonlinear optical properties of doped SiGe quantum dot encapsulated in Si matrix

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Abstract Electron states in spheroid $Si_{0.7}Ge_{0.3}$ quantum dots are investigated taking into account the presence of a donor impurity atom and a weak external electromagnetic laser field. The conduction band confining profile along the radial direction is modelled by a parameterized exponential potential. Based on the calculated inter-state transition energies, the nonlinear optical responses associated with light absorption, relative refractive index change, and second and third harmonics generation are evaluated and discussed. Results are reported considering different positions of the donor center in the dot as well as for different values of the exponential potential parameter. When the impurity is shifted to different position, the polarisation changes inside the dot and hence the energy and wave function of the system. The change of impurity position from center to edge of the dot causes redshift whereas the increase in potential parameter causes blueshift.

1 Introduction

Research and fabrication of optoelectronic devices underwent what may be called as a revolution after the proposal and development of semiconductor quantum dots (QDs) in 1980s [1, 2]. Progress on the subject has been reviewed in several occasions throughout the years [3–7]. Thanks to advanced epitaxial growth, beam lithography and reactive etching procedures, it has been possible to fabricate different kind of nanostructures with precise control of the wetting layer. Such a procedure is not exempt of technological challenges posed, in many cases, by the physical nature of the involved materials. Accordingly, lattice mismatch gives rise to strain, which conditions the geometry of obtained QD systems—with or without a wetting layer (WL)—as it has been revealed by accurate imaging. Thus, QD with cylindrical, conical, pyramidal, hemispherical, disc, lens, ring, dome, oblate (or semi-oblate) and prolate shapes have been dealt with either experimentally or from the theoretical point of view [8–17].

SiGe/Si QDs have attracted attention not only due to their optical properties, such as photoluminescence in the visible range [18], but also mostly in relation with their promising features with regard to qubit hosting, pointing at core applications for quantum computing [19–26]. The field of nonlinear optics is growing due to its vast applications like second harmonic generation, third harmonic generation, etc. [27] The nonlinear response of the hetero-structure arises in the anisotropic medium where the polarization is expressed as a power series where the contribution from nonlinear terms arises only when the field strength of the applied field is high. These effects were observed after the invention of the laser which is a highly coherent source of high intensity so the contribution of the nonlinear terms increases. Here, we investigate SiGe/Si QDs from the perspective of their nonlinear optical response. In particular, we assume the presence of ionized, hydrogenic-like, impurity atom and model the electron confinement with an attractive power exponential potential function. In this way, we theoretically evaluate the coefficients of optical absorption, relative refractive index change, second harmonics generation (SHG), and third harmonics generation (THG); all of them are related with transitions between allowed electron states in the system, influenced by the electrostatic interaction with the Coulombic center,

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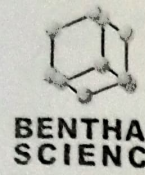

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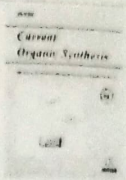

Supported Ionic Liquids and their Applications in Organic Transformations

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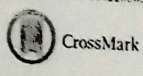


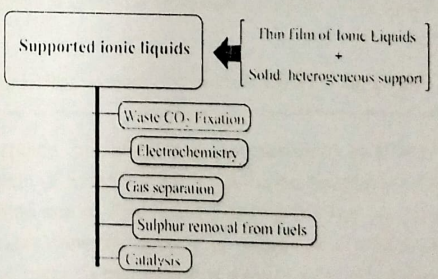
Abstract: Ionic liquids are one of the greener solvents which have emerged as a replacement for toxic and harmful volatile organic solvents. In the past decade, the concept of supported ionic liquids (SILs) has attracted the attention of the scientific community due to their unique chemical and physical properties. SILs can be synthesized by coating a thin layer of IL film onto/into the surface of solid support. They can be classified as supported IL phase catalyst, solid catalyst with IL and supported IL catalysis. SILs demonstrated the combined properties of both heterogeneous and homogeneous catalysts. These ILs offer several advantages such as enhanced stability, reusability, recoverability, easy product isolation, absence of IL leaching, as compared to conventional solvents. In this review, various aspects of SILs, classification, method of preparation and their applications in various organic transformations such as cross-coupling reactions, oxidation, reduction, synthesis of different heterocyclic compounds, biocatalytic reactions *etc*., have been discussed.

Keywords: Supported ionic liquids, organic transformations, green catalyst, cross-coupling reaction, designer solvent, pollutants.

1. INTRODUCTION

The exponential industrial growth has led to the generation of the huge amount of pollutants such as harmful volatile organic solvents, heavy metals, *etc*., which raised several environmental concerns. In the past few decades, ionic liquids (ILs) have gained wide popularity due to their diverse physicochemical properties such as low vapour pressure, low toxicity, non-flammability, tunable polarities, high electric conductivity, thermal stability, *etc*. [1-5]. ILs are also known as 'designer solvents' which consist of at least two components (organic cation and anion) that can be varied to design solvents according to the requirement of reaction with a particular set of properties [6-9]. They have been employed in various catalytic reactions with enhanced activity and selectivity [10-15]. However, the large scale catalytic reactions in highly viscous ILs are associated with several drawbacks, such as product isolation and recovery of catalyst, impure IL disposal, high cost of ILs, *etc*. Thus, there is an urgent need for new materials which can be employed to address the drawbacks associated with conventional ILs.

Recently, heterogeneous catalysts have attracted the attention of researchers due to their great potential such as simple recovery, reusability, *etc*. [16]. Based on the above concept, various types of ILs have been immobilized (both physically and covalently linked) on different types of solid supports, like zeolites, silica, activated carbon, *etc*., in minute quantity to fabricate different types of supported ionic liquid (SILs) which can be employed as a stable, recyclable catalyst or solvent in chemical reactions [17, 18]. The immobilization of ILs over the solid support transfers its desired catalytic properties to the solid catalyst. SILs display the combined properties of both heterogeneous and homogeneous catalysts, such as enhanced stability, recyclability, easy product isolation and absence of IL leaching [19, 20]. SILs have been employed in various types of applications such as catalysis, gas separation, surface modification, waste CO_2 fixation, sulphur removal from fuel, electrochemistry, *etc*. (Scheme 1) [21, 22]. In this review, various aspects of SILs, classification, method of synthesis and their applications in various organic transformations like oxidation, reduction, synthesis of heterocyclic compounds, cross-coupling reactions *etc*., have been discussed.



Scheme 1. Applications of supported ionic liquids.

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Research Article

Buffalo colostrum- A novel substitute of human serum for the cultivation of *Plasmodium falciparum in vitro*

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Abstract
In vitro cultivation of erythrocytic stages of *Plasmodium falciparum* requires supplementing the culture medium with human serum. The present study was carried out to explore an alternative to human serum. Different human serum samples were found to vary considerably in their ability to support the growth of erythrocytic stages of *P. falciparum in vitro*. These results strongly suggested the use of pooled human serum for comparing the growth of parasites in medium augmented with other supplements. Parasites could multiply for a few cycles only in RPMI (Roswell Park Memorial Institute) medium supplemented with serum obtained from pig, goat, sheep or buffalo. Continued cultivation could not be achieved using any one of these animal sera. Ability of bovine colostrum was investigated as an alternative to human serum. Buffalo colostrum, 10%(v/v) 'suitably prepared' supported the continuous growth and multiplication of *P. falciparum*. Morphologically both asexual and sexual stages appeared normal and healthy, but the multiplication rate of parasites grown in colostrum augmented medium was found to be lower than that in serum-supplemented medium. The one month of uninterrupted cultivation of *P. falciparum* registered 10^6 fold increase in parasite density compared to 10^{10} fold multiplication recorded in control culture with 10% serum supplement. Cow colostrum failed to support the growth and multiplication of parasites beyond 6 days in culture. The initial positive results with buffalo colostrum hold promise and should be explored further as a potential substitute for human serum for continuous *in vitro* propagation of erythrocytic stages of the malignant malaria parasite.

Keywords: Bovine colostrum, Human serum substitutes *In vitro* culture, *Plasmodium falciparum*, Pooled human serum

INTRODUCTION

Long-term cultivation of the malarial parasite, *Plasmodium falciparum*, is one of the important requirement for research in understanding the biology of the parasite, drug development and immunology. The first successful continuous cultivation of erythrocytic stages of *P. falciparum* was reported nearly five decades ago (Trager and Jensen,1976). Since then commercially available RPMI-1640 has been found to be the medium of choice, but alone it is not sufficient to support the growth of parasites, so it has to be supplemented with human serum. The requirement of human serum poses certain constraints; it is a scarce commodity, varies from batch to batch, and is expensive and moreover, in endemic areas, serum samples may contain inhibitory substances like residues/metabolites of antimalarial drugs and/or antibodies. These constraints and variability factors demand the development of alternatives to human serum for cultivation. Several attempts have

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Evaluating the Veracity of Software Bug Reports using Entropy-based Measures

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ABSTRACT

The wide usage of open source software (OSS) results in an increase of bug data forming an integral part of the extensive data ecosystem. This bug report data needs to be analyzed for bug fixing and prediction of various important attributes like bug severity, priority, fix time, assignees, etc. The increased volume of bug data and different bug reporters from different geographical locations make veracity an important concern. We assume that the bug reports (i.e., different bug attributes) reported in software bug repositories are trustworthy during the bug triaging process. In reality, the bug report data are not trustworthy regarding various aspects like integrity, authenticity, and trusted origin as the bugs are reported by users who may or may not have proper knowledge of the software. In this paper, we proposed entropy-based models for veracity estimation of different bug attributes.

KEYWORDS

Big Data, Entropy, Open Source Software, Software Repositories, Veracity

1. INTRODUCTION

Everyday data production of IBM is 2.5 quintillion bytes (Dev, 2015). The wide usage of social media results in an exponential increase in data (Wang et al., 2013). On Twitter, around 340 million tweets are posted daily (Wang et al., 2013). This shows that social media data forms an integral part of big data. Data from Twitter has been used in various studies, like crime rate prediction (Gerber, 2014), stock price movement prediction (Chung & Liu, 2011), National Football League prediction (Sinha et al., 2013), information dissemination (Zaman et al.,2010), Box office collection (Asur & Huberman, 2010) and US primary elections (Tumasjan et al., 2010). Data veracity is the degree to which data is accurate, precise, and trusted. In reality, data is often uncertain, imprecise, and difficult to trust. Studies (Tapia et al., 2013; Morstatter et al., 2013; Rubin & Lukoianova, 2013; Hutton & Henderson, 2015; sanger et al., 2014 and Swamynathan et al., 2010) deal with the issues with the veracity of tweets in Twitter. Like social media data, open source software bug repositories have become an invaluable source of information for software developers and managers in bug triaging and

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COVID 19 and Livelihood Challenges of Stone Quarrying Workers in Mahoba, (U.P)

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Abstract-COVID-19 is perhaps the most disruptive global event since the Great Depression of 1929. Although it is a health pandemic, it has turned into an unprecedented global social and economic crisis. COVID-19 is unleashing multiple economic shocks. Like other economic sectors, however, the extractive industry has not been spared the negative consequences of this epidemic. The harsh working conditions at mining sites are putting workers at the forefront of health and safety risks, prompting the industry to quarantine workers, but on the other hand, national lockdown regulations have them forced to do so. There are around 100 quarries in Kabrai Town only where thousands of workers directly engaged in the quarry. But due to pandemic, there is a lack of businesses which has resulted in thousands of labour force being unemployed and forced to search for other jobs to fulfil their livelihood needs. Many have already shifted to other sources of livelihood like daily wage workers in local area and some others are seeing employment in already crowded MNREGA scheme which is supported by the local District authority. There is not enough potential to caters all population because of its own limitations. Quarry workers are facing hardship due to lack of livelihood opportunities

Key Words: Covid19, Stone Quarry Workers, Livelihood

Introduction-The Covid19 pandemic is undoubtedly the global health crisis that defines our time, with the government and health services alike racing to slow the spread of the virus. But beyond the impact on the global health, Covid19 has shown its potential to create devastating social, economic and political challenges that will have lasting repercussions. In Kabrai block of Mahoba district, the main occupation is stone quarry business where thousands of the people gets employment. There are around 100 stone crushers which now become the main source of livelihood for local population of area since 1979, when the first stone quarry site is developed by the government to help the people of this drought prone region (Lahariya, K., 2017).The major challenges for policy makers in India, today is to promote livelihood for the large number of populations. It is estimated that about 15 million new livelihoods will have to generate in India every year alone if full employment has to be ensured. While the rapid economic growth in India since 2000 onward, has dramatically increased new livelihood in sector such as IT, Telecom, Travel and retail. It has also led to the displacement of millions from their traditional livelihoods in agriculture animal husbandry, fishing, and forestry and also in household manufacturing like handloom cloth weaving etc (Planning Commission, 2002).Livelihood is being recognized a very significant a very significant issue because most communities and societies want to be taken care of themselves and their family. The term 'livelihood' represents a relatively recent development in the understanding of what was previously referred to as 'socio-economics' and aims to incorporate the non-economic attributes of survival (Ellis, 2000). A popular definition of the concept of livelihood is defined a livelihood as 'abilities and assets (including both material and social resources) and activities to necessary to obtain a livelihood' (Chamber and Conway, 1992). Livelihood will sustainable when it can deal with and recover from stress and shocks, maintaining or enhancing its capabilities and assets, both present and in the future, without undermining the natural resource base (Chamber and Conway, 1992).

Study Area-Mahoba district lies in the extremely southern part of the Uttar Pradesh, which is bounded between latitudes 25° 04'36" N to 25°35'45"N and 79°20'12" E to 80°15'00" E. The northern fringe of the area consists of the plain tracts whereas, the central and southern part is hard rock terrain and forms a part of Bundelkhand Granitoid Complex (DGM, 2006). The district is bounded by Chhatarpur district of Madhya Pradesh in the south and Hamirpur district in the north. Banda district lies in the immediate east of Mahoba district and Jhansi district lies in the west.

Statement of Problem: Mining and crushing of stones play a major role in meeting the needs national and local infrastructure. Rapid growth of construction industries increased its demand. Largely rural, migrants and unskilled (both men and women) work in this sector which provide them with opportunities for basic work, as well as additional income for those who are engaged in agriculture. Mahoba has been in the spotlight for its mining activities. Stone quarrying and crushing involve various types of processes that create potential for exposure to a wide range of physical, chemical and ergonomic hazard (Lad and Samant, 2014). Quarrying, crushing, drilling, demolition, screening, loading and unloading are some of these processes that are performed in all installation regardless of their size. In all these processes, a considerable number of the people get their livelihood. Mostly villages have job card which is prerequisite to work under MGNAREGA scheme but here the problem is that workers who work under this have to wait up to three months to get his salary that's why very late disbursal of payment of their work, people hesitate to work here. This problem is persisted so long then people will inevitably face the problem of food if local machinery will not timely intervene this problem.

Methodology:-The study has been carried out on the basis of field observations at selected quarrying and crushing sites and households survey of five villages within Kabrai block of Mahoba district. Available articles on quarrying in Bundelkhand with particular emphasised on Mahoba has been collected from various sources. Stratified and purposive random sampling method has been applied to get the relevant data of Stone Quarry workers and Stone quarrying company by surveying households in five villages of Kabrai block. Focused group discussions (FGD) and oral interviews has also been conducted among villagers, quarrying owners and workers who transport the quarried

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Implications of abiotic stress tolerance in arbuscular mycorrhiza colonized plants: Importance in plant growth and regulation

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ABSTRACT

Arbuscular mycorrhizal fungi (AMF) are crucial for the growth and development of most terrestrial plants, enabling them to withstand abiotic stresses. Abiotic stress such as salinity, drought, extreme temperature, heavy metals, and carbon dioxide hampers plant growth. Abiotic stresses are being elevated because of abrupt climatic changes and agricultural malpractices such as excessive fertilizer and pesticide use, which is also hazardous for human consumption. To cope with the adverse effects, we need a reliable system that can monitor and control all these deleterious effects on plants, and AMF is one of the appropriate methods to create a sustainable platform for agriculture. Mycorrhizal symbionts grow together with the roots of higher plants, aiding them in the uptake of minerals and nutrients, which results in improved plant growth and yield even under stressed conditions. In return, these symbionts receive carbohydrates for the completion of their lifecycle. The role of AMF, as a bio-fertilizer, can strengthen the quality of crop plants, by elevating soil health and enhancing ecosystem stability. In this review, we will investigate how different abiotic stress factors can negatively affect plant growth, the role of AMF in controlling those stresses, its impact and effect on plant growth and yield, its use as a bio-fertilizer in agricultural fields, and its interaction with other organisms.

1. INTRODUCTION

Many abiotic stresses, such as salinity, drought, extreme temperatures, heavy metals, and excessive fertilizer and pesticide use, have contributed to soil degradation, and today, they pose a threat to agriculture, as they are responsible for most of the crop and yield losses globally [1]. Fortunately, several microorganisms, particularly bacteria and fungi, can counteract the negative effects of environmental stresses, thereby monitoring the plants' performance during stressful conditions [2].

One of them is AMF, a member of the subphylum Glomeromycota, which includes three classes (Glomeromycetes, Archaeosporomycetes, and Paraglomeromycetes) in the phylum Mucoromycota. So far, this subphylum has been classified into four orders and 25 genera, containing about 250 species [3]. Glomeromycota depends on plants for carbon substrate to survive. In return, the symbiont provides an abundance of minerals and nutrients to the host plants, such as nitrogen, phosphorus, and potassium through an intraradical network of hyphae and arbuscules, and the root apoplast interface. In addition, AMF improves the quality of the soil since fungal hyphae accelerate decomposition much earlier, thus improving soil quality [4].

The AMF establishes symbiotic relationships with the roots of most of the terrestrial plants, including 80–90% of the vascular plants, and 90% of the agricultural plants [5], such as cereals, vegetables, and horticultural plants. The application of AMF has been found to increase plant growth and regulation by enhancing nutrient uptake and stress tolerance. Considering the research and development associated with AMF in agriculture, the present review aims to present an overview of the current knowledge on the relationship between AMF and host plants in regulation and development, improved nutrient uptake even under stress conditions, and the emergence of AMF as biofertilizers.

2. FEATURES OF AMF SYMBIOSIS

According to molecular data and fossil evidence, the symbiosis dates back to 400–450 million years ago [5] around the time land plants first appeared. Through the succession of biological processes, such links can result in a variety of beneficial effects in natural ecosystems. One of the examples of a mutualistic relationship is the symbiotic associations of mycorrhizal symbionts and the roots of higher terrestrial plants [Figure 1]. A hyphal network extends beneath the roots and enhances the uptake of nutrients and minerals by the host plants.

The mycelium of fungi colonizes the roots of a wide range of plants, even if they are from different species, producing a common mycorrhizal network (CMN). CMN is a critical component of the terrestrial ecosystem, affecting a wide range of plant communities,

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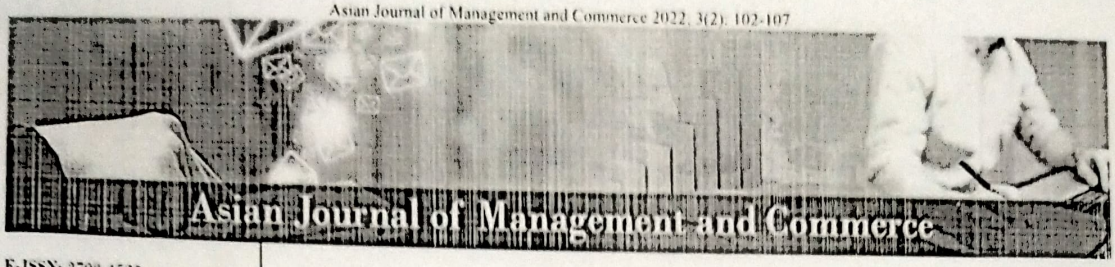

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Corporate governance framework in India: An overview

Dr. DR Jalwani, Pawan Kumar Bhura and Ashutosh Kumar Jha

Abstract
Due to the failures and bankruptcies of many well-known corporations in recent decades, corporate governance has attracted considerable attention in both developed and developing countries in the world. Corporate governance is the framework for managing and directing businesses. The governance of corporations is the responsibility of the boards of directors. Therefore, Corporate Governance is separate from the daily operations in the company and hence kept separate from Operational Administration. Corporate governance depends upon the decision of the board of directors of the company. And how does this increase the value of the company in the market. By assuring accountability, transparency, and enforcement in the capital market, good corporate governance policies help to decrease this risk. The present study describes the structure of corporate governance like Anglo-American Model, German model, Japanese model and Indian Model of Corporate Governance, weaknesses, importance as well as the steps to be taken to improve corporate governance in India.

Keywords: Corporate governance, accountability, transparency, enforcement, Anglo-American, Indian Model

Introduction

Corporate Governance plays a vital role in directing and controlling of the companies. The responsibility of the same is discharged by the Board of Directors. The value of the company is distinguished by the directors and full-time executives through analyzing the day to day operations and management of the company. Corporate Governance helps to set a relationship between management, board, shareholders and stakeholders of a company. It helps in setting up the objectives of the company and help in attainment of the same through regularly monitoring the performance. A concrete corporate governance structure helps in creating proper incentives for the board and management. This further helps in attaining objectives that are in the interests of the company. It guides the organization and helps them to attain the goals by optimum utilization of resources.

Corporate governance provides a framework for the management, direction and governance of businesses. Corporate governance focuses on creating environment in the organization that enable managers and directors to act in the best interest of the investors, organization and its stakeholders. The company's managers, board of directors and high-ranking officials are responsible for the provider of capital investment in the company. And they also care about better utilization of funds. It helps in reaching goals and objective ethical corporate governance.

Looking towards its gravity, the Government of India has provided it a special place in statutory framework. Corporate Governance helps to uphold the principles of transparency, integrity, ethics and honesty. It acts as the soul of an organization. Therefore, one must adhere to it while indulging in any business practices.

Review of Literature

(Sawakar, 2018) [4] The research paper is an effort to understand the "Corporate Governance in India Evolution and Challenges". The study highlights the background of Corporate Governance in India and its Significance. The objective of the study is to specify the evolution, regulatory deficiencies, Issues and Challenges for Corporate Governance in India. This paper also discusses about the different Committee on Corporate Governance Reforming the Corporate Governance in India since 1990s and to provide some suggestions bases on study. The study concluded that the post-1991 scams required corporate governance in India. Corporate Governance should be embraced as it has a lot for the Public Sector.

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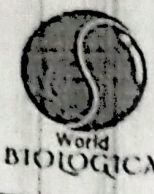

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Research paper

Total Biomass Benefits due to a Plant Hormone (Kinetin) Application on Oyster Mushroom (*P. Sajor-caju*) Cultivated on Wheat Straw

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ABSTRACT

Pleurotus sajor-caju is an important edible mushroom species due encompassing significant medicinal and nutritional values, popularly cultivated worldwide. It contains several essential components such as proteins, fiber, vitamins, and minerals. Therefore, present study evaluated the growth and yield of oyster mushroom (*Pleurotus sajor-caju*) after the treatment of various doses of a plant hormone, Kinetin. *Pleurotus sajor-caju* was cultivated on wheat straw and sprayed with different doses of kinetin i.e. 10 ppm, 50 ppm and 100 ppm three times. All three flushes were collected and measured for total biomass production of mushroom. The results indicate that the hormonal treatment was able to enhance the biomass production in mushroom. Yield was found to increase from 8% to 27% as compared to control and the mushroom biomass from various treatment was 10 ppm (414 g), 50 ppm (482 g) and 100 ppm (298 g).

1. Introduction

Mushrooms are widely known for their wild availability and are being cultivated and harvested in natural condition at outdoor fields (Gupta, 1986). However, due to the increased mushroom consumption and its high nutrition values, indoor cultivation has been started where environmental condition can be controlled for the better productivity of mushrooms as it may provide suitable climatic and other conditions for its growth and development (Sarker & Chowdhury, 2013).

Mushrooms have long been used for medicinal and food purposes. Mushrooms are known to be rich source of proteins, minerals and vitamins (Caglarirmak, 2007). Protein content in mushroom is commonly 19 to 35% which is higher whereas fat content is reported to be very low with respect to the carbohydrates (Wani et al, 2010). *Pleurotus* species contain high potassium to sodium ratio, which makes

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Effect of repeated exposure of Auxin (indole 3 acetic acid) in Pleurotus Sajor -caju Mushroom Cultivation: A case study

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Abstract - Mushrooms have long been used for medicinal and food purposes. Pleurotus sajor- caju is edible mushroom species. In present study, Pleurotus sajor -caju was cultivated on wheat straw and during its growth various doses of Indole 3 acetic acid (IAA) a plant hormone at 10ppm, 50ppm and 100ppm were sprayed in mushroom substrate. Thereafter its effect on the growth and yield of all three flushes were recorded. Results showed that IAA was able to induce stimulation in growthand ultimately increase in yield is also recorded. Various doses of IAA resulted in increased biomass production from 14% to 30 % with reference to control. This study suggest that exposure of the hormone to substrate can be important tool to increase the production of mushroom and thereby increase nutrition demand can be fulfilled.

INTRODUCTION

Mushrooms have been reported as good source of nutrition and other health benefits substances. Mushroom possesses several vitamins, minerals and high energy level therefore can be exploited as good food source across the world.

India is known for the commercial production of mainly three species includes *Agaricus bisporus, Volvariella volvacea and Pleurotus*. Several health related benefits (medicinal and nutritional values) (Dunkwal et al., 2007) have been observed in these species. Mushrooms are known to have antioxidant potential, thus mushroom intake may reduce oxidative stress level in body hence mushroom show protective properties also (Adams et al., 1999). Earlier studies reported that plant based food products protect us from many diseases such as cancer, cardiovascular diseases and also plays immunomodulatory role (Halliwell & Gutteridge., 1984).

Pleurotus species which are usually known as oyster mushroom, are mainly edible mushroom and also have commercial importance. *Pleurotus* mushrooms are highly rich in protein, minerals and vitamins therefore considered to be healthy source of food

important species due to its medicinal, nutritional and commercial advantages and hence it is being cultivated globally (Knop et al., 2015).

Agricultural based countries are facing issue in order to manage the agricultural residue. Oyster cultivation attracted world due its ability to use agricultural residue as substrate to grow thus address the nutritional scarcity on one hand and environmental protection in other hand. More than 900 million tons of agro waste is being produced worldwide such as wheat, paddy and various cereals straw. The cultivation of the *Pleurotus* mushrooms helps in recycling the agricultural wastes and also became an alternative food source to combat with nutritional scarcity globally, especially in developing countries where growing population is major challenge in order to provide nutritional food. Thereafter, utilized substrate rich in protein content can be further used for different purpose includes production of biogases, cattle feed and also as organic fertilizer (Kakon et al., 2012). Low cost production techniques are being employed for the production of the *Pleurotus* species (Jegadeesh et al., 2018). All edible mushroom are reported to be delicious however, *P. sajor-caju* is one of the most cultivated species among all (Zhang et al., 2002). Zadrazil 1980, reported that *pleurotus* can make its colonies

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Enhancement of Biomass of *Pleurotus* Mushroom Grown on Wheat Straw Using Plant Growth Hormone Gibberellin : A Case Study

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Abstract

Edible Mushroom grown on agricultural residues is a valuable option under rural conditions, without giving much stress to the technology. Despite a ban on stubble burning, farmers dispose of wheat straw by setting it afire. This results in serious environmental pollution that can be main culprit to cause deleterious impact both on human and fertile soil. Huge quantity of wheat straw is available during the period of January to April in northern India. It can be used as substrate for the cultivation of Pleurotus and also for growing the summer variety of mushrooms. Wheat straw being available locally in abundance reduces the cost of mushroom cultivation. Edible mushroom Pleurotus sajor – caju was grown under optimum normal conditions for the higher production of mycelial in short period of time. The plant hormones at different concentrations were used to increase the biomass of Pleurotus sajor – caju by 17-28%. An enhancement in the biomass was observed highest with Gibberellin at 10ppm. The results clearly suggested that gibberellin at 10ppm/ Bag (3kg polybag having 2.1% spawn) would be the best concentration showing positive effect on pinning numbers , fruiting number, yield.

Introduction

Mushroom culture requires a very low cost investment and facility for the Bio-conversion of wheat straw substrate into protein rich food, which is an important necessity for the exponentially growing population.

Mushroom represent the oldest microbial food. The important characteristics of mushroom over other microorganisms is, that bio-conversion of the cellulosic residues into food does not require any pretreatment to remove lignin. *Pleurotus* spp. popularly known as DHINGRI, are supposed to degrade the cellulose – lignin complex. They can be grown on straw with no added nitrogen and could prove 40-80% biologically efficient. To increase its efficiency plant hormones can be used like they are used in many fields of agriculture. Thus for a country like India, where ample organic residues are available, *Pleurotus* offers sufficient scope and opportunity for converting straw into high quality food rich protein, vitamins and minerals and could serves as a means for alleviating protein and vitamin shortages of the used foods (Gibriel et al., 1996; Garg P., 2014; Upadhyay et al., 1996). However, no hard effort has been made to get agro-waste like wheat straw, which are available in huge quantities and are otherwise burnt in open and contribute to increase environment pollution get converted into biomass. The objective of this study was therefore to investigate the effects of plant hormones on wheat straw substrate inoculated with plant growth hormone: gibberellins at different concentrations on the development and yield of oyster mushrooms (*Pleurotus*).The increament in the biomass of mushrooms is influenced by various factors such as substrate, temperature and other biochemical factors such as plant growth hormones (Khandakar, 2004). For that reason it is very much important to study the effect of plant hormones on the production of Pleurotus mushrooms.

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REVIEW PAPER

Impact of climate change on water resources, challenges and mitigation strategies to achieve sustainable development goals

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Abstract

Providing safe water and climate action are among the most challenging tasks for the entire world among seventeen sustainable development goals. However, climate change of the planet has become disastrous for the living world as it has many direct and indirect harmful impacts, including water crisis, frequent occurrences of disasters, polar glaciers disappearance, rise in seawater levels, extreme weather events, habitat loss, low agricultural yields, health problems etc. In the current study, the impacts of climate change on water resources (surface water, groundwater) have been discussed briefly. The present study also links climate change with various attributes like productivity, pH balance, oxygenation and the circulation pattern of the marine ecosystem. Diverse climatic-driven phenomena like extreme weather conditions (drought and flood), sea-level rise, melting of ice, loss of productivity and change in nutrient loading in surface water ecosystems, contamination in groundwater and saltwater intrusion in the freshwater aquifer are described in the present study. Further, the climate-induced factors like temperature and precipitation patterns which affect the water quality have been illustrated as these factors have control over the life support systems of the planet. Conservation and management measures of water resources in changing climatic scenarios are also considered in the current study. Moreover, a link between sustainable development goals and climate change has also been part of this study. The authors believe this paper will show a few ways for extensive future research in water resource management and assist the scholars in achieving sustainable development goals in the changing climatic scenario.

Keywords Climate change · Climatic factors · Water resources · Water conservation · Sustainable development goals

Introduction

Climate change is a long-term statistical change in some climatic parameters like temperature, precipitation and wind flow of a large area over an extensive period. The extended period considered for climate change can be around 30 years, as given by the World Meteorological Organization (Bernstein et al. 2008). In other words, the persistence of some unusual events for an extended period is considered climate change (Stocker et al. 2014). In the 1800s, the first sign of CO_2 and other gas accumulation in the atmosphere and its relation with atmospheric warming came to light. Researchers have begun to observe an increase in the concentration of such gases in the atmosphere, which is commonly needed to keep the atmosphere warm, which is called "global warming." These long-term rises in global temperature led to various episodes of climate change and have accelerated after industrialisation took place (IPCC, 2006). Human-stimulated warming attained around 1 °C (probable amid 0.8 °C and 1.2 °C), exceeding pre-industrial points in 2017, rising at 0.2 °C (probable amid 0.1 °C and 0.3 °C) per decade (Masson-Delmotte et al. 2018). Changes in solar constant due to orbital and intensity variation and volcanic eruptions are the natural factors of climate change (Pachauri 2007). Climate change is induced anthropogenically due to excessive greenhouse gas emissions leading to increased global temperature. The fossil fuel–generated

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योग साधना में बाधक एवं साधक तत्त्व विवेचन

राम करण तूडर

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नारी : अतीत से वर्तमान तक

डॉ. लाल बहादुर स्वर्णकार
ऐसोशिएट प्रोफेसर
स्वामी श्रद्धानन्द कालेज
दिल्ली विश्वविद्यालय, दिल्ली

नारीवादी इतिहासकारों की यह आम धारणा है कि महिलाएं मानवता का आधा भाग है, लेकिन परम्परागत इतिहासकारों ने उनको या तो भुलाया, या उनकी उपेक्षा की। उन्होंने केवल पुरुषों और उनके विचारों की असफलताओं का जिक्र ही किया।[1]

महिला विद्वानों का तर्क है कि ऐतिहासिक लेखन में भी स्त्री–पुरुष को उल्लेखनीय तरीकों से अलग–अलग कोटियों के रूप में पेश किया है और इस तरह उसका पितृसतात्मकता के पक्ष उजागर होता है।[2]

स्त्री को नगण्य बनाकर पुरुषों को महत्व दिया गया अर्थात् इसमें पुरुष के संदर्भ में स्त्री को निम्न माना गया है।[3]

असंतुलित इतिहास लेखन को सुधारने के लिए इस दृष्टिकोण में परिवर्तन की जरूरत है और महिलाओं को भारतीय संस्कृति के दृष्टिकोण से देखने की जरूरत है, तभी भारत में नारी को पुरुषों के समान तथा उससे भी ऊँचा स्थान दिलाया जा सकता है।[4]

भारतीय संस्कृति में नारी का उल्लेख जगजननी आदिशक्ति स्वरूपा के रूप में किया गया है। श्रुतियों–स्मृतियों और पुराणों में नारी को विशेष स्थान मिला है।[5]

आदिकाल से ही हमारे देश में नारी अर्धनाशीश्वर के समान आदर्श रही है, आज भी आदर्श भारतीय नारी में तीनों देवियाँ विद्यमान हैं। अपनी संतान को संस्कार देते समय उसका 'सरस्वती' रूप सामने आता है, गृह–प्रबंधन के समय 'लक्ष्मी' का रूप तथा दुष्टों के अन्याय का प्रतिकार करते समय 'दुर्गा' का रूप प्रकट हो जाता है। किसी भी मंगल कार्य को नारी की अनुपस्थिति में अपूर्ण माना गया है।[6]

वेदों के अनुसार नारी 'माँ' के रूप में ही हमें इस संसार का साक्षात् दिव्य दर्शन कराती है, जिसके शुभ आशीर्वाद से जीवन की सफलता फलीभूत होती है। माँ तो प्रेम, शक्ति तथा श्रद्धा की आराध्य देवी है। तीनों लोकों में माता के रूप में नारी की महत्ता प्रकट की गई है।[7]

स्मृतियों में यह नियम बनाया गया कि यदि स्त्री, बीमार व्यक्ति या बोझा लिए कोई आये, तो उसे पहले मार्ग देना चाहिए। नारी के

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Impact of Male Out Migration on Women in Kumaon Himalaya

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ABSTRACT

Outmigration from villages is a perennial phenomenon. The constant attraction towards urban areas from the villages and small towns is incessant. The young men from the villages move to big towns cities in search of better job opportunities and good standard of living. The native village survives on money order economy and the agricultural produce for sustainability. The women folk who are left behind bear the entire burden of rearing children, looking after old parents, and performing various roles in the society like attending religious and marriage events or other such social obligations. The out migrants merely come once or twice when there is harvest season or any emergency. The women folk have a larger role to play in the absence of their husbands, sons or brothers. The hilly terrain is also not very friendly for all the chores like carrying fuel wood as well as drinking water from far of distances. The dilemma here is that at the first place these women become very appreciative when their husbands and sons and brothers go to cities to earn a living but as time passes and these men folk stop visiting native village regularly these women become overburdened. Although the outmigrants send money regularly and the condition of village and their homes are becoming cemented and more facilities are available as compared to previous decades. The present paper is a hunch to know the impact of this widespread outmigration on the women folk of Kumaon Himalaya. This study is exploratory, qualitative and narrative in nature where primary survey of six villages was conducted in the Dhari block of Nainital district in Uttarakhand. Findings reveals that about 3/4th of the total out migrants are of young age (age below 30) and male. Over 70% of the male out migrants are highly educated (Graduate and above) and 68.49% of them are employed in private jobs. About 1/4th portion of the male out-migrants is of students and Haldwani alone attracts 25.75 % migrants due to a number of livelihood options and education facilities. Due to out-migration of the male members of the households, the wives and mothers left behind are facing acute workload of household chores, field's work, livestock ranching, taking care of aged parents and managing all social obligations on their own. Some of the households present a different approach, as their standard of living has raised drastically and have had positive impacts of male out-migration.

Key words: Out Migration, Male out-migration, Sustainability, Kumaon Himalaya

INTRODUCTION

Male out-migration is the most often adopted strategy in rural areas to overcome risks associated with agriculture and other allied economic activities and even to diversify income and raise their standard of living. There are various underlying factors for the increasing flow of migration from rural areas, such as underdevelopment, unemployment, lack of availability of non-farm jobs and increasing population pressure. Therefore, the young male population migrate to the other nearby towns and cities or to other states in the search of better education or livelihood opportunities. Its impact is felt in every aspect of life such as demographic, economic, social, political and even religious especially on the women, children and the aged people left behind. The women juggle in different roles in sustaining their families and fields in this region while the men folk have migrated. The matter of concern is remittances, which could hardly make any dent on reducing the workload of hill women. Every able-bodied woman works for average 8 to 10 hours daily in various productive activities, such as cultivation, fodder collection, fuel collection, animal husbandry apart from cooking of food and

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RESEARCH ARTICLE

Landslide Susceptibility Prediction based on Decision Tree and Feature Selection Methods

Nirbhav[1] · Anand Malik[2,3] · Maheshwar[4] · Tony Jan[5] · Mukesh Prasad[3]

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Abstract
Landslide hazards give rise to considerable demolition and losses to lives in hilly areas. To reduce the destruction in these endangered regions, the prediction of landslide incidents with good accuracy remains a key challenge. Over the years, machine learning models have been used to increase the accuracy and precision of landslide predictions. These machine learning models are sensitive to the data on which they are applied. Feature selection is a crucial task in applying machine learning as meticulously selected features can significantly improve the performance of the machine learning model. These selected features decrease the learning time of the model and increase comprehensibility. In this paper, we have considered three feature selection methods namely chi-squared, extra tree classifier and heat map. The paper substantiates that feature selection can significantly increase the performance of the model. The study was carried out on the landslide data of the Kullu to Rohtang Pass transport corridor in Himachal Pradesh, India. The classification score and receiver operating characteristics (ROC) curves were used to evaluate the model performance. Results exhibited that eliminating one or more features using different feature selection methods increased the comprehensibility of the model by reducing the dimensionality of the dataset. The model achieved an accuracy of 90.74% and an area under the ROC curve (AUROC) value of 0.979. Furthermore, it can be deduced that with a reduced number of features model learns faster without affecting the actual result.

Keywords Feature selection methods · Machine learning · Landslide susceptibility prediction · Receiver operating characteristics

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Introduction

Landslides are crucial natural hazards in hilly areas throughout the world (Pourghasemiet al., 2018). Even though landslides primarily happen restrictedly, substantial damage can happen to natural and human infrastructures at a distinct level in mountainous regions (Achu et al., 2022; Holbling et al., 2012). Besides the tangible damage, landslides have wide ranging impact on the economy and human habitation (Hong et al., 2017). Various studies have been conducted and evaluated different landslide reduction strategies and landslide susceptibility mapping (Martire et al., 2012; Pham et al., 2021; Pradhan, 2013; Solway, 1999; Svalova, 2018). All studies carried out this using different knowledge-based methods (Myronidis et al., 2016; Feizizadeh and Ghorbanzadeh, 2017) and machine learning methods (Sezer et al., 2011; Aghdam et al., 2016; Pourghasemi and Kerle, 2016; Chen et al., 2017; Ghorbanzadeh et al., 2018; Achu et al., 2020). Over the few

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भारतीय ज्ञान परम्परा में इतिहास की अवधारणा

रत्नेश कुमार त्रिपाठी / अजय कुमार सिंह

भारत मे ज्ञान परम्परा का इतिहास अति प्राचीन तथा समृद्ध है। वेद, पुराण, ब्राह्मण ग्रन्थ, उपनिषद, निरुक्त वेदान्त, महाभारत, रामायण सहित अनेक भारतीय भाषाओं में लिखित-अलिखित ग्रन्थों का एक विशाल भण्डार दृष्टिगोचर है। वेद की मान्यता को आज भी दुनिया नतमस्तक होकर स्वीकार करती है। वेद ज्ञान का पर्याय है क्योंकि वेद शब्द की व्युत्पत्ति ही 'विद्' जानने धातु से 'घ्यं' प्रत्यय से होता है जिसका अर्थ ज्ञान है। श्रौत परम्परा का प्रमाण होने के कारण से उसे श्रुति भी कहते हैं। साढ़े आठ लाख श्लोकों को लेकर पुराण हमारे वैदिक समृद्धि का प्रतिनिधित्व करता है जिसमें मानव और प्रकृति के सारे सामाजिक, धार्मिक, आर्थिक व वैज्ञानिक पक्ष विस्तार से दिखाई पड़ते हैं। असंख्य ब्राह्मण ग्रन्थ तथा उपनिषद, निरुक्त और भारतीय भाषाओं के काव्य-महाकाव्य, नाटक, प्रहसन, नाराशंसी, यात्रा वृतान्त, आत्मकथा और अलिखित लोक-परम्परा व कला हमारे प्राचीन ज्ञान समृद्धि से हमारा साक्षात्कार कराती है।

भारतीय इतिहास के अध्ययन के पीछे निहितार्थ का होना आवश्यक है यदि निहितार्थ नही है तो अध्ययन का उद्देश्य ही समाप्त हो जाता है। इतिहास अतीत से वर्तमान को जोड़ता है। इसलिए इतिहास का अध्ययन सलघता से होना चाहिए और उसमें निरंतरता का आभाव नही होना चाहिए। भारतीय ग्रन्थों में दिये गये इतिहास विषय अध्ययन में ऋषियों और विद्वानों द्वारा किये गये इतिहास की परिभाषा से भारतीय इतिहास के अध्ययन की प्राचीनता तथा इतिहास का अधिगम को स्पष्ट किया जा सकता है।

इतिहास के स्वरूप पर प्रकाश डालते हुए दक्षिण भारतीय ग्रंथ श्रीतत्व निधि में लिखा गया है-

इतिहासः कुशाभासः सूकरास्यो महोदरः।
अक्षसूत्रां घटं विभ्रत्पंकजाभरणान्वितः

अर्थात् सृष्टि संवत् का प्रारम्भ श्वेतवाराह कल्प से होता है। 'इतिहास पुरुष' वाराह मुख है, काल का विशाल स्वरूप इतिहास के उदर में समाहित है अतः वह महोदर कहा गया है। पार्थिव इतिहास का रंगरूप पृथिवी के रंगरूप से बनता है, इसलिए उसे कुशाभाष (कुशाओं जैसे आभाषित होने वाला) कहा गया है। इतिहास काल के संख्यात्मक निर्देश से सूत्रित है, अतः इतिहास पुरुष अक्षसूत्रा धारण किये है। ज्ञानामृत का दान उसका पावन उद्देश्य है, अतः उसके दूसरे हाथ में अमृतघट विद्यमान है। इतिहास पुरुष का यह शरीर कमलाभूषणों से विभूषित है-कमल स्वयं सौन्दर्य, विकास और आनंद का प्रतीक है।

आचार्य मल्लिनाथ का इतिहास के लिए कहा गया यह वाक्य 'नामूलं लिख्यते किंचित' अखिल भारतीय इतिहास संकलन योजना का ध्येय वाक्य है।

विष्णुधर्मोत्तर पुराण में वर्णित इस श्लोक से इतिहास की पूर्ण अभिव्यक्ति हो जाती है -

धर्मार्थकाममोक्षाणां शास्त्रं स्यादुपदेशकम्
पूर्वैराचरितं सद्भिर्धर्मकामार्थसाधकम्॥'

अर्थात् - इतिहास वह शास्त्र है जिससे धर्म, अर्थ, काम और मोक्ष चारो पुरुषार्थ सिद्ध हो जाते हैं। इसीलिए इनका उपदेश से समन्वित होना आवश्यक है। साथ ही इनको कथायुक्त भी होना चाहिए। पूर्ववृत्त को कथायुक्त करके इतिहास के रूप में प्रस्तुत करने का उल्लेख इस सूत्र में किया गया है। निश्चय ही ये सृष्टि रचना संबंधी घटनाएँ हैं, जिन्हें कथाओं के माध्यम से लोक में प्रचारित करने का विचार प्राचीन भारतीय चिन्तको ने किया। इस प्रकार सारा समाज इतिहास से शिक्षित किया जा सका।

''स वृहती- दिशमनु व्यऽचलत्''।
तम इतिहासश्च पुराणं च गाथांश्च नाराशंसीश्च अनुव्यऽचलन्॥

Academic Achievements for Annual Report 2022-23

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1. Book

1. *विभाजन के अश्रु से बुद्ध पुनः मुस्कुराये,* ISBN : 978-81-941493-0-9, Writer : Dr. Ajay Kumar Singh, Publisher : Bhartiya Itihas Sankalan Samiti, Goraksha Prant, Year : 2021

2. *भारतीय राष्ट्रवाद के तीन अध्याय,* ISBN : 978-93-85265-32-7, Writer : Dr. Ajay Kumar Singh, Publisher : Academic Heights Publication, New Delhi, Year : 2020

2. Edited Book:

1. *चौरी चौरा : एक पुनरावलोकन,* ISBN: 978-93-82424-66-6, Editor: Prof. Himanshu Chaturvedi, Publisher: Akhil Bhartiya Itihas Sankalan Yojana, New Delhi, Year: 2021

3. Research Article

1. "पर्यावरणीय आपदा और महात्मा गांधी", *अंतिम जन*, वर्ष-3, अंक-1, न.-11 मई-अगस्त -2020, Page-78-79, ISSN : 2278-1633, UGC/SL No : 4628/48020, Editor : दीपांकर श्री ज्ञान , Publisher : गाँधी स्मृति एवं दर्शन समिति, राजघाट, नई दिल्ली, Year : 2020

2. "काकोरी वीरों पर दायर ब्रिटिश मुकदमा : एक समीक्षा", *इतिहास*, Year- 2, Vol- 6, No-2, जुलाई-दिसंबर, 2020, Page- 85-99, ISSN : 2319-8818, UGC Care No : 101002499, Editor :भारतीय इतिहास अनुसंधान परिषद, नई दिल्ली Year : 2020

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Roll No. -402

नारी अतीतकाल से वर्तमान तक

डॉ० लाल बहादुर

स्वर्णकार, प्रोफेसर, इतिहास विभाग, स्वामी श्रद्धानन्द कॉलेज (दिल्ली विश्वविद्यालय) नई दिल्ली।

नारीवादी इतिहासकारो की यह आम धारणा है की महिलाए मानवता का आधा भाग है, लेकिन परम्परागत इतिहासकारों ने उनको या तो भुलाया, या उनकी उपेक्षा की! उन्होंने केवल पुरुषो और उनके विचारो की असफलताओ का जिक्र भी किया। महिला विद्वानों का तर्क है की ऐतिहासिक लेखन में भी स्त्री पुरुष को उल्लेखनीय तरीको से अलग-अलग कोटियो के रूप में पेश किया है और इस तरह उसका पितृसतात्मकता के पक्ष उजागर होता है। स्त्री को नगण्य बनाकर पुरुषो को महत्व दिया गया अर्थात इसमें पुरुष के संदर्भ में स्त्री को निम्न माना गया है।

असंतुलित इतिहास लेखन को सुधारने के लिए इस दृष्टिकोण में परिवर्तन की जरूरत है और महिलाओ को भारतीय संस्कृति की दृष्टिकोण से देखने की जरूरत है, तभी भारत में नारी को पुरुषो के सामान तथा उसे भी ऊँचा स्थान दिलाया जा सकता है। भारतीय संस्कृति में नारी का उल्लेख जगजननी आदिशक्ति स्वरूपा के रूप में किया गया है, श्रुतियो-स्मृतियो और पुराणों में नारी को विशेष स्थान मिला है।

आदिकाल से ही हमारे देश में नारी को अर्धनारीशवर का आदर्श रहा है, आज भी आदर्श भारतीय नारी में तीनों देवियाँ विधमान है, अपनी संतान को संस्कार देते समय उसका 'सरस्वती' रुप सामने आता है, ग्रह-प्रबंधन के समय 'लक्ष्मी' का रूप तथा दुष्टो के अन्याय का प्रतिकार करते समय 'दुर्गा' का रूप प्रगट हो जाता है, अत: किसी भी मंगल कार्य को नारी की अनुपस्तिथि में अपूर्ण माना गया है।

वेदों के अनुसार नारी माँ के रूप में ही हमे इस संसार का साक्षात दिव्यादर्शन कराती है, जिसका शुभ आशिर्वाद से जीवन की सफलता फलीभूत होती है, माँ तो प्रेम शक्ति तथा श्रद्धा की अराध्य देवी है, तीनो लोको में माता के रूप में नारी की महत्ता प्रगट की गई है।

स्मृतियों में यह नियम बनाया गया की यदि स्त्री, बीमार व्यकित या बोछ लिए कोई आये तो उसे पहले मार्ग देना चाहिए, नारी के प्रति किसी भी तरह का असम्मान गंभीर अपराध की श्रेणी में रखा गया है, नारी अगर शत्रु पक्ष का भी हो, तो उसे पूरा सम्मान देने की परम्परा बनाई गई थी। हमारी संस्कृति में प्राचीन काल से ही नारियों की एक उज्ज्वल परम्परा रही है।

भारतीयों की प्राचीन सिन्धु सभ्यता में मातृ देवी की पूजा की जाती रही है, जिसके पुरातात्विक प्रमाण बहुत से मिले है नारी को 'जननी' पृथ्वी की देवी के रूप में दिखाया गया है, कही-कही शक्ति देवी के रूप में दिखा कर पूजा की जाती रही। आदिवासी ग्रामीण विशेषकर असम के गारो-खासी जाति में अभी भी माता प्रधान सभ्यता मौजूद है, जिसका रूप केरला में देखने को भी मिलता है, बंगाल और बिहार में शक्ति के रूप में देवी की पूजा की जाती है। वैदिक काल में भी महान नारियों की उज्ज्वल परम्परा रही है, जो की विद्धता में इतनें आगे निकल गई की ऋषियों का पद भी प्राप्त किया जेसे रोमशा, विश्वतारा, अपाला, धोषा, पैलोमी, सावित्री, मैत्रेयी और गार्गी, ऋग्वेद (5/7/9) में उसे 'ऋषिका' और 'ब्रहमवादनी' कहा गया है।

गुप्तकाल में नारी शक्ति को विभिन्न नामो से पूजी जाती थी, जिनमे भवानी, गौरी, कात्यानी, पार्वती का रूप विभिन्न मंदिरो में भी देखी जा सकती है, बहुत से राजाओं ने अपने नाम के साथ माता का नाम जोड़ने की प्रथा चला रखी थी,क्योंकि वो नारी को उच्चम स्थान दिया करते थे, जैसे गौतमी पुत्र सातकरणी जिसका उल्लेख नासिक गुहा भी लेख में भी मिलता है। बुद्ध और जैन जैसे सुधारको ने स्त्री की स्थिती में सुधार का प्रयास किया थे, जिसमे आम्रपाली जैसी महिला का उद्धार हुआ था।

मध्यकाल में भी एक से बढ़कर एक वीरागना के अद्वितीय शौर्य से भारत का इतिहास भरा पड़ा है, जिनमे इंदौर की महारानी अहल्याबाई होल्कर, शिवाजी की माताजी जिजाबाई, रुद्रमाम्बा, चेन्नमा और दुर्गावती ने अपने शोर्य का परिचय दिया। ब्रिटिशकाल खंड में लक्ष्मी बाई, एनि बेसेन्ट, श्री माँ, भगिनी निवेदिता और कस्तुरबा गाँधी ने अपने पराक्रम और ज्ञान साधना और सेवा से देश के इतिहास को महिमा मंडित किया, जिसके प्रमाण पूरे हिंदी साहित्य के इतिहास में भरा पड़ा है। जिसमे पहले लेखक प्रेमचंद ने गबन में दिखाया है और 'नारी जाति के अधिकार' नामक लेख भी लिखा है।

रविन्द्रनाथ टैगोर ने भी चित्रागदा को स्त्री जाति के सामान अधिकार के लिया आगे बढाया है। उसी तरह बंकिमचन्द्र ने भी दुर्गेशनंदिनी की नायिका आयशा और भंमर के द्वारा अपने पति को बेवफाई के लिया माफ नहीं करती, परन्तु यह लेखक भारतीय परम्परा के बंधन को नहीं तोड सके बल्कि पुरुष और स्त्री पाठको को गहराई से प्रभावित किया और पश्चिमी एवम भारतीय नारी के गुणों को सामन्वित करने का प्रयास किया। इसी समय एनी बेसेन्ट और मार्गरैट-कजिंश जैसे पश्चिमी नारीवादियों ने भारतीय महिलाओ की विचारधाराओ को प्रभावित किया और स्त्री शिक्षा के प्रसार से नई विचार उत्पन्न किया। बाद के काल में स्त्रियों की छवि में बदलाव आया और उन्होने राष्ट्रिय आन्दोलनों में महत्वपूर्ण भागीदरी ही नही निभाई बल्कि बड़े सूक्ष्म ढंग से अंग्रेज़ विरोध ी सामाजिक आर्थिक संघर्ष को मातृभूमि (भारत माता) देवी की पूजा में परिवर्तित कर दिया, इसका सकारात्मक पहलू शक्ति की देवी, नारी शक्ति की ध रणा उत्पन्न हुई और राष्ट्रवाद के धर्म में रूपान्तरण से राजनीती में महिलाओ का प्रवेश हुआ और महिला अनायाश ही उसी शक्ति का भाग अपने को समझने लगी और महिला भारी संख्या में आन्दोलन का समर्थन करने लगी।

Roll No - 403

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A study on Indian startups: Issues, challenges and opportunities

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Abstract
Start-up objectives like being your own boss and creating work for others demand a lot of perseverance and sacrifice. Numerous elements, such as a sizable population with a sizable middle-class population, educated youngsters with technical backgrounds, IT dominance, high internet and mobile penetration, and other factors, have created potential for the start-up movement to spread throughout India. The "Make-in-India" initiatives and other government programmes have also helped entrepreneurs by attracting a large number of people to the field. Starting a business requires careful planning and discipline, as well as careful evaluation of internal and external elements that could affect the venture's survival. Before embarking on the journey, it is important to have a broad understanding of the venture concept, market size, revenue goals and profit projections. Timing, collaboration, and tenacity are major factors in entrepreneurial success. Infrastructure, government rules, and funding availability may all act as obstacles for companies at various phases of development. In actuality, there are several instances in history of companies that began with great vigor but quickly fizzled out for a variety of reasons. The article focuses on some of the challenges and obstacles that an Indian start-up must face as well as the chances that the nation can provide in the current climate.

Keywords: entrepreneur, employment, finance, start-up, "make in India," government, issues & challenges

Introduction

A startup enterprise is a new entity that is just starting, growing, and generally financed by an individual or a small group of people. It is a young, enterprising, scalable business model that relies on technology and innovation. Company founders develop a good or service for which they anticipate demand by up-selling existing markets or creating brand-new ones. A startup is nothing more than an idea which takes the form of an enterprise.

In line with Grant Thornton (2022) [5], a startup business is establishment that is

a. A three-year-old or newer corporation
b. A temporary business organization, a partnership, or an entrepreneurial endeavor.
c. Develops, produces, or distributes new goods, services, or procedures.
d. Up to INR 25 crore in revenue
e. Not made through division or reorganization
f. Employing 50 or fewer persons

Startup is defined by the Department of Industrial Policy and Promotion (DIPP) as an organization formed or registered in India that meets the criteria listed below

- Not more than seven years old; (for Biotechnology Startups not prior to ten years)
- Having annual revenue that did not exceed INR 25Cr in any prior fiscal year, and
- Working to improve products, processes, or services through innovation and development
- It is a scalable company model with a strong likelihood of generating income or jobs.

It should be highlighted that such an entity is created by something other than dissolving or rebuilding an already be considered a startup if its preceding financial years' turnover exceeded INR 25 crore or if it has been in operation for seven years (or ten years in the case of biotechnology businesses) since its formation or registration (Startup India, 2022) [5].

Governmental actions

Since the Indian government is committed to promoting entrepreneurship, it has implemented several measures to ensure that startups receive the proper support. In this context, it is essential to draw attention to the "Make in India" campaign, which was started in September 2014 to lure foreign investment and domestic companies into the manufacturing sector. Furthermore, to instill confidence in startups, the government raised the foreign direct investment (FDI) limit for most sectors and increased the protection of intellectual property rights (IPRs). Furthermore, to encourage female entrepreneurs and help enterprises obtain bank financing, the Government of India (GoI) introduced a new initiative named "Standup India" in 2015. The program's goal is to make India a top location for startups. "Digital India," which was started in 2015 to guarantee that all residents have access to government services through a single online platform, is another excellent and extensive endeavor. The project seeks to connect rural communities by improving their digital infrastructure, which presents an enormous commercial opportunity for companies.

The India startup scenario

It should be mentioned that India is home to more than 800 technological companies each year. According to estimates, 13,500 IT businesses will launch by 2022, with a potential

ROW No - 416

Innovations

An Exploratory Study on Determinants of Water Scarcity in Delhi

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Abstract:

After oxygen, water is the important fundamental component of life. Anything that disrupts the availability and quantity of water tends to disrupt humanity's ability to survive. The scarcity of water puts the sustainability of the natural resource base in jeopardy, affecting all social and economic sectors. Since safe access to water is essential to peoples' diverse means of subsistence, the micro levels organisations such as local communities and households evidently experience water scarcity. Water resources in Delhi are under tremendous strain due to a combination of factors including a sharp rise in water demand, deteriorating water quality, groundwater depletion, inter-sectoral conflict and competition for water and system's bottlenecks. Despite Delhi's prominent position, it does not provide a fair representation of the supply and distribution of water. Many rural and urban areas do not receive water in accordance with prescribed norms. Even though hydrological and climatic statistics show no substantial change in the availability of water over the past fifty years, a sizable portion of both rural and urban areas nevertheless experience water shortage. People do not receive water that is of appropriate quality, in sufficient quantity or both, in a timely manner. In fact certain social, economic, political and institutional variables are accelerating and intensifying water shortage and inequality. The research work necessitated a wide range of primary and secondary data. The collected information has been analyzed and interpreted with the help of statistical technique and GIS mapping environment. This paper is a micro-level investigation that covers an entire city. This study therefore aims to investigate the determinants and nature of the water scarcity situation in Delhi. It also suggests pragmatic solutions and policy recommendations for ensuring access to affordable clean water to everyone.

Key words: 1.Water Scarcity, 2.Climatic Condition, 3.Water Resources, 4.Urban Area, 5.GIS Environment, 6.Non Revenue Water

Introduction

Water is regarded as the elixir of life, yet over exploitation of this vital resource and inefficient water usage across sectors as a result of poor policies has resulted in worldwide water shortages. All facets of society including people, enterprises, civil society and the government, must take prompt action to address the rapidly declining supply of precious and rare water resources caused by the expanding population. The water problem is one of the century's greatest challenge faced by different nations worldwide (World Economic Forum, 2019). There is strong global agreement that resource mismanagement is the only cause of the present water crisis. India is not an exception to this and is extremely accessible to water stress (Schleifer, 2017). As a result of India's rapid socio-economic expansion and, more specifically, its wasteful use of water, the country's per capita water attainability, a measure of water scarcity, continues to significantly decline. Along with population growth, it is anticipated that climate change will exacerbate the situation. For instance, the amount of water accessible per person has reduced from 1816 cubic meters in 2001 to 1588 cubic meters

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