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ANALYSIS OF HEAVY METALS IN EFFLUENT AND SOIL FROM RANIPET DISTRICT, INDIA

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ABSTRACT

The present study was focussed about the analysis of selected heavy metal in the five sampling stations from the Ranipet district. Effluent and soil (surface:<30cm and deep: >30cm) samples are collected from all the stations (TCC limited, Emerald Nagar, Puliyanganu lake, Puliyanganu and Karai SRP nagar). By acid digestion method, the heavy metal composition of the samples were analysed. Among the five stations, effluent chromium levels found high in Puliyanganu (S4) whereas high incidence of surface and deep soil Cr levels observed as 990.28±121.3 and 1685.47±221.6mg/Kg respectively.Our results evidenced that the heavy metal levels in the tested sampling stations were above the permissible limits.

KEY WORDS : Heavy metals, Ranipet, Effluent, Surface soil

INTRODUCTION

Many Asian countries are rapidly increasing their industrial sector for the enrichment of urban society which eventually develop a serious challenge to the environmental sustainability (Chhonkar *et al.*, 200b). In this industrial era, the aquatic ecosystems (fresh and marine) are considered as the ultimate sink of the various domestic and industrial effluents. Release of heavy metals, charged ionic particles and pathogens into the water system pose a serious threat to the life forms in both aquatic and terrestrial (Yadav *et al.*, 2005).

Figure 1 showed the summary of the heavy metal

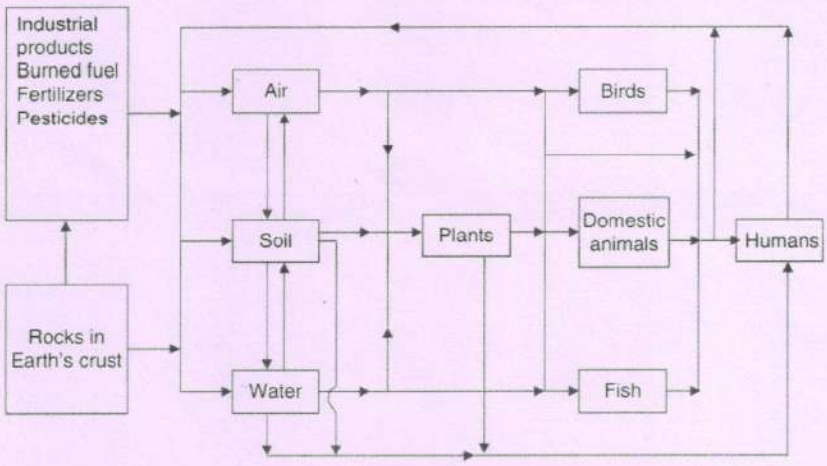

Fig. 1. Overall summary of the heavy metal augmentation from abiotic to biotic agents

PHYSICAL- CHEMICAL RELATIONSHIP IN FRESHWATER ZOOPLANKTON AT LAKE KALINJUR, VELLORE, TAMIL NADU.

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ABSTRACT

The zooplankton found in almost all water bodies is diverse. Because of the pivotal role of zooplankton in most aquatic ecosystems, Usethere is a constant need to explore the effect of stressors (such as physicochemical properties of freshwater) on their abundance Present paper deals with the study of monthly variations in the zooplankton population and their correlations with some physical characteristics of Kalinjur lake in Vellore district, Tamilnadu. From January 2021 to December 2021, Statistical analysis of data involves Pearson's Correlation analysis and various diversity indices viz. Zooplankton diversity and population dynamics are controlled by numerous physicochemical factors. Zooplankton populations fluctuate with physicochemical factors. A total of 27 species of zooplankton from 4 major taxonomic groups were observed: Rotifera (9 species), Cladocera (7 species), Copepoda (6 species), and Ostracoda (5 species). Physico-chemical parameters of Kalinjur Lake revealed well-marked fluctuations with maxima and minima values of each parameter during specific seasons and zooplankton analysis revealed seasonal variations with an increase during winter and a fall during monsoon and summer seasons. Zooplankton populations were highest in December and January. The present investigation showed positive correlations with Rotifer parameters like calcium, nitrite, phosphate, chloride, and the Tidey test. In contrast, Turbidity, Electrical Conductivity, pH, Alkalinity, Total Hardness, Magnesium, Ammonia, Nitrite, Fluoride, Sulfate, BOD, and COD water showed negative correlations with the zooplankton population.

KEYWORDS: Physico-chemical parameters, Monthly variation, Zooplankton, Correlation

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GC-MS ANALYSIS OF PHYTOCHEMICALS IN METHANOLIC LEAF EXTRACTS OF COMMONLY AVAILABLE HERBAL PLANTS IN VELLORE, TAMIL NADU, INDIA.

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Abstract:

Clitorea ternatea, Acalypha indica, Cissus quadrangularis, Catharanthusroseus and *Coleus aromaticus* are the plants which are commonly available herbals in Vellore district, Tamil Nadu, India. In the present study, the methanolic leaf extracts of the plants are subjected to Gas chromatography- Mass spectrometry analysis and investigated for the important phytochemical constituents. The GC-MS analysis revealed the presence of 8 major compounds in *Clitorea ternatea*, 10 major compounds in *Acalypha indica*, 11 major compounds in *Cissus quadrangularis*, 9 major compounds in *Catharanthus roseus* and 5 major compounds in *Coleus aromaticus*. There were also certain compounds which are commonly available on comparing the phytochemicals. The results of the present comparative study may lead to the invention of new drugs, herbal medicines and in various medical fields for treating several maladies, which may lead to the development of novel drugs using nanotechnology.

Index terms: **Clitorea ternatea, Acalypha indica, Cissus quadrangularis, Catharanthus roseus, Coleus aromaticus.**

1.INTRODUCTION:

Plants are the good source of medicine and it is inherited and used as the important compound in the health care system universally. India is called as the botanical garden of the world as it produces large quantity of valuable medicinal plants. Plant medicines are used to treat infectious diseases as well as chronic diseases. (Tandon and Yadav, 2017)

Drugs are being developed all the time since a growing number of people developvarious acute and chronic infections, diseases, cancer, heart problems, diabetes etc., Now, it has become the major threat to human race because the consequences are devastating. Any prescribed drug itself could lead to various other minor and major health issues. (Zhao et al., 2018) Therefore, people still prefer plant-based natural medicines which has lesser or no impact. More than 80,000 plant species are been used for the treatment of various diseases as traditional medicines acrossthe different regions of India.

It is generally reported that 5,000 of 35,000 species in China is used as the drugsin Chinese traditional medicine. A plant is considered as a medicinal plant, whenit has effects that are related to health (i.e,) which have been proven to be useful as drugs or that contains the constituents of drugs. The medicinal plants and theirconstituents are able to take the edge off or to reduce or to cure the human sickness and ailment.(Akerele et al., 1991)

National health portal reports that evidence still exist on Unani hakims, Indian vaids, European and Mediterranean cultures used herbs as medicines for over 4000 years. There is a high demand for the plant-based drugs and medicines because of the growing population, inadequate drug supply, cost of the medicinesand side effects.

India is a well-known country to use medicinal plants for treating the diseases. Medicinal plants and aromatic plants are being used as raw materials for the manufacture of drugs. There are about 8000 herbal remedies which have been systematized in AYUSH in INDIA. Drugs by natural plants are very safe with minimal side effects and it can be used

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Comparative Analysis of Latex Plants by GC-MS using Methanol Extraction

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Abstract : Plants are able to produce a large number of diverse bioactive compounds. Solvent extraction is used for isolation of plant metabolites. The extract yield for plant metabolite extraction strongly depends on the nature of solvent. A review showed the methanol can yield more bioactive compounds. Drying of the sample material is also important for the extraction of plant material. The present study was carried out to analyze the phytocomponents of 5 different latex producing plants. The plants like *Calotropis gigantea, Carica papaya, Nerium oleander, Ficus benghalensis and Plumeria alba* leaves and latex. The GC-MS analysis of the metabolites revealed phytocomponents. *Calotropis gigantea* leaves showed 14 compounds and latex produced 5 compounds out of this 4,4,6A,6B,8A,11,11,14B-Octamethyl-1,4,4A,5,6,6A,6B,7,8,8A,9,10,11,12,12A,14,14A,14B-Octadeca-hydro-2 and 2R- Acetoxymethyl-1,3,3-trimethyl-4T-(3-Methyl-2-Buten-1-Yl)-1T-Cyclohexanol compound was present in both latex and leaf extraction. Beta. -carotene compound was present in both latex and leaf of *Carica papaya*. It was observed that *Ficus benghalensis* contained 2R-Acetoxymethyl-1,3,3-trimethyl-4T-(3-Methyl-2-Buten-1-Yl)-1T-Cyclohexanol was same in latex and leaf extraction.

Key words : Methanol extraction, GC-MS analysis, phytocompounds, latex plants, magnetic stirrer

Introduction

Medicinal plants are the backbone of traditional remedies.[1] The plants may contain many biological components with medicinal values and also be used for application purposes. It is the source for making new drugs.[2] Plants can produce a wide range of phytocomponents that can protect against free radicals that accumulate in fruits and vegetables. Phytochemicals are a collective term for both bioactive and non-nutritive plant substances. Recently, the use of phytochemicals has increased, especially in the areas of functional foods and pharmaceuticals.[3,4] There are about 10% of flowering plants that produce latex. Over 40 families are represented, including *Euphorbiaceous, Apocynaceae, Caricaceae, Moraceous and Asclepiadaceae*. Latex is a milky white fluid that is secreted by ducts of lactiferous tissue in leaves, stems, fruits and even in roots. some plants, like *Euphorbia hirta, Euphorbia tirucalli, Jatropha gossypifolia, Plumeria rubra, Nerium oleander, Calotropis procera, Ficus benghalensis, Ficus religiosa* and *Carica papaya* latex, were used to identify the phytochemicals present in it but not the methanol extraction study. The naturally synthesised chemical compounds are used to defend against predators like insects, fungi, and herbivorous mammals.[5] Phytochemical screening is the method that has been used to detect antioxidant compounds in plants.[6] Extraction is one method for extracting phytochemicals from the selective plant materials. The phytochemicals yield not only depend on the extraction technique but also depend on the solvent which is used for extraction.[7] There are so many techniques involved in the extraction method, like maceration, infusion, percolation, microwave assisted extraction, the Soxhlet extraction technique, and also other extraction methods like accelerated solvent extraction and supercritical fluid extraction.[8] (Figure 7 and 8) In this research, magnetic stirrer was used for extraction process. The primary goal of extraction is to extract as much of the specific compound as possible while obtaining the highest biological activity from the extract. Many solvents like methanol, ethanol, chloroform, acetone, and water, have been used for extraction depending upon the plant material. A review showed the highest extraction yield by methanol.

It has been proven to be more effective in the extraction of polyphenols with lower molecular weight. Methanol was found to be more effective than ethanol to extract a large number of phenolic compounds.[2] Likewise, (Figure 6) drying the plant material is also important because fresh plant materials may have active enzymes that produce the active constituent's intermediates and metabolic reactions in the plants. Many researchers have done their research by drying plant material in an air-dry process in the shade in a dark room because overheating can cause the volatile

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Transient analysis of an M/M/1 queueing system with K-variant working vacation, disaster and repair

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Abstract

An M/M/1 queueing model with K-variant working vacation, system disaster and repair is analyzed in this paper. In this investigated model, the server switches to the working vacation at the end of the busy period. During the working vacation, the server provides service to the customers at a slower rate of service. At the end of the WV period, if any customers waiting for service then the server immediately switches to the busy state. In the K-variant working vacation policy, the server can take up to K working vacation. For this system, the transient and steady-state probabilities are obtained through generating function, Laplace transforms and continued fraction. Further, numerically illustration is presented to understand the effect of the parameter in the system performance.

Key words: Single server, K vacation, working vacation, disaster, repairable server, transient probabilities.

1 Introduction

Researchers have studied vacation queueing systems extensively due to their numerous applications in the fields of computers, communication systems, manufacturing, and production systems. Vacation models are useful in systems where the server wants to make the most of its idle time. Excellent survey papers related to vacation queueing models can be found in [11], [19], [13]. The vacation policies can be classified as single, multiple and working vacation (WV). In the single vacation policy, the server goes to a vacation period for a random duration at the end of the busy period. After the expiry of the vacation period, the server begins its service to serve the waiting customer otherwise it remains idle see Altman and Yechiali [1], Tian et al. [19], and references therein. In the multiple vacation scheme, returning from vacation if the server finds the system is empty

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TRANSIENT ANALYSIS OF MODIFIED M/M/1 QUEUE WITH ADDITIONAL SERVER AND CONGESTION

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Abstract
Congestion is a common phenomenon in the field of computer and communication networks. Congestion will occur when the rate of incoming traffic to an interface exceeds the rate of outgoing traffic from an interface. The permanent solution for congestion is often increasing the speed of server or providing an additional server to serve the customers who is waiting in the queue. But, increasing the speed of service is not possible in many real life situations. To overcome this difficulty, a modified queueing model is considered in this paper. Arriving customers are served through an classical M/M/1 queueing system until the queue size reaches the predefined capacity. An additional server is added in the queueing system when the queue size is exceeds the predefined level. An explicit expressions for steady- and transient- state probability distribution for the number of customers present in the queueing system are derived. We also derive the mean and variance in steady state. Further, numerical illustrations are presented to understand the model behavior.
Keywords: Congestion; M/M/1 Queue; Transient probabilities; Additional server; Chebyshev Polynomials; Modified Bessel function

1 INTRODUCTION

Queueing theory is a mathematical study of waiting line and/or waiting time of a system. Federal Express (the overnight package delivery service) noted that: "Waiting is frustrating, demoralizing, agonizing, aggravating, annoying, time consuming and incredibly expensive. It is true and everyone experiences the feeling of waiting and they all know well the cause effect of waiting in a line to get a required service. Queueing theory has enormous application in the field of computer and communication systems (Marco Mezzavilla et al. (2018)), transportation-traffic management (Gerum and Baykal- Gursoy (2022), Yanhe Jia et al. (2021), Niek Baer et al. (2019)), hospital management (Vassa and Szabob (2015)), manufacturing sectors (Gunasekaran et al. (1996)), food industries or any service sectors which consists of arrivals and departures. In general, customers are expected to complete their service at the earliest time possible and want to leave the system at the earliest in satisfied manner. The long waiting line makes an unpleasant situation and which leads to congestion in the queueing systems. The word congestion in the context of queuing theory means if the arrival rate for the customers into a system exceeds the service rate of the customers at any point of time. In the context of networking, Congestion of a network router is said to occur if packets are dropped or packet loss (see Zhang (2009), Chung et al. (2018)). Congestion creates a chaotic situation at the service facility and customers get impatience due to long time waiting in the queue. This will

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Transient Analysis of an M/M/1 Queue with Sleep Modes, Startup Time, Disaster, Repair and Its Application to Wireless Sensor Networks

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Abstract
An M/M/1 queueing system with vacation, threshold policy, start up time, waiting server, system disaster and repair is considered. This work is motivated by the energy management of Wireless Sensor Networks (WSNs). In this model, the system switches to various states namely busy state, idle state, shutdown state, inactive state, wake-up state and failure state. The disaster can occur at state state of the system except at failure state and subsequent repair is considered. The disaster can be considered as a jamming signal is WSNs. For this investigated system, a closed form of expression is obtained for both transient and steady- state probabilities. Furthermore, performance measures such as mean, variance and probability that the server is in various stages of power management modes are computed. Finally, graphical illustrations are made to understand the effect of the parameters on the performance of the system.

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Keywords: - Single server, transient probabilities, steady-state probabilities, thresholdpolicy, system disaster, repair.

1 Introduction

WSNs composed of several spatially distributed sensors called nodes that work together to monitor a specific purpose such as pollution levels, temperature, sound, vibration, pressure, and so on. Energy is regarded as a limited resource for a sensor node, particularly when deployed in a unfriendly region, and once depleted, it is extremely difficult to provide supplant energy. The main objective is to manage energy in such a waythat no node runs out of energy and the network remains operational indefinitely. Hence, it is essential for a sensor node to have an effective energy management policy for the lim- ited energy source, as well as to manage the application requirements in accordance with the available energy source. Energy management in WSNs can be considered as a set of rules for managing various energy supply mechanisms and then consuming the provided energy efficiently in a sensor node. In order to avoid energy deficiency in a network, an efficient power management between supply and load is required. Hence, a power saving scheme to extend the lifetime of WSNs has become an important research topic. Therehave been numerous

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1 Introduction

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MULTIPLE VACATIONS IN AN $M^X/G/1$ RETRIAL G-QUEUE

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Abstract: We investigate a set of non-Markovian group of arrival queues with retrial G – queue, the scheme of Bernoulli service and multiple vacations. Assume that the arrivals who detect that the server is not available and join the retry group which follows the First – come – First – served norm and that only those are front of the line allowed to enter the server. With probability q, the server takes a vacation after each service completion and with probability $p = 1 - q$, he waits to serve the next customer. If the server is unable to locate a customer within the retrial group, the server will go on vacation. We begin by gathering information for the distribution of the queue length, in addition various performance characteristics of this system under the conditions of steady – state. Furthermore some particular cases are also analyzed.

Keywords: Batch arrival, Retrial G – queue, Bernoulli vacation, Steady state

I. INTRODUCTION

We can witness a noticeable growth in the system of retrial queue by the characteristic that the arrivals who detect that the server in unavailable and join in the retrial group to make an effort once more after an arbitrary period for their demand in the literature of queueing theory. Many scholars have become more interested in examining queues with multiple vacations in recent years. See Falin and Templeton [3] and Artalejo[1] for a full study of the retrial queues.

The investigation of a queueing system with the concept of positive and negative arrivals. Due of their widespread uses in Computer communication networks, neural networks and production system. Queues with negative arrivals (also known as G – queues) have piqued interest. In the honor of Gelenbe [5, 6] who first presented to create this form of queue, the queue with negative arrivals has been dubbed the G-queue.. Harrison [7] has looked into compositional reversed Markov processes and how they might be used in G – networks. In recent years, notable additions to a unique category of queueing representation that works with the simultaneous existence of negative entry, such as Krishnakumar [8], have been made. Positive arrivals enter the system and are regarded as normal queueing customers, whereas negative customers only enter the system when the positive customers are being serviced. This type of negative customer causes the server to crash and the service channel to fail for a brief period of time, removing positive customers from the system. When a server fails, it will be fixed as quickly as feasible. The server will be treated as good as new after the repairs are completed. Do [2] published a study on G – networks, unfavorable arrivals, and queueing system applications. Gao and Wang [4], Peng [13] and Rajadurai [10] have addressed many sorts of queueing models that operate in the presence of negative arrivals at the same time.In a variety of real – world settings, queueing systems with batch arrivals are frequent. Messages to be transmitted across a computer communication system could be made up of a random number of packets. This encourages us to create a realistic model for a batch queueing system.

If a customer is in line at the end of vacation period, service will begin. Otherwise, the server immediately takes another vacation and repeats the process until there is at least one customer waiting when it returns from vacation. The length of each vacation is supposed to be a random variable with an independent and same distribution, independent of the length of service times and the arrival procedure. There is a substantial amount of literature on many variations of this paradigm, for example Ramasamy and Sevi [11], Tedjanto [12].

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AN M/G/1 MODEL ON THE PREEMPTIVE PRIORITY QUEUES OF THE IMPATIENT CUSTOMER AND LOW PRIORITY CUSTOMER BEHAVIOR

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Abstract

We consider the M/G/1 queue with two classes of customers in which first type customers have deterministic impatience time and have preemptive priority over the second type customers have no impatience .If the second type customer is being served when the first type customer arrives, then the service of the second type customer is immediately interrupted and the server starts a service for the newly arrived the first class customer. The preempted service of the second type customer is resumed from that time when there are no first type customers in the system. We assume a First -Come -First Served (FCFS) queueing discipline within each type of customers. We also assume that once customers (either low or high-priority) start receiving service, they stay in the system until their service is completed. The Laplace Stieltjes transform for the time in the system. Finally, we show how this priority scheme may lead to an improvement in the utilization of the server when customer decide whether or not to join, and at last this paper points out the problems to be solved

KEYWORDS:

Pre-emptive priority Queue, impatient Customers, Laplace Stieltjes transform, General distribution, waiting time.

INTRODUCTION:

The M/G/1 queuing model is one of the most researched models in operations research and in the performance evaluation area. In this model customers arrive to a single server queue with accordance to a Poisson process with rate denoted by λ per unit of time. Service times are independent and identically distributed. In quality of service requirements due to the different types of business, single service standards are often unable to meet certain business requirements which require that the customers are divided into different priority and according to the priority to get the services and quality. However most of the literatures are based on service time with exponential

print

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Heat transfer and Electric field Impacts on Ferrofluid Flow Over a Wedge

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Electric field

Abstract

The interest behind this article is to examine the electrohydrodynamic number, and heat transfer impacts on two dimensional, laminar, incompressible nanofluid boundary layer flow over a wedge. The well-known nanoparticle volume fraction model was applied to approximate the viscosity, thermal diffusivity, heat capacitance, and thermal conductivity of the nanofluid. The nanoparticles itemized here are Nickel, Ni, and Nickel Zinc Ferrite $Ni(Zn)O.Fe_2O_3$ with base liquid as water (Liquid H_2O). The governing system of equations is reduced in the system of nonlinear differential equations and solved numerically using MATLAB. The impact of the electrohydrodynamic parameter k_1, nanoparticle volume fraction ϕ, electric field functions g_1 on the velocity profile, the influence of the Prandtl number Pr, joule heating energy parameter s_2, and ion kinetic work parameter s_3 on temperature profile has examined. Further surface drag forces and the rate of heat transfer are inspected. A comparison is made with the available outcomes in the literature and present outcomes is a satisfactory concurrence with the findings in the literature for particular values. The velocity profile increases with an increase in electrohydrodynamic number, and also increases more in the case of Nickel than Nickel Zinc Ferrite. A decreasing trend in the velocity profile is observed for increasing values of electric field functions in both types of nanofluids. The temperature rises more in Nickel Zinc Ferrite than Nickel for an increase in the ion kinetic parameter. The cumulative effect of nanoparticle volume fraction and electric field function leads to decreases the heat transfer rate.

1 Introduction

Ferrofluids are exceptional sorts of materials, which are suspensions of magnetic nanoparticles, for example, Cobalt, Nickel, Iron in conventional base liquid. The three segments of ferrofluids are nanomagnetic particles, surfactant, and fluid transporter. It doesn't exist in nature, but they developed synthetically. Ferrofluids have high permeability, high saturation magnetization and high viscosity at high volume fractions, so it can be used in rotating machinery, change the angular momentum and rotation of the spacecraft, lubrication, semiconductor

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ORIGINAL ARTICLE **OPEN ACCESS**

An Empirical Investigation in Measuring the Role of Machine Learning (ML) in Enhancing Innovation in the Health Care Industry for Sustainable Business Perspective

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ABSTRACT
Over the years, machine learning emerged as one of the key technologies to enhance the healthcare industry by incorporating different practises and enhancing the overall treatment facilities. This appears to be a significant help for both patients and medical professionals in terms of predicting potential illness that people suffer from. Using this particular technology, the healthcare industry essentially improves patient service by predicting medical outcomes and taking effective measures against it. Security and privacy concerns appear to be significant challenges that healthcare faces while implementing machine learning. However, the advantage level of the concerned technology appears to be quite high within healthcare that essentially enhances medical treatment of the patients as well. The concerned research incorporated principles of "positivism research philosophy", the "deductive research approach" and "descriptive research" design to meet desired research outcomes. On the other hand, primary data collection and quantitative data analysis methods are also implemented in this study to identify and understand the role of machine learning in enhancing innovation in the healthcare industry for a sustainable business perspective. Primary data collection in the form of a survey has been conducted in this research where 50 participants were considered as the sample size which essentially helped reach eventual outcomes.
Keywords: *Machine learning, healthcare, medical facility, patient care, decision-making*

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INTRODUCTION

Machine Learning has become a massive trend in the industry because it is a sophisticated as well as technologically advanced implementation of innovation. Machine Learning is everywhere, and it is employed in a multitude of scenarios. It is crucial in a variety of sectors, including banking, health sciences, and cybersecurity [1]. Along with to their competitive advantage for a wide range of different types of healthcare applications ranging from the predictive model of cardiogenic shock from one-dimensional cardiovascular signals to computer-aided treatment plan (CADx) utilizing multi-dimensional clinical data, deep learning (DL)/ Machine learning (ML) strategies have seen broad acceptance in past few years [2]. Despite the impressive performance of ML/ DL, there are still concerns about its reliability in care environments (which is usually considered difficult because of several security and privacy concerns directly implicated), particularly in context of current findings that ML/DL is susceptible to adverse threats.

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The Intelligent Smart City Deployment Via Artificial Intelligence Software Networking

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Abstract — **The Software Defined Network (SDN) structure is a novel approach to network management. Switches in SDN do not process incoming packets in the same way that they do in a traditional network computing environment. They look in the linking tables for incoming packets, and if none are found, they are sent to the control system for processing, which is the SDN's operating system. The most serious threat to cyber security in an SDN network is a Spread Denial of Service (Dodos) attack. The attack will take place at the network or application layers of the infected devices that are linked to the network. In this paper, an intelligent machine learning-based method for detecting whether incoming packets are infected or not is proposed Smart city activities seek to go beyond the limitations of traditional urban planning, which regulates critical infrastructures in silos, and to profit on the pervasiveness of data and services given by electronic technologies such as machine learning, the internet of things, affordable and big data..**

Keywords—machine learning, automatic assistance, algorithm, automobiles, technologies, automation, software networking, strategies, deployment , transportation, urbanization, advancement, infrastructure, per capita, intelligent software networking, conventional, processing, organization.

I. INTRODUCTION

AI requires machine learning (ML), which is the use of systems to translate data, learn from it, and make a conclusion or prediction absent explicit instructions. Because of advancements in computer and storage capacity, ML has dramatically changed into more complicated direct tangible, such as deep classification (DL), which employs algorithms for even better insight and automation. Another topic that has spurred recent AI growth is speech recognition (NLP), notably in the realms of virtual houses and IT assistants.. Natural language processing (NLP) employs vocal and particular phrase recognition to facilitate human-machine interaction through natural language cues and requests. Smart city efforts aim to transcend the limits of conventional urban planning, which controls infrastructure systems in silos, and to capitalize on the ubiquitous nature of data and services provided by digital technologies such as big data, the internet of things, accessible and big data. Globalization, as a process of fast economic development, breakthroughs in manufacturing technology, and innovation, particularly in the fields of communication and transportation, has had three significant consequences: increasing the role of technology, decentralization, and sub national diplomacy (Para diplomacy). To compete and thrive in a worldwide society, demand for the three T's (Time, Transporter, and Technical) is fast growing. In these conditions, the advancement of Smart City technology has piqued the interest of a wide range of stakeholders. This has emphasized the significance of a town as a new player in foreign politics.[1]

II. OBJECTIVE

The research aimed to fulfill the following objectives:

- To explain the intelligence software networking
- List the different types of objective in vision of intelligent smart city
- To study urbanization with intelligent software network
- To study different strategies for smart cit deployment
- To study benefits associated with smart cities
- To study how this system works and how been managed by organization
- And in the last we will study about the possible future growth in smart city deployment with the help of intelligent software networking

III. METHODOLOGY

The impact of globalisation on current society, particularly the increasingly important role of the city, has resulted in three distinct yet interrelated aspects, such as decentralisation, technology, and political diplomacy, becoming forerunners of the city's economy. A city acquires increased political clout in developing wealth and success for its citizens by utilising technology. In addition to technology's role as an enabler, we contend that having advanced tech and deploying it to the topic is inadequate. Smart diplomacy must be developed at the subnational level

"FAKE NEWS VIRUSES ON THE DEFORMATION TRIAL: A LOOK AT THE LAWSUIT BETWEEN JOHNNY DEPP AND AMBER HEARD"

ABSTRACT

Fake news" refers to information that resembles news media content but is not based on fact or intent. False news items are not criminal unless they fall inside the scope of restricted material. This article investigates the dissemination of fake news and hoaxes during actor Johnny Depp's defamation lawsuit. Heard asserts that former Depp attorney Adam Waldman defamed her by labelling her assault allegations as false. Heard claimed that the comments had harmed Depp's career and reputation. The jury determined that Heard's attorneys had not demonstrated all elements of defamation. This paper concludes by stating that rumours do not have legal or judicial weight and are powerless because they are always just that: "rumours".

INTRODUCTION

The term "fake news" refers to material that resembles news media content but is not based on fact or purpose. In turn, fake news sources lack the rules and procedures for journalism's editorial board for the purpose of assuring the precision and legitimacy of information. True and false news are intertwined informational disorders, such as erroneous or misleading information or a falsehood (false information that is purposely spread to deceive people) [1]. One must differentiate between deliberately false information, such as when an error was made carelessly, and other tales that contain errors despite diligent investigation, as well as stories that are not blatantly incorrect but are overstated, biassed, or tendentious. The first two groups must be avoidedat all costs. Human rights legislation generally protects all forms of expression, even those that are false.[2].

In recent years, there has been a rise in the public's awareness of false news, which can be attributed to increased worries over the potential impacts that it might have on political institutions.[3]. Fake news articles are not illegal unless they fall into the category of content prohibited by law, such as defamation, libel, or (in some jurisdictions) hate speech. The Joint Declaration on freedom of expression and "fake news," misinformation, and pro-paganda acknowledges the potential harm that fake news poses to an open dialogue and the freedom of thought and expression [4] This topic has been brought to the forefront in both the United States and the United Kingdom as a result of discoveries regarding claims of Russian meddling in democratic elections and referenda, as well as for misdirecting public discussion through the use of misinformation operations. Indeed, one of the most prevalent explanations for the chaos that ensued during the 2016 presidential elections in the United States and the 2016 Brexit vote is that it was caused by the spread of false news.[5].

State regulation and the role of "Big Tech" (Facebook and Alphabet) in stopping the spread of disinformation have come to the fore as a result of the problem brought on by the proliferation of false news. Initially, these firms were criticised for their apparent lack of action against online deceit,

DEDUCTION OF FAKE NEWS ON SOCIAL MEDIA PLATFORMS (WITH REFERENCE TO WHATSAPP USERS)

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ABSTRACT

The use of social media for news consumption has two sides. On the one hand, consumers seek out and consume news via social media because of its low cost, simple access, and quick transmission of information. On the other side, it facilitates the widespread dissemination of "fake news," or low-quality news that contains purposely misleading material. The widespread dissemination of false news has the potential to have tremendously detrimental consequences for both people and society. As a result, detecting false news on social media has lately become an emergent study topic that is gaining a lot of interest. This study conducted athorough research of identifying false news on social media, including characterizations based on psychology theories. 600 samples were collected from Vellore district Whatsapp users and SEM analysis, sentimental/impact analysis of such bogus news in the community, existing data mining methods, assessment metrics is performed through collected data. The researcher alsodeveloped a "fake node identification module" to identify the fake news generator. The results shows that a behaviour of an individual depends on the personal and social factors, while forwarding a content.

INTRODUCTION

Social media has had a profound effect on how we communicate with one another, with two-thirds of all people in the US using it. However, fake news is a form of yellow journalism or propaganda that is spread through traditional print and broadcast news outlets and online social media platforms. The study took on two key obstacles in analysing the influence of false news in society: to depict the impact of fake news on our peers and to grasp their feelings on social media. Fake news is written and published with the intent to mislead or profit financially or politically. It often employs sensationalist, dishonest, or outright fabricated headlines to increase readership, online sharing, and Internet click revenue.

It is distinct from evident satire or parody, which is designed to entertain rather than deceive its audience. Types of false news include satire or parody, partially accurate but misapplied reporting, sloppy reporting that serves an agenda, false news that is not founded on facts, and intentionally misleading news.

REVIEW OF LITERATURE

This paper discusses an algorithm created by experts from the Indian Institute of Technology, Kharagpur, and IIT Bombay's centre for urban science and engineering (Zhao et al., 2015). It uses artificial intelligence to filter out vital and undesired information on social networking sites during natural disasters and has an accuracy level of 90% (Roopavathi and Kishore., 2020). According to a report in 'The Times of India' dated Aug 11/2019 the Thiruvananthapuram state police department has acted against rumour spreaders and recruited retired police officers, military personnel, and parliamentary staff to assist with rescue measures. Uttar Pradesh police launched a "digital

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STRETCH ASSIGNMENTS AND ITS EFFECTS ON JOB PERFORMANCE OF IT EMPLOYEES

Dr. J.P. Evelyn Freeda, Assistant Professor, PG & Research Department of Commerce, Voorhees College, Vellore

Abstract:

In this competitive world, to bring out one's uniqueness in a job, stretch assignments give hands to IT employees. To advance in a career, one might consider many options for expanding their knowledge and skill set. Stretch assignments help the employees explore challenging roles and learn more about the management roles within their companies without leaving their current positions. Understanding these assignments and how to pursue them can help you make progress towards your career goals. In this article, the researcher explains stretch assignments, their benefits, and their effect on the job performance of IT employees.

Keywords: stretch assignment, upcoming promotion, high performance and skill development.

INTRODUCTION:

Stretch assignments are implemented in an organisation to prepare an employee for the next level of upcoming promotion and encourage the high-performing employee by developing their skills and evaluating their level of interest or aptitude by preparing them for the next level. Stretch assignments not only broaden knowledge but also escalate the employee's interpersonal skills, which in turn mould them into great leaders. Stretch assignments are taken by the employees in order to generate an opportunity to learn and develop. It also helps them to show that they have initiative and are ready to take on more responsibilities. This initiation helps them remain in the same organisation rather than switching to another. Stretch means it is a challenge that helps the employees think and act outside their comfort zone or day-to-day job. Stretch assignments take the employees to unfamiliar challenges, create change without disturbing their routine work, and work cross-functionally, leading them to a high level of responsibility. Though it improves performance, there are also some of the noted effects of stretch assignments laid out by the IT employees.

LITERATURE REVIEW

There are so many definitions regarding stretch assignment were the different researcher Whitepaper, A & Macaux, William. (2010) a Stretch assignment captures the most attention and shows the uniqueness of the worker, pushes them to develop into future leader for big time. Morrison, Rachel (2018) Relishing competence or avoiding the stretch assignment? Gender differences in what makes employees "love" work. Journal of Human Resources. 18. 3-24. Vani (2016) The study conformed positive effects of WLB. Jo Miller (2019) Stretch assignment is a temporary, internal learning opportunity that helps an employee acquire new expertise and the stretch role is a new, permanent position that challenges an employee to expand responsibilities or learn new skills. Evelyn (2018) states that the new technology plays vital role in stretch assignment and skill development of the employees. Wilson, Velsor, Chandrasekar, & Criswell (2011) states that the majority of top executives rely on stretch assignment to learn about the skills of successful leadership. Vani (2017) The assignment not only improve the productivity but also keeps employees morale.Shadoviz (2014) In a poll of 820 international executives, over 70% of them pinpointed that stretch assignments as a turning point for uncovering their potential. Palaniammal & Rajeswari (2014) suggested that participative planning should be exercise during decision making and implementing performance management system reduce the personal bias in the company.

OBJECTIVES OF THE STUDY:

- To study the demographic profile of the respondents.
- To identify the factors that contributes to stretch assignments.
- To examine the impact of stretch assignments on employee performance.

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STRETCH ASSIGNMENTS AND ITS EFFECTS ON JOB PERFORMANCE OF IT EMPLOYEES

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Dr. Ram Pande

THE PROS AND CONS OF ONLINE EDUCATION AMONG COLLEGE STUDENTS (WITH SPECIAL REFERENCE TO COLLEGES IN VELLORE CITY)

UGC CARE APPROVED

ABSTRACT

In this era of evolving technology, the opportunities made available by the internet have been fully utilized. There was a lot of uncertainty among parents and students when it first came out. This uncertainty has subsided and has become the new normal (an unusual situation that has become routine), and both students and educators can see the benefits and drawbacks of online education. It has more positive aspects than negative ones. The views are taken from the perspective of students. Online education is a costly affair in a country like India, where it is still in its developing phase. Convenience sampling has been used to study the views of students. The researcher used a structured questionnaire to obtain responses from the students from different colleges. A total of 180 responses were received, with 16 being ignored due to response bias. Hence, a valid number of 164 samples were taken forward for analysis. Percentage analysis, Anova, and Chi square were used as tools for this paper. The researcher brings out the difficulties that are faced by students and tries to give practical solutions to make the learning process easier.

Keywords: *Online class, offline class, software, and hackers—the new normal.*

I. Introduction

Online education is a much easier way to deliver any type of education through the internet. Online learning systems enable students and educators to gain knowledge while remaining stationary. The recent pandemic has increased the use of online education in schools and colleges. The applications available on online platforms made usage much easier, resulting in more user-friendly online classes. The vast usage of the Internet has reduced paper work a lot, saving a lot of trees, but in the same way, the implantation of mobile towers has made sparrows an endangered species. Though it makes life easier, there are some notable advantages and disadvantages raised by students about the online mode of education.

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A STUDY ON WORK LIFE BALANCE OF EMPLOYEES WITH REFERNCE TO GOOD LEAPS SOLUTIONS PRIVATED LIMITED

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Dr.Y.Edison Nesa Doss Assistant Professor, and Head, Department of Social Work, Voorhees College, Vellore.

ABSTRACT

The study conducted on the research topic "A Study on Work Life Balance of Employees of Good Leaps Solutions Private Limited. Work life balance is an important aspect of a healthy work environment. Maintaining work-life balance helps reduce stress and helps reduce stress and helps prevent burnout in the workplace. By creating a work environment that prioritizes work life balances, employees can save money and maintain a healthier, more productive work force. Work-life balance is about effectively managing the juggling act between paid work and the other activities that are important to people. It's not about saying that work is wrongor bad, but that work shouldn't completely crowd out the other things that matter to people like time with family, participation in community activities, voluntary work, personal development, leisure and recreation.

Key Words: Work-Life, People, Community, Development, burnouts, etc.

INTRODUCTION OF THE STUDY

Most recently, there has been a shift in the workplace as a result of advances intechnology.Employees have many methods, such as emails, computers, and cell phones, which enable them to accomplish their work beyond the physical boundaries of their office.Researchers have found that employees who consider their work roles to be an importantcomponent of their identities will be more likely to apply these communication technologies to work while in the in on-work domain. Work life balance is the stability characterized by the balancing of an individual's work with environment and personal resources such as family, community, employer, profession, geography information, economics, personality or values. Many authors believe that parents being affected by work-life conflict will eitherreduce the number of hours one works where other authors suggest that a parent may runaway from family life or work more hours at a workplace. This implies that each individualviewswork-life conflictdifferently.Employee assistance professionals say there are many causes for this situationranging from personal ambition and the pressure of family obligations to the accelerating pace of technology. According to a recent study for the Centre for Work-Life Policy, 1.7 million people consider their jobs and their work hours excessive because of globalization.

REVIEW OF LITERATURE

1. **Susi.S (2010)** Work life balance is directly related to employee satisfaction. This concept has initiated the need of understanding of important issues like employee retention, quality workforce, job satisfaction and improved work family equation. Also Work life balance needs to be promoted at workplace to be included as a vital part of work culture. Supportive work culture increases employee loyalty and commitment towards the organization.
2. **Holly S. and Mohnen A. (2012) "Impact of working hours on work-life balance"** connected working hours and satisfaction with desirable work-life balance. This balance is specific to each person and relates to satisfaction with a job and all other parts in life, especially family life and free time. Therefore, a good work- life balance results in high satisfaction. Their results show diverse perceptions and influences of job conditions on employees.
3. **Shalini and Bhawna (2012)** reported in their study, "Quality of work life balance" is being used by the organizations as a strategic tool to attract and retain the employees and more

A Study on Customer's Perception towards Web Application Firewall with Special Reference to Strongbox it Private Limited

- D. Sathya Prasath Kumar[41]
- P. Venkatesh[42]

Abstract:

Web application firewalls (WAFs) are the primary front-end protection mechanism for Internet-based infrastructure which is constantly under attack. Therefore, this paper aims to provide more insights into the performance of the most popular open-source WAFs, including Mod Security, WebKnight, and Guardian, which we hope will complement existing knowledge. The key contribution of this work is an in-depth approach to conducting such a study. Our experiments show that open source WAFs are not yet totally reliable for protecting web applications despite many advances in the field. Mod Security appears to be the most balanced open-source solution. The attackers are using methods that are specifically aimed at exploiting potential weak spots in the web application software itself – and this is why they are not detected or are not detected with sufficient accuracy, by traditional IT security systems such as network firewalls. Additional protection against attacks, in particular for already productive web applications, is offered by what is still an emerging category of IT security systems, known as Web Application Firewalls a web firewall is a system for detecting web application attacks. Web firewalls are used for a variety of purposes. Most prominently, they are one of the main barriers between stored databases and clients accessing the data to prevent. This paper will also cover the findings of a survey conducted in India about the Perception of Web Application Firewalls gathering relevant information

Key Words: Applications, Security, Firewall, Perception, Information, etc.

Introduction

The application of security in web applications is of profound importance due to the extended use of the web for business. Most of the attacks are either because the developers are not considering security as a concern or due to the security flaws in designing and developing the applications. Web Application Firewall (WAF) helps guard web applications by monitoring and filtering HTTP traffic between web applications and the Internet. Web Application Firewalls exist in physical or virtual appliances form. They are also nowadays frequently delivered from the cloud as cloud web applications. While proxies or firewalls protect clients, Web Application Firewalls protect servers. WAFs are deployed to defend a web application or a collection of web applications. WAFs are commonly deployed in-line, as a reverse proxy, one of the easiest

WAR: THE UNFOLD TRUTH

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Abstract

We live in an era of relative peace compared to most of history. However, this does not mean that there is no conflict today. Most of the world's conflicts are concentrated in the Middle East, Asia and Africa, and the most common forms are territorial disputes and civil wars, while terrorism often strikes fear in people. Today many in the West have never witnessed a war on their country's territory. Nevertheless, conflicts, wars, and violence are by no means things of the past. In this article, we look into how War-related deaths have decreased, but the number of struggles and conflicts occurring in the last few years have been rising. Furthermore, how do people forget the presence of stars (on-going wars) from the glowing Sun (Highlighted War)?

Key Words: War, Violence, Terrorism, Struggle, Death.

Introduction

Whether war is part of human nature is something that humans have debated for millennia, from philosophers to religious leaders to scientists. We adduce that war is part of human nature, and that is for three reasons. The first is that humans are part of the animal kingdom; we evolved most recently from apes and monkeys. Further back, through reptiles and fish, we evolved just like other animals in the animal kingdom. Hence, we have to look at laws that apply to the animal kingdom, and we have to use them for humans. Secondly, individual animals in the animal kingdom compete. They compete over resources, and they compete over surrogate resources, things like status and territory. Then we have the difference between animals and humans, which is course, the size of the social groups that we can form. Humans have larger brains and better cognition than are most closely related species that chimpanzees and bonobos, so we can develop much bigger social groups when we compete over resources or status. We do it in bigger social groups, so. In contrast, chimpanzees can fight their heritage disputes with groups on each side; we can do it with groups of millions or even billions, so yes, war is unequivocally part of human nature.

WAR: Human Nature

Today, we will focus on why people fight and, more specifically, why human beings go to war. So, are humans hardwired to battle and kill one another? That is a question that philosophers have been asking for a long time. Many anthropologists believe that pre-civilization social systems were violent. For example, killing and fighting were among the leading causes of mortality; as to anthropological evidence, when combined with cave paintings and fossils of humans killed by other humans, it seems clear that we have been killing each other for a long time. Some studies have reported relatively large-scale group confrontations similar to battles, but these tend to be largely symbolic and often do not result in much killing. The majority of the actual violence committed by hunter-gatherers against one other occurs during raids, in which one group sneaks up on another and attacks. So, in the end, there may be a very violent middle path between the individual killings and the modern wars that we see today. However, why are we seemingly so hardwired toward violence? Well, it might be evolution. We may have aggression "in our genes," but we cannot kill people! Many of us -most of us, make it through life without killing a single person. However, aggression may be an innate trait in humans.

WAR: Biological Trait

In common, we naturally want to protect our close relatives and kin who contain the most genetic material and ensure the continued survival of our genes. So we might be expected to fight to protect members of our kin group. However, protecting one's family from harm is somewhat different from killing other people's families. It is helpful to remember that war consisted of raiding

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A STUDY ON SOCIAL MEDIA ADVERTISING AND ITS INFLUENCE ON CONSUMER BUYING BEHAVIOUR IN CHENNAI

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ABSTRACT

A new environment has emerged as a result of social media, allowing us to engage with someone on a personal level. A vast number of consumers use social media platforms daily, such as Facebook, Twitter, Snapchat, and Instagram. These platforms provide an excellent way to reach these consumers. The purpose of the study is to find out the impact of social media advertising on consumer buying behavior at Chennai. Quantitative research design has been adopted for the study. The primary data has been collected through structured questionnaire with open and closed ended questions. Books, magazines, journals, thesis and websites were referred to collect secondary data. The data was collected by adopting purposive sampling technique from 100 consumers. Analysis namely reliability test, descriptive, multivariate ANOVA (MANOVA) and linear regression were used to identify the impact of social media advertising on consumer buying behavior in Chennai. The study found that there is a significant impact of social media advertising on consumer buying behavior. It also found that Facebook plays a major role in social media advertising and mobile phone and laptop is the highly preferred product by the consumers based on social media advertising. Possible suggestions and conclusion were discussed.

Keywords: - Social Media Advertising, Consumer Buying Behavior.

INTRODUCTION

In this modern era, social media earn the highest attention of both companies and individuals as it is considered as an innovative mode for connecting people with company in a simple manner. Social media provides a huge platform for the marketers to advertise their products to attract wide range of customers. By the use of hi-tech social network, the marketers provide relevant lively and interactive advertisement which insists the customers to buy the products immediately. Social media advertising provide huge increases in conversions and sales with lower cost of acquisition. According to Kaplan and Haenlein (2010), social media includes blogs, Wikipedia, and social networking sites (e.g., Cyworld, Facebook), user-generated content communities (e.g., YouTube, Flicker, Todou), virtual game worlds (e.g., EverQuest), and virtual social worlds (e.g., Second Life). These media allows global accessibility of marketing activities to yield efficient return on investment with low effort and in short time. Through social media advertising, the marketer can provide vast information about their products with features, usage, sometimes provides comparison too. Companies can keep in touch with customers and address a range of stakeholders through social media marketing, including current and potential customers, current and potential employees and the general public.

Social media advertising gives power to customers to investigate the products, post online comments, product reviews, etc. which help the marketer to modify its prices, descriptions, promotional tools according to the feedback provided by the customers. It also allows individuals, businesses and other organizations to interact with one another and build relationships and communities online. Due to 24*7 advertising made by the marketers through social media, the buying behavior and buying decision of consumer has been changed rapidly. Apart from direct marketing made by marketers, the social media advertising offers an overview of products live chat, retweet and repost comments on the products which influences the customers to change their buying pattern and decision on goods and services. It often repeats the message, recalls the products viewed while connecting to the social media sites and therefore forces many customers to purchase the products. Therefore, the study has been undertaken to investigate the impact of social media advertising on consumer buying behavior of various products in Chennai.

POWER POLITICS AND GENDER DISPARITY IN CARYL CHURCHILL'S *CLOUD NINE* AND *TOP GIRLS*

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Abstract

Caryl Churchill holds a unique and indisputable position as a post- modern, contemporary British playwright. She is a revolutionist who has fueled her dramas with social emancipation and theatrical innovation. She startles her audience with open ended questions, fluidity of roles, fragmented multiple voices promoting a world devoid of racial, class and sexual subjugation. Her dramas transcend the borderlines of the past and the present. Her characters are outspoken and gusty. Her plays sharply criticize greedy capitalists and deludes societal institutions.

This paper attempts to explore two important plays of Churchill *Cloud Nine* and *Top Girls*. The play *Cloud Nine* focusses on the colonial oppression, gender and sexual attitudes that existed during the Victorian times. The theatrical device of cross- gender, cross-racial and doubling of roles are the techniques employed by the dramatist which makes the spectators to look beyond alternative identities and dominant hegemonic forces. The next play *Top Girls* is feminist in theme and modernistic in approach. It explicates inter and intra sexual oppression. The play highlights on the class differences that are prevalent even among women. The dramatic technique of overlapping dialogues represent the self- centeredness of each of these characters. Both of these dramas make an earnest attempt to topple down all hierarchical structures in the aim of accepting one's identity.

Key words: Power politics, repression, hegemonic structures and gender roles.

Caryl Churchill holds an enviable position among the contemporary British playwrights. If Megan Terry shook the American theatre, it was Churchill who explored gender, history, power and recreated all of these in British theatre.

Having being educated at Oxford, she began her professional career as a playwright in her twenties with radio plays. Her first radio play was *Ants* (1962) followed by a dozen other plays like *Lovesick* (1966) *Identical Twins* (1968), *Not... Not... Not... Enough Oxygen* (1971) ... Subsequently, this was followed by six television plays. It was Michael Cordon who inducted her to write plays for the stage. Thi strengthened her relationship with the Royal Court Theatre. Churchill being trained well in the craft o theatre began to lash out all orthodoxy and limited conventions through her innovative experimentation In the next phase of her dramatic career, her commitment towards Monstrous Regiment and Joint Sto Theatre encompassed her journey towards political, feminist and socialist outlook of the soci incorporating Brechtian techniques. Her true strength lies in going further beyond the Brecht dramaturgy.

The play *Cloud Nine* was written for the Joint stock Theatre in 1978-79 and performed at the Royal C in 1979-80. This play explores the sexual politics, colonial and sexual oppression. This play challe the linearity of time, patriarchal conventions and the gender strictures.

two acts. The first act is set in Africa, colonized by the British explicating the enc

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A STUDY ON WESTERN PHILOSOPHY VERSUS INDIAN TRADITION IN BHARATI MUKHERJEE'S *DESIRABLE DAUGHTERS*

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Dr. Binu Anitha Joseph. Assistant professor. P. G and Research Department of English. Voorhees College. Vellore.

Abstract

The aim of this paper is to present, observe and examine the depiction of personal identity of ndian migrant woman in the U. S by Bharati Mukherjee in her novel *Desirable Daughters*. Her novels xplore the shifting identities of diasporic women, between the present modern life in the United States f America and the past traditional life in India. The prime motive of Bharati Mukherjee's novels deals ith the issues encountered by women in their foreign atmosphere. Being an immigrant writer she veils the topics like diaspora, assimilation, cultural conflicts, immigration, quest for self tualisation and identity. The foremost and recurrent theme of *Desirable Daughters* is the conflict sing from native and foreign cultures. The major characters in the novel struggle with the challenge accommodating the American feminist culture in to their traditional Indian culture.

Desirable Daughters belongs to the genre of American literature which deals with issues of igrant life and cultural assimilation. Culture assume a new form in the contemporary Literature, re the issues of Diaspora, globalization, consumerism, transnationalism, cultural hyberidity and tity crisis have become a new motif in the post colonial Literature.

words: Diaspora, Assimilation, Immigration, Identity, Modernity, Tradition.

The current era is most suited for the full-fledged growth of society's underprivileged groups. ding women and the scheduled class. The Indian patriarchal system has traditionally placed n at the bottom of the social hierarchy and saw them as helpless, feeble beings. However, the t situation has altered her positions, and the new class of women has questioned these roles and s to venture beyond the boundaries that are considered taboo.

The obstacles and chances of the New Woman Tara in Bharati Mukherjee's *Desirable ters* are examined in the current research. Bharati Mukherjee is a Third World Feminist whose ocuses on the concerns and issues that South Asian women, particularly Indian women, undergo. pports women's rights, just like her contemporary feminist writers, but she differs from them in main goal is to outline the issues with cross-cultural conflicts that Indian immigrants, arly women, deal with. Her female protagonists experience both patriarchal colonization and te colonization. As an immigrant she has been preoccupied with women's accustoming issues ica and Canada.In the novel *Desirable Daughters*, three sisters' behaviour and varied coping sms with identity are explored in relation to immigration. The main character Tara Lata in this les the themes of identity crisis, self-destruction, and self-discovery. Through the life of the ist, who in numerous ways breaks with convention but yet identifies with the home country, depicts a traditional Indian Brahmin family and a modern American one.

ra, Parvati, and Padma, three sisters who were born and reared in Calcutta in the 1950s and inct personalities and diverse life trajectories, are the central characters of Desirable . Tara, the primary character. is seen in various lightings, and her two sisters are also l throughout the entire narrative. The narrator of the story begins the novel with the

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A CRITICAL STUDY ON BHARATI MUKHERJEE'S *THE TREE BRIDE*

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Abstract

The aim of the paper is to observe and present the aspects of the fusion of Myth, Mysticism and history in the writings of Bharati Mukherjee. It discusses the qualities of Mukherjee as a diasporic writer. Mukherjee proved herself to be a trendsetter in diasporic literature. Her writings reflects a niche that she has craved ton herself in the American Literature. Assimilation plays a major theme in the writings of Bharati Mukherjee. In many of her novels Mukherjee presents the assimilation of Indian immigrants in America and also reverses the situation. Most of her novels deals with the assimilation of immigrants from the west in to Indian culture. *The Tree Bride*, (2004) is a historical novel by Bharati Mukherjee. It is the sequel to *Desirable Daughters*. Mukherjee records her own experience as an immigrant while writing these novels. *The Tree Bride* deals with the major Hindu concepts- karma or fate where they have no control. In her novels, Mukherjee explains the theme of expatriation, immigration and transformation. Exploration, expedition of history, myth and culture are the dominant themes of the novel.

Key words: immigrants, assimilation, exploration, expedition, transformation and culture.

The Tree Bride is a novel published in 2004. It deals with the assimilation of western immigrants into the Indian society. It is a sequel to *Desirable Daughters*. Tara, the narrator of *Desirable Daughters* narrates the novel *The Tree Bride* too. Both the novels are part of the proposed trilogy by Bharati Mukherjee. The novel is a one - person narrative of British history in India. It weaves its way in and out of continents and timelines. It is about recreating the British men who leave their homeland to fulfill their dreams. They believe in a higher purpose of instilling order and discipline in foreign lands.

In *Tree Bride* the author has fused history, mysticism, treachery and enduring love. It is a suspenseful story about the lingering effects of past secrets. Tara Lata, a five-year old girl is a victim of the archaic custom of child marriage. It is a tradition followed by her father who is a university graduate and lawyer.

Tara Lata's wedding party is travelling in 1870 through a dark jangle to rendezvous with the bridegroom's party. The groom's relatives curse the bride instead of greeting her. They call her unlucky because the bridegroom has been bitten fatally by a snake. Tara Lata's father marries her to the God of the forest to save her from a life of degradation, widowhood and shame. In this way, she becomes the legendary 'Tree Bride'.

The young girl makes her father's house as a refuge for the poor and the sick. She is dragged from her home in 1944 by colonial authorities, who announce her death six days later.Her heroic life comes to an end after her arrest. She dubiously dies of heart attack in the jail. Mukherjee has amalgamated and fused history and mysticism in an empathetical manner. Altogether it proves that Mukherjee is a master of creating magical, mysterious stories which resound the spiritual healing of the depressed soul.

The Feminist Movement originally started in the west. It widely affected the Indian sensibility. In 1948, Simone de Beauvoir expresses her hatred against humanity in *The Second Sex*. She says : "This humanity is male and man defines woman not in herself but as relative to him, she is not regarded as an autonomous being…she is defined and differentiated with reference to man and not he with reference to her; she is the incidental, the inessential as opposed to the essential. He is the subject, he is the absolute-she is the Other" (Beauvoir 86). Thus, the quiet Brahmin girl from Bengal

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WOMEN-TORCHBEARERS OF LEGACY: AN ANALYSIS OF TEMSULA AO'S *THE POT MAKER*

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Abstract

Temsula Ao is a renowned Indian poet, short story writer, ethnographer and a folklorist. Most of her works have been translated into German, French, Assamese, Bengali, Kannada and Hindi. *The Pot Maker* is a story that is included in the collection entitled *These Hills Called Home:Stories from a War Zone* (2006). It is the story of a young girl who aspires to acquire the traditional familial skill. Temsula focuses on the value systems that uphold the interests of the community and the people. She highlights the influence of the tribal tradition and customs on an individual and her desires. The paper attempts to analyze the women characters in the story, who indeed turn out to be the torchbearers of ancestral legacy.

Key words: legacy, torchbearer, tradition, community

Temsula Ao is a renowned Indian poet, short story writer, ethnographer and a folklorist. She was conferred the Padma Shri in 2007 and the Nagaland Governor's Award for Distinction in Literature in 2009. She was the recipient of the Sahitya Akademi Award in 2013 for her collection of short stories *Laburnum for My Head*. She was honoured with the Kusumagraj National Literature Award (for Poetry) in 2015. She was a retired Professor of English from the North Eastern Hills University. Most of her works have been translated into German, French, Assamese, Bengali, Kannada and Hindi. *The Pot Maker* is a story that is included in the collection entitled *These Hills Called Home:Stories from a War Zone* (2006). The language is simple. The complex themes give rise to a maze of emotions. In her stories, women are projected as innately strong and wise enough to encounter any grave situation.

The plot centers round the Naga community. Sentila wishes to follow the legacy of her mother and grandmother in pot making. Her mother, Arenla teaches her weaving as it is a highly skilled profession. Sentila is very adamant in mastering pottery. The potters discourage her from choosing the skill. They tell that it is quite painstaking. They consider it as a mere childish lure. Sentila ignores their advice. She pays a visit to the pottery area. When Arenla comes to know about her visits, she maintains silence. She decides to closely watch her movements. Gradually, Sentila's visit paves way for rumours in the village. The village council decides to summion Mesoba, Sentila's father. He escapes by telling lies. He conveys that Sentila has gone to meet the women in the village and uprights them that she will be mastering the art of pot making. Mesoba successfully convinces the council. They tell him to teach her the necessary skills that a girl ought to learn.

Meanwhile, Arenla teaches her daughter the craft of pot making. Initially, Sentila used to make errors. This made Arenla very happy. Sentila has an entirely different attitude. She considered her errors and failures in a light-hearted manner. She followed the dictum: 'Failure is the stepping stone to successes. She decides to meet Onula, the supervisor of girls' dormitories. Onula helps her in moulding the clay to make the perfect shape of pots. Sentila does not show much progress. She makes defective and shapeless pots. One day, Onula suggests that she should observe her mother preparing pots. Sentila carefully views her mother. Arenla asks her to make pots. She stays away for sometime in the guise of illness. Sentila undergoes an epiphany while making pots. She arranges them in a row.

A STUDY OF FEMINISTIC PERSPETIVE OF GIRISH KARNAD'S TWIN PLAYS

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ABSTRACT

There is a typical sandiness about his style in this plays "*naga mandala*" of girlish Karnad presents the deplorable state of woman in Indian society. *Hayavadana* is play on the search of identity in the midst of tangled relationships both the plays has central woman character like pad mini of *Hayavadana* are present in our society. The suffer because of the male-chauvinistic attitude and the hard and unbreakable social institutions like marriage .these modern Indian woman couscous permanent victims because of their failure to break social laws, both ways they are sufferers :whether they abide by these social dictates or violate them. *NAGAMANDALA* depicts the plinth of a noodle class woman where cannot express her true feelings in the male dominated society plot of *HAYAVADANA* is of a different sort as the conflict is between the complete and the incomplete. *Naga mandala* the patriarchal and matriarchal views clash to settle score for the personae in the playhouse of kit, miming freezing and quick shifts of scans remain specials feature of *naga mandala.*

INTRODUCTION

The word drama comes from the green verb "Dran "which means to act or to perform. Drama is an imitation of life. Bharatha is traditionally considered the father in history of Indian drama. History of India drama begins from the ancient vedic period, moves on to the classical theater also influencing modern theater, particularly the Hindi,Marathi,Bengali heartless down the line . Even the epics of Ramayana, Mahabharatha and Arthasasthra are instilled with specific techniques of dramas.

The colonial period in the history of Indian drama is the whirlwind phase for dramatist from the country. The period after independence in 1947 marks a significant second stage in the development and history of modern Indian drama . Indian drama, with its long history of two thousand years in a unique phenomenon in the literary world. The western impact also quickened the drying roots of Indian native tradition with the sap of a new life, thereby opening the exciting chapter of modern Indian drama written originally in the vernaculars,and at times, translated into English . By the end of 19th century there were pioneering effort boldly employing the mother tongue for creative dramatic expression.

Girlish Karnad (1938) is a contemporary writer playwright screen writer actor and movie director in Karnad language .for four decades Karnad has been composing pays, often writing history and mythology to tackle contemporary' issues. he is also active in the world of Indian cinema working as an actor director and screenwriter, both in Hindi and Karnad cinema, earning numerous awards along the way .he was conferred pad ma sari and pad ma bushman by the government of India

The karnads play poses a different problem that human identity in a world of a tangled relationship .karnads pays adequate attention to his characters .through his characters are from history,but they are not devoid

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Structural and Optical Properties of Dy^{3+} Doped with an Eulytite Type $NaBaBi_2(PO_4)_3$ Phosphor for White Light Emitting Diodes

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A series of $NaBaBi_{(2-x)}(PO_4)_3$:xDy^{3+} eulytite type phosphors with varying doping concentrations were synthesized using a conventional solid-state reaction. The crystalline nature and phase formation of the phosphor were confirmed by the PXRD technique. FESEM was used to examine the surface morphology. UV-DRS measurements were used to quantify the band gap of the host and Dy^{3+} ion doped phosphors. The phosphors' photoluminescence properties were thoroughly investigated. According to the excitation spectra, these phosphors show a strong absorption band in the near-ultraviolet (NUV) region, extending from 250 to 450 nm. Under the excitation of 352 nm, the peaks of the emission spectra of Dy^{3+} ions are located at 485 nm (blue), 575 nm (yellow) and 666 nm (red), corresponding to the magnetic dipole $^4F_{9/2}\rightarrow{}^6H_{15/2}$ transition, the electric dipole $^4F_{9/2}\rightarrow{}^6H_{13/2}$ transition and the $^4F_{9/2}\rightarrow{}^6H_{11/2}$ transition. The optimal concentration of Dy^{3+} doped phosphor is $x = 0.075$ and the major concentration quenching mechanism is accomplished by energy transfer between the nearest-neighbour ions. The critical transfer distance (R_c) is estimated to be about 19.01. The Commission International deI'Eclairage (CIE) of $NaBaBi_{1.925}(PO_4)_3$:$0.075Dy^{3+}$ phosphor was calculated to be ($x = 0.341$ and $y = 0.374$), which was very close to the "ideal white" ($x = 0.33$, $y = 0.33$). Present findings suggest that the phosphor might be a viable option for producing a white-light-emitting phosphor under NUV activation.

Keywords: Phosphor, Eulytite, Chromaticity coordinates, Activators, Phase formation.

INTRODUCTION

In present solid state lighting research domain, the need for phosphor converted white light emitting diodes (WLEDs) has driven researchers to design revolutionary phosphors with adequate host matrix doped with suitable activators [1]. Light-emitting diodes (LEDs) have received significant attention as illuminating light sources and components in display systems since the introduction of WLEDs in the 1960s [2]. The lighting industry is actively focusing on WLEDs, also regarded as the next generation of solid-state lighting (SSL) [3]. In recent years, WLEDs have gotten a lot of attention in comparison to traditional light sources like incandescent and fluorescent lamps because of their benefits like low energy consumption, higher rendering index (CRI), reliability, higher luminosity efficiency, longer lifetime, energy-saving qualities and environmental friendliness [4,5].

According to solid state lighting research, low cost and ease of preparation are essential criteria in phosphor synthesis. As a consequence, choosing the most excellent host from a plethora of options such as silicates, sulphates, phosphates, nitrates and vanadates is critical. Phosphors based on phosphate host matrices have become a major research area due to their wide variety of applications in lighting and displays. Phosphate based phosphors have a number of benefits, including a low cost, a high luminous efficiency, a low sintering temperature, a big band gap, greater thermal and chemical stability over a wide range of temperatures and a straightforward synthesis procedure. On a variety of phosphate based hosts, a number of phosphate based compounds with the generic formula $A^{I\text{-}IV}{}_4[XO_4]_3$

Original Article

Regional survey of indoor gamma-radiation and estimation of radiation exposure indexes in and around Vellore district, Tamil Nadu

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Abstract The ambient gamma (γ)-radiation levels were measured in various types of dwellings in and around Vellore district. The survey was performed by using a portable Micro-R Survey Meter NUCLEONIX in different types of dwellings. The background γ-radiation exposure inside the dwelling was obtained in a total of 632 dwellings located in 30 different geographical positions in Vellore and nearby places. From the measured dose values, the radiation exposure indexes were estimated such as absorbed dose rate (ADR) and annual effective dose (AED) for the population. The present study has taken an initiative to formulate the environmental γ-radiation reference level for indoor γ-radiation level in and around Vellore district, Tamil Nadu. The calculated highest mean AED was found in concrete dwellings at 0.58 ± 0.07 $mSvy^{-1}$. The highest ADR was found to be 1219 μGy/yr in tiled house. Furthermore, the work was extended to find the correlation between the temperatures, time, and type of house with radiation for a day with 2 h of regular time interval in these four types of houses and analyzed with response surface methodology.

Keywords: Ambient gamma radiation, μ- R survey meter and RSM analysis

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INTRODUCTION

Human beings are exposed continuously by two types of radiation from the terrestrial radionuclide and cosmogenic nuclides.[1] Terrestrial radiations have a greater contribution in the environmental radiation for the population after the radon ^{232}Rn.[2] The population receives an external radiation from the cosmic rays whose concentration depends on the geological and geographical conditions. Furthermore, they have received the radiation from indoor by the building construction materials, i.e., soil, brick, sand, clay, variety of cement, brick, marble, granite, gypsum, and aggregate.[3] Indoor gamma (γ)-dose rate is greater than the outdoor γ-dose rate due to the earth materials that were used for the building constructions also the occupancy factor also is high and the more radiation dose received from the indoor is significant for the human health.[4] People spend their 80% of time in indoor such as dwelling and official places. The building materials contain radionuclides ^{232}Th, ^{238}U, and ^{40}K which are the major sources of the indoor radiation. Environmental radioactivity exists in various geological formations of water, rocks, soil, and air in the earth's environment. Obviously, the indoor γ-radiation exposure is greater than the outdoor γ-radiation exposure

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130. திருமறையில் இயற்கை - ஒரு சிறப்புப் பார்வை

முனைவர் மா.இரவி,
நெறியாளர் மற்றும் மேற்பார்வையாளர்,
முத்துரங்கம் அரசினர் கலைக்கல்லூரி (தன்னாட்சி)
வேலூர், தமிழ்நாடு, இந்தியா.

திருமதி. து. லீனா தெபோராள்,
பகுதி நேர முனைவர் பட்ட ஆய்வாளர்,
முத்துரங்கம் அரசினர் கலைக்கல்லூரி (தன்னாட்சி),
வேலூர், தமிழ்நாடு, இந்தியா.

ஆய்வுச்சுருக்கம்

தமிழிலக்கியத்தில் இயற்கை| என்னும் மையப் பொருளின் ஒரு பகுதியாக திருமறையில் இயற்கை| என்னும் சிந்தனை இடம் பெறுகிறது. திருமறை என்பது அடிப்படையில் ஒரு பேரிலக்கியமாகத் திகழ்கிறது. அதனுள் பயண இலக்கியம், கவிதை இலக்கியம், அறநெறி இலக்கியம், அகத்திணைக் கூறுகள், புறத்திணைக் கூறுகள், வரலாற்றுச் செய்திகள், உருவகம், காப்பியக் கூறுகள், நாடகக் கூறுகள், சிறுகதைகள், நாட்குறிப்பு, கடித இலக்கியம், மொழிபெயர்ப்பு பற்றிய செய்திகள் முதலானவை திரளாக இடம்பெற்றுள்ளன. திருமறையின் தொடக்கமே கடவுள் இயற்கையைப் படைப்பதில் ஆரம்பிக்கிறது. அதன் தொடர்ச்சியாக மனிதனும் இயற்கைப் பொருளைக் கொண்டே உருவாக்கப்பட்டவன் என்ற உண்மையும் கூறப்படுகிறது. இயற்கையை உள்ளடக்கியதாக உலகம் உருவான செய்திகளும், இயற்கைக்குத் தொடர்பான படைப்புகளும், இயற்கையைச் சார்ந்து வாழும் மனிதன் உள்ளிட்ட பிற உயிரினங்களும் திருமறையில் பதிவு செய்யப்பட்டுள்ளன. இயற்கை உருவான விந்தைச் செய்தியை உலகுக்கு அறிவிக்கும் ஒரு புனிதமான நூலாக திருமறை விளங்குகிறது.

முன்னுரை

மனித அறிவுக்கு எட்டாத இயற்கையின் செயற்பாடுகளைப் பற்றிய உண்மையான உயிரோட்டமான தகவல்களை உள்ளடக்கிய நூல்களுள் திருமறை முக்கியமான, முதன்மையான இடத்தைப் பெறுகிறது என்றே கூறலாம். அதனடிப்படையில் இயற்கை பற்றிய விளக்கம், கடவுளால் இயற்கைப் படைக்கப்பட்ட விதம், திருமறையில் கூறப்பட்டுள்ள இயற்கைச் சம்பந்தமான செய்திகள் முதலானவற்றை விளக்கமாக ஆராய்வதே இக்கட்டுரையின் நோக்கமாகும்.

இயற்கை - விளக்கம்

இயற்கை என்னும் சொல் தமிழுலகிற்குப் புதியதன்று. திருமறையின் தொடக்கம் இயற்கை உருவாக்கத்தினை பொருளாகக் கொண்டிருப்பது போல, தமிழின் தொன்மை இலக்கியமான சங்க இலக்கியத்தின் ஐந்திணைக் கோட்பாடுகளும் இயற்கை சார்ந்தனவாக அமைந்துள்ளமை குறிப்பிடத்தக்கது. இயற்கை என்ற சொல் ஆங்கிலத்தில் Nature என்ற சொல்லுக்கு இணையானது. 'இயற்கை என்ற கருத்தின் வரலாற்று வளர்ச்சியைக் காணும்போது, இது மனிதரை உள்ளடக்கியதா இல்லை, மரம், மலை, நீரோடை, மிருகங்கள், பறவைகள், ஊர்வன போன்றவைகளை மட்டுமே இயற்கை என்பதா என்பது போன்ற பல விவாதங்கள் எழும்பியதுண்டு. தொடக்கக்காலப் பண்பாடுகளில் காற்று, கடல், காடு, சந்திரன் என்பவைகளையும் இயற்கை ஆவிகள், இயற்கை தெய்வங்களாகப் பிரிந்துக்கொண்டதுண்டு. ஆனால் இன்று இவை அனைத்தையும் உள்ளடக்கிய ஒரே சாரமாக (Single Essence) இயற்கை என்ற சொல் விளங்குகிறது எனலாம்.

திருமறையும் இயற்கையும்

திருமறையில் இயற்கை என்ற சொல் நேரடியாக இல்லை. ஆயினும் படைப்பு என்ற சொல்லுக்குரிய பொருளை இயற்கை என்னும் கண்ணோட்டத்தில்தான் பார்க்க வேண்டியுள்ளது. இந்த படைப்பு என்ற சொல்லும் திருமறையில் பெருமளவும் படையல் என்ற பொருளின் அடிப்படையிலேயே இடம் பெறுகிறது. அதாவது படையல் என்பது சமய வழக்கங்களில் கடவுளைத் தொழும்போது வைத்து வணங்கப்படும் பொருட்களையும் உணவுப் பண்டங்களையும் குறிக்கும். அது போலவே யூதருடைய வழிபாடுகளில் இச்சொல் காணப்படுகிறது. ஆனால் சீர்த்திருத்தத் திருச்சபையினர் பயன்படுத்தும் பரிசுத்த வேதாகமத்தில் இந்த படைப்பு என்ற சொல்லுக்குப் பதிலாக 'சிருஷ்டி' என்ற சொல் கையாளப்பட்டுள்ளது.

'ஆதியிலே தேவன் வானத்தையும் பூமியையும் சிருஷ்டித்தார்.' (பரிசுத்த வேதாகமம், ஆதியாகமம் -பழைய ஏற்பாடு, அதிகாரம் 1:1) இங்கே சிருஷ்டிப்பு என்பதற்கு உபயோகப்படுத்தப்பட்டிருக்கும். எபிரேய பதம் 'பாரா' (Bare) என்பதாகும். இதற்கு இருவித அர்த்தங்கள் உண்டு. ஒன்று ஒன்றுமில்லாமையில் இருந்து உருவாக்கப்படுவது (Creation) அடுத்தது உண்டாக்கப்பட்டவைகளில் இருந்து உருவாக்கப்படுவது (Re-Creation). இந்த ஆதியாகமம் 1:1

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Biological Applications of Biosilica/Silk Fibroin/Polyurethane (1:3:1) Composite

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High availability and several benefits of biosilica (BS) in various industries, it becomes a desirable material for industrial purposes. This study is focused to prepare a biocomposite of biosilica isolated from sugarcane baggase and combined with silk fibroin (SF) and polyurethane (PUF) foam. FTIR, XRD, TGA, DSC and SEM measurements were used to characterize the synthesized BS/SF/PUF biocomposite. The potentiality of biosilica composite as an antimicrobial support material was investigated. The BS/SF/PUF biocomposite has a rough surface nature, amorphous and higher thermal stability due to strong contacts, according to the characterization data. Furthermore, the results revealed that the produced material exhibited excellent antioxidant and antimicrobial properties.

Keywords: Biocomposite, Biosilica, Silk Fibroin, Polyurethane, Antioxidant property, Antimicrobial activity.

INTRODUCTION

The use of polymers as biomaterials has a significant impact on medical progress. Biodegradable polymeric biomaterials, in particular, offer the advantages of being able to be broken down and removed after they have served their purpose. Degradable polymers are employed in a variety of clinical settings, including surgical sutures and implants [1]. Materials with desired physical, chemical, biological, biomechanical and degrading qualities must be chosen to meet functional demands. The extraction of sodium silicate from sugarcane bagasse ash has been the subject of extensive research [2-4]. Sugarcane bagasse ash is a waste product from the sugar industry as well as a byproduct from a biopower plant.

The extracted biosilica was combined with silk fibroin and polyurethane foam to prepare a biocomposite which could be active against selected microorganisms. Silk fibroin, a naturally occurring protein produced by the domestic silkworm, *Bombyx mori* [5] has been recognized as a potentially useful biomaterial. Three chain units such as heavy, light and a P25 glycoprotein make up the *Bombyx mori* silkworm [6,7]. GAGAGS repeats and GAGAGX (X = V or Y) repeats are heavy and light chain units [8]. These repeating units tend the silk fibroin to self-assemble into antiparallel -sheet structures *via* hydrogen bonds and van der Waals interactions [9]. The material is used till date for its superior properties like robustness, lustre, resilience, ability to conform to the surface of molds, ease of manipulation and ability to bind with chemical dyes. It is also recognized for its applications in the field of medicine [10].

Polyurethanes (PUs) are a type of polymer that is widely employed in the medical device sector. The presence of hard and soft segments in their chemical structure confers elasticity and mechanical strength to the polymer [11]. They are preferred in the manufacture of heart valves, blood vessels, vascular grafts and catheters due to their elastomeric properties and good blood compatibility [12-14].

Hence, in present study, the ternary biocomposite of biosilica/silk fibroin/polyurethane (BS/SF/PUF) foam was pre-