3.3.1

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RESEARCH ARTICLE

Applied Organometallic Chemistry WILEY

Instigating the in vitro antidiabetic activity of new tridentate Schiff base ligand appended M(II) complexes: From synthesis, structural characterization, quantum computational calculations to molecular docking, and molecular dynamics simulation studies

Yogesh Deswal[1] | **Sonika Asija**[1] | **Aisha Tufail**[2] | **Amit Dubey**[2,3] | **Laxmi Deswal**[1] | **Naresh Kumar**[1] | **Sonia Saroya**[1] | **Jagat Singh Kirar**[4] | **Neeraj Mohan Gupta**[4,5]

[1]Department of Chemistry, Guru Jambheshwar University of Science and Technology, Hisar, 125001, India
[2]Computational Chemistry and Drug Discovery Division, Quanta Calculus Pvt. Ltd., Kushinagar, 274203, India
[3]Department of Pharmacology, Saveetha Dental College and Hospital, Saveetha Institute of Medical and Technical Sciences, Chennai, 600077, India
[4]Department of Chemistry, Govt. P. G. College, Guna, Jiwaji University, Gwalior, 473001, India
[5]Fluorescent Chemistry Lab, Medicinal and Process Chemistry Division, CSIR-Central Drug Research Institute, Lucknow, 226031, India

Correspondence
Sonika Asija, Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar-125001, Haryana, India.
Email: sonika@gjust.org

Funding information
Council of Scientific & Industrial Research (CSIR), New Delhi, India.

In search of novel medications that could be effective in preventing and treating diabetes, four new $[Co(L)(H_2O)_3]$ (**2**), $[Ni(L)(H_2O)_3]$ (**3**), $[Cu(L)(H_2O)]$ (**4**) and $[Zn(L)(H_2O)]$ (**5**) complexes were synthesized from 4-Chloro-2-(((3-mercapto-5-[pyridin-4-yl]-4*H*-1,2,4-triazol-4-yl)imino)methyl)phenol ligand ($\mathbf{H_2L}$), which is obtained by the condensation of 5-chlorosalicylaldehyde with 4-amino-5-(pyridin-4-yl)-4*H*-1,2,4-triazole-3-thiol in 1:1 ratio. The Fourier-transform infrared spectroscopy (FTIR), nuclear magnetic resonance (NMR) (^1H and ^{13}C), elemental analyses, UV–visible, electron spin resonance (ESR), thermogravimetric analysis (TGA), scanning electron microscopy, energy dispersive X-ray analysis (EDAX), and X-ray diffraction (XRD) studies were used to successfully characterize the compounds. The ligand act in a tridentate manner and coordinates to the metal ions through $N_{azomethine}$, $O_{phenolic}$ and S_{thiol} functionalities. On the premise of their spectral and physico-analytical data; octahedral geometry for complex **2** and **3**, while square planar and tetrahedral geometry for complex **4** and **5** was proposed. Theoretical calculations of the synthesized compounds have been performed by using density functional theory (DFT)/B3LYP method and parameters such as HOMO-LUMO energy values and MESP were calculated. In vitro examinations against α-amylase and α-glucosidase reveal promising results for the compounds. Nickel (II) complex (**3**) against α-amylase and zinc (II) complex (**5**) against α-glucosidase were found to be good inhibitors. Molecular docking experiments against the receptors 1BSI and 5ZCC were done to support the observation and considerable

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RESEARCH

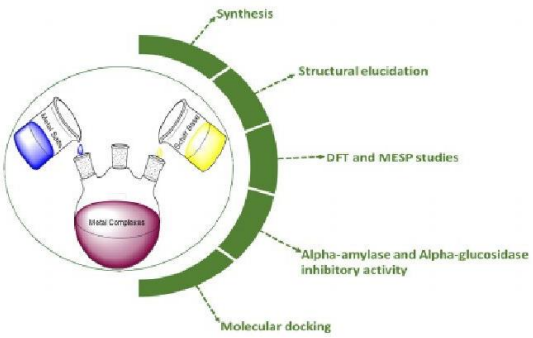
Metal Complexes of 1,2,4-Triazole Based Ligand: Synthesis, Structural Elucidation, DFT Calculations, Alpha-Amylase and Alpha-Glucosidase Inhibitory Activity Along with Molecular Docking Studies

Yogesh Deswal[1] · Sonika Asija[1] · Aisha Tufail[2] · Amit Dubey[2,3] · Laxmi Deswal[1] · Naresh Kumar[1] · Jagat Singh Kirar[4] · Neeraj Mohan Gupta[4,5] · Pinki Barwa[1]

Received: 10 March 2023 / Accepted: 20 July 2023

Abstract
In search of 1,2,4-triazole-based antidiabetic agents, new mixed-ligand chelates of the type, $[M(L)(H_2O)_3]$ (where M = Co(II) Ni(II), Cu(II) and Zn(II)), were synthesized using 2-(((3-mercapto-5-(pyridin-3-yl)-4*H*-1,2,4-triazol-4-yl)imino)methyl) 4-nitrophenol (H_2L^1) ligand and the corresponding metal acetates in 1:1 molar ratio. FTIR, NMR, mass, UV–Vis, elementa analyses, conductivity measurements, ESR, XRD, TGA, SEM, and EDAX studies were used to determine the nature o bonding, coordination characteristics and the stability of compounds. Spectral and physico-analytical studies suggest that th ligand functioned in a binegative tridentate manner with phenolic-O, azomethine-N and thiol-S as the coordinating sites an an octahedral geometry was proposed for the metal complexes. The quantum computational calculations of the synthesize compounds were executed in the ground state using DFT/B3LYP level with 6-311++G as basis set. In vitro alpha-amylas and alpha-glucosidase inhibitory assay revealed moderate to good results for the synthesized compounds and especially th complex **3** against alpha-amylase and complex **4** against alpha-glucosidase were found to be effective inhibitors. Additionally the compounds were explored for molecular docking studies against the human pancreatic alpha-amylase (PDB id: 1BSI) an alpha-glucosidase (PDB id: 5ZCC). The molecular docking calculations of complex **3** into 1BSI revealed a binding energy of − 8.6 kcal/mol, whereas that of complex **4** against 5ZCC resulted in a binding energy of − 7.4 kcal/mol respectively, bot of which exceeds that of the standard Acarbose.

Graphical Abstract
New Schiff base ligand and its transition metal chelates were synthesized. Furthermore, the synthesized compounds wer examined for in vitro alpha-amylase and alpha-glucosidase inhibitory activity.



Keywords 1,2,4-Triazole · Metal complexes · DFT · Alpha-glucosidase · Alpha-amylase

Extended author information available on the last page of the article

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Article

Picomolar Detection of Lead Ions (Pb^{2+}) by Functionally Modified Fluorescent Carbon Quantum Dots from Watermelon Juice and Their Imaging in Cancer Cells

Kundan Singh Rawat [1,2,†], Vikram Singh [1,†], Chandra Prakash Sharma [1], Akanksha Vyas [2,3], Priyanka Pandey [1], Jagriti Singh [1], Neeraj Mohan Gupta [1], Monika Sachdev [2,3] and Atul Goel [1,2,*]

[1] Fluorescent Chemistry Lab, Division of Medicinal and Process Chemistry, CSIR-Central Drug Research Institute, Lucknow 226031, India
[2] Academy of Scientific and Innovative Research (AcSIR), Ghaziabad 201002, India
[3] Division of Endocrinology, CSIR-Central Drug Research Institute, Lucknow 226031, India
* Correspondence: atul_goel@cdri.res.in
† These authors contributed equally to this work.

Abstract: Water contamination due to the presence of lead is one of the leading causes of environmental and health hazards because of poor soil and groundwater waste management. Herein we report the synthesis of functionally modified luminescent carbon quantum dots (CQDs) obtained from watermelon juice as potential nanomaterials for the detection of toxic Pb^{2+} ions in polluted water and cancer cells. By introducing surface passivating ligands such as ethanolamine (EA) and ethylenediamine (ED) in watermelon juice, watermelon-ethanolamine (WMEA)-CQDs and watermelon-ethylenediamine (WMED)-CQDs exhibited a remarkable ~10-fold and ~6-fold increase in fluorescence intensity with respect to non-doped WM-CQDs. The relative fluorescence quantum yields of WMEA-CQDs and WMED-CQDs were found to be 8% and 7%, respectively, in an aqueous medium. Among various functionally-modified CQDs, only WMED-CQDs showed high selectivity towards Pb^{2+} ions with a remarkably good limit of detection (LoD) of 190 pM, which is less than that of the permissible limit (72 nM) in drinking water. The functionally altered WMED-CQDs detected Pb^{2+} metal ions in polluted water and in a human cervical cancer cell line (HeLa), thus advocating new vistas for eco-friendly nanomaterials for their use as diagnostic tools in the environment and biomedical research areas.

Keywords: carbon quantum dots; watermelon juice; green synthesis; lead ion sensing; bioimaging

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1. Introduction

Lead is one of the most abundant and toxic substances in the category of heavy metals [1]. It is found in the environment due to its presence in many anthropogenic sources, such as electronic waste, combustion of leaded gasoline, and unregulated industrial emissions [2]. Since lead is harmful to the environment and accumulates in soil and groundwater, it is directly linked to human health [3]. Even a very low concentration of toxic lead ions exposure can cause reproductive, neurological, developmental, and heart disorders in humans [4]. Considering the deposition of lead in the human body, the U.S. Environmental Protection Agency (EPA) has set the permissible limit of lead in drinking water at 15 ppb (<72 nM) [5]. Once introduced into the body, lead can induce serious health problems, such as hypertension, dysgenesis, memory loss, anaemia, mental confusion, and reduced IQ level in children [6]. In April 2014, there was a water crisis in Flint city (Michigan, USA) due to the leakage of Pb^{2+} ions from ageing pipes into flint river, which affected more than 1 lac residents [7]. Therefore, developing an efficient, rapid and cost-effective method for the detection of lead is crucial in monitoring lead poisoning in the environment [8]. The common protocols for detection of heavy metal ions include

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A Fractional Differential Approach to Plant-Pest Dynamic Model with Infected Pest

Anil Kumar Shukla[1,3], Joydip Dhar[2] , Rajshree Mishra[3]

[1]Govt. P. G. College Guna, Madhav Rao Sciendia Road, 473001, Guna, India

[2]ABV – IIITM, Banmor Road, Gwalior, 474015, India

[3]SMS Govt Model Science College Gwalior, 474001

Email addresses: anilshukla763@gmail.com (Anil Kumar Shukla), jdhar.iiitmg@gmail.com (Joydip Dhar), rajshreemishraa@gmail. com (Rajshree Mishra)

Abstract

In the modern era, plant pest is a significant problem. Many options are available, including chemical remedies and ones based on natural enemies. In this work, we discuss the dynamics of infected pests on plants. We have suggested that Belington-DeAngeli functional responses in pests cause infection spread. Because natural enemies are disappearing at an alarming rate and chemicals are hazardous to both plant life and humans, that's the reason for choosing the model with diseased pests. In this study, the existence, uniqueness, boundedness, and non-negativity for the solution of the model have been carried out. Analysis of the equilibrium point's local and global stability and numerical simulation have been done at the end of this work.

Keywords: Fractional order Derivative, Three species dynamics, Healthy Pest, Diseased Pest

1. Introduction

Recently an important region, "Pest with some disease," captivated investigators because the disease leads to the depletion of the pest population. Researchers were initially concerned about the plant pest issue because of its extreme importance in biological sciences. The most widely used method to address this critical issue is chemical intervention, but due to the harmful effects that chemicals have on both plant and human species, careful research is being done to find better alternatives to chemicals Recently an important region "Pest with some disease" captivated investigators because it leads to the depletion of the pest population. in this context, Fred Gould wrote a paper [1]in the year 2008, on genetic paste management in which he introduces how genetical changes control the paste population which is not harmful to the human species, 2017 Tim Harvey et al. wrote a paper [2], on genetic pest management by DNA sequencing and stated that this technique is very efficient for the pest management and in 2023 AlperenKutalm et al. investigated in his paper [3], that the entomopathogenic fungi are a biological control disease for the paste Tropinota, Hirta, and the apple scab. In 2014 a mathematical model on genetic paste management is reported by Alphey et al. [4], a notable work has been reported by Kumar et al. in 2017 [5] and in 2020 Vella et al. wrote a paper [6] on genetic paste management by female-specific approach. As of now, ODE is the foremost technique used to prepare various plant pest models using numerous kinds of parameters like delay or without delay harvesting, etc., [7-9]. The fractional differentiation approach is a cutting-edge field of research because it produces unique results in the system known as the memory effect, which is a very advantageous standard for resolving plant pest issues.

Weihua Deng explained the memory effect that fractional differential equations exhibit in his research study [10]. In 2017 Comlekoglu T et al. write the memory effect of fractional differential equation in cardiomyocyte [11] Consequently, tremendous work has been reported in this sector because of the exceptional attainment of these tactics [12-18]. To address the inadequacies in models created for plant-pest relationships, several scientists have experimented repeatedly corrected models by examining divisor parts of a real-world problem. The proposed model is significantly more capable and efficient than earlier models. In this study effort, we discussed a fractional-order differential model for plant immature-mature pests and natural enemies.

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GENERALIZED FOURIER TRANSFORM IN RIEMANN-LIOUVILLE SENSEAS A DENOISER FOR SIGNAL

Anil Kumar Shukla[a,b], Rajshree Mishra[b], Joydip Dhar[c]

[a]*Govt. P.G. College Guna, Madhav Rao Sciendia Road, 473001, Guna, India*

[b]*SMS Govt. Model Science College, Chetakpuri, Gwalior,474001, India*

[c]*ABV-IIITM, Banmor Road, Gwalior, 474015, India*

Email addresses: anilshukla763@gmail.com (Anil Kumar Shukla), rajshreemishraa@gmail.com (Rajshree Mishra), jdhar@iiitm.ac.in (Joydip Dhar)

ABSTRACT

Signal processing is a vast applied area of research, and It is applicable in engineering, medicine, war, and many more fields. Many signal processing methods are already available like Fourier transform, fractional Fourier transforms, and many more. In this work, we defined a generalized Fourier transform and proposed a new technique for signal denoising: the Fourier transform of signal in the presence of fractional calculus. This proposed method is more convenient than previous methods because of its applicability in the fractional variable.By fractional variable, we reached the more appropriate signal.

Keywords: R-L Integrodifferential, Low pass filter, De-noising signal, Digital Signal Processing.

1. INTRODUCTION

Signal processing started as a numerical technique in the early 17th century, but it was a known subject in the 19th century. In 1948 Claud Shannon wrote a paper on communicationsmathematical theory [1]. His study proved to be a milestone in signal processing, and researchers started their work in this field. In 1996 Hall et al. wrote a book on SAGE- a Radar technology of the U.S.- an example of digital signal processing. The Fourier transformwas a widely used practical method in signal processing in the 20th century; In 2006, Salih published a book on the use of the Fourier transform in signal processing [2], after some time,the fractional Fourier transform, a generalization of the Fourier transform, was developed, Namias initially proposed the fractional Fourier change in 1980 [3], and the FRFT (Fractional Fourier Transform) defined by Namias is applicable in many problems of signal processing [4–6] and this definition move the researchers interest in the fractional domain. Presently many researchers are working in the field of signal processing using fractional calculus, viz., In 2000 Tseng wrote a paper on fractional calculus using Fourier transform [7], pulling the attention to the field of applicationof fractional calculus in signal processing with continuation to his work. In 2004 Margin and Richard found the application of fractional calculus in bioengineering [8]. Then in 2007,Assaleh et al. found the application of fractional calculus in their

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Research Article

Shilpa Umdekar, Praveen Kumar Sharma*, and Shivram Sharma

An SEIR model with modified saturated incidence rate and Holling type II treatment function

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Abstract: In this article, the behavior of an susceptible exposed infected recovered (SEIR) epidemic model with nonlinear incidence rate and Holling type II treatment function is presented and analyzed. Reproduction number of the model is calculated. Equilibrium points are determined. Disease-free equilibrium exists when $R0$ is below 1. Behavior of disease-free equilibrium is examined at $R0 = 1$. Endemic equilibrium exists when $R0$ crosses 1. Stability of both equilibrium points is investigated locally and globally. Simulation is provided to support the result.

Keywords: SEIR, basic reproduction number, Holling type II function, Lyapunov function

MSC 2020: 34D23, 93A30, 93D20

1 Introduction

Infectious diseases have been a part of human life for a long time already. Evidence tells us that epidemics often end up causing mass deaths. It was after the increase in healthcare, for a certain period of time, the health burden diminished of infectious diseases. However, in recent years, it has emerged that the challenge still exists, especially, in our rapidly changing world since every nation has limited resources to treat the infected. Emerging diseases pose a continuing threat, for example, human immunodeficiency virus in the twentieth century, acute encephalitis syndrome, malaria, cholera, and more recently COVID-19-coronavirus, causing mortality that has proven the necessity of having optimal resources to control an epidemic. Various mathematical models for infectious diseases proposed by many authors (see [1–9,16,18]). To figure out this problem, many treatment functions have been proposed by various researchers [13,14].

Zhang and Xianning [17] introduced the saturated treatment function for the better analysis of real system through the epidemic model. This function is widely known as Holling type II treatment function,

$$h(I) = \frac{aI}{1 + bI},$$

where $a > 0$ is a cure rate and $b \geq 0$ measures the magnitude of the consequence of the infected person being held for treatment. The specialty of this function is that it is defined as continually differentiable and characterizes the situation of limited medical resources.

Whenever we talk about epidemic or pandemic, the incidence rate of the disease in a population is first to be discussed. Previously, bilinear incidence rate βSI was being used more often to assess the new

* **Corresponding author: Praveen Kumar Sharma,** Department of Mathematics, SVIS, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore 453111, Madhya Pradesh, India, e-mail: praveen_jan1980@rediffmail.com
Shilpa Umdekar: Faculty of Doctoral Studies and Research (FDSR), Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore 453111, Madhya Pradesh, India
Shivram Sharma: Department of Mathematics, Govt. P.G. College, Guna 473001 Madhya Pradesh, India

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Research Article

Shivram Sharma and Praveen Kumar Sharma*

Stability analysis of an SIR model with alert class modified saturated incidence rate and Holling functional type-II treatment

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received August 17, 2022; accepted February 05, 2023

Abstract: This study discusses an SIR epidemic model with modified saturated incidence rates and Holling functional type-II therapy. In this study, we take the new alert compartment (A) in the SIR compartment model. Consider the modified non-linear incidence rate from the susceptible to the infected class and the second non-linear incidence rate from the alert to the infected class. Further, we investigate the elementary reproduction number, the equilibrium points of the model, and their stability. We apply manifold theory to discuss bifurcations of the disease-free equilibrium point. This study shows that the infected population decreases with the Holling functional type II treatment rate. It also shows that the number of infected people decreases when the psychological rate increases and the contact rate decreases.

Keywords: alert class, SIR model with alert class, Holling functional type-II treatment rate, basic reproduction number

MSC 2010: 34D23, 93A30, 93D20

1 Introduction

Many diseases are spreading rapidly at this time, and mathematical modeling helps a lot in studying them and preventing their spread. Many authors [1,2,6,7,9,13,17] have presented various epidemic models. Naresh et al. [10] developed an SIR compartmental model with a time delay for epidemiology. Yi et al. [17] considered the transmission rate in the SEIR epidemic model, and Nicho [11] revealed herd immunity to many diseases in proportion to those immunized. Kar and Batabyal [7] proposed an SIR epidemic model and described how afflicted populations were treated. Van den Driessche and Watmough [14] examined the reproduction numbers and equilibrium points of the epidemic model. Wang and Ruan [15] introduced the piecewise treatment function, which is known as

$$G(I) = \begin{cases} c, \text{ when } I > 0 \\ 0, \text{ when } I = 0, \end{cases}$$

where c denotes the infective's constant clearance rate.

Zhang and Suo [18] introduced the Holling functional type-II therapy rate, which is given by

$$H(I) = \frac{aI}{1 + bI}, \quad I \geq 0,$$

* **Corresponding author: Praveen Kumar Sharma,** Department of Mathematics, SVIS, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore-453111 (M.P.), India, e-mail: praveensharma@svvv.edu.in, praveen_jan1980@rediffmail.com
Shivram Sharma: Department of Mathematics, Govt. P.G. College, Guna-473001 (M.P.), India, e-mail: shivramsharmajnu85@gmail.com, dr.shivramsharma@mp.gov.in

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2023

Influence of Types of Hospital, Length of Service and Their Interaction on Personality Factor Q_3 (Undisciplined Vs Controlled) of Nurses

Dr. Anjali Pandey
Govt. E.V.P.G. College, Korba (C.G.)

Abstract :- The aim of the present study was to find out the impact of types of hospital on Personality of nurses. For this a sample of 300 Nurses with of 0-5 Years, 5 -10Years and more than 10 Years of Length of Service of Government and Private Hospital was randomly selected. Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adoptation) by S.D Kapoor was used. It was found that there was impact of type of hospital on Personality Factor Q_3 (Undisciplined Vs Controlled). Those working in Government hospital were found to be significantly more self - disciplined to than those working in Private hospital.

Keywords :- Nurses, Types of Hospital, Length of Service, Personality Factor.

Introduction :- In medical Profession, taking care of patients with total control our self and environment is of paramount importance, specially when it comes to critical care. The nurses who are in control of themselves and environment would do a much better job compared to those who are not disciplined. In difficult and testing situations it becomes all the more important. Therefore it can be easily stated that controlling or Self disciplined nature is a very significant factor in the personality of nurses.

Objective :- To study the influence of Types of Hospital, Length of Service and their interaction on Personality Factor Q_3 (Undisciplined Vs Controlled).

Hypothesis :- There is no significant influence of Types of Hospital, Length of Service and their interaction on Personality Factor Q_3 (Undisciplined Vs Controlled).

Sample :- A sample of 150 Nurses each was selected randomly from Government and Private Hospitals. They were stratified on the basis of Length of Service 0-5year, 5-10 year, and above 10 year.

Test :- Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adaptation) by S.D Kapoor

Method :- Through random sampling four hospitals were selected (two government and two private hospitals). The nurses of the selected hospitals were administered upon a structured Sixteen Personality Factor questionnaire by S.D Kapoor by the researcher. The scoring was done and the score were analysed.

Analysis and Discussion of Results :- The objective was to study the influence of Types of Hospital, Length of Service and their interaction on **Personality Factor Q_3** (Undisciplined Vs Controlled) of Nurses. There were two Types of Hospital, namely, Government and Private. 0-5year, 5-10 year, and above 10 year working in nursing were the three levels of Length of Service of Nurses. Thus the data were analyzed with the help of 2X3 Factorial Design ANOVA

Table 1

Types of Hospital wise N, Mean, SD of **Personality Factor Q_3** (Undisciplined Vs Controlled) of Nurses

Types of Hospital	N	Mean	SD
Government Hospital	150	6.00	1.59
Private Hospital	150	5.37	1.59

Table 1

Length of Service wise N, Mean, SD of **Personality Factor Q_3** (Undisciplined Vs Controlled) of Nurses

Length of Service Wise	N	Mean	SD
0-5 Years	107	5.59	1.70
5-10 Years	97	5.61	1.62
Above 10 Years	96	5.88	1.54

Table1

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Alteration in THRβ-1 expression on Thyrocytes of Hypothyroidism Mice: Antioxidant Activity of Ashwagandha and Quercetin

Narendra Namdev[1], Gayatri Rai[2], and Payal Mahobiya[3]*

[1] Endocrinology Lab, Department of Zoology Dr. Harisingh Gour Vishwavidyalaya Sagar M.P. Email ID- narendra.nnamdev95@gmail.com
[2] Endocrinology Lab, Department of Zoology Dr. Harisingh Gour Vishwavidyalaya Sagar M.P. Email ID- phd008gayatri@gmail.com
[3] Endocrinology Lab, Department of Zoology Dr. Harisingh Gour Vishwavidyalaya Sagar M.P. Email ID- 1607payal@gmail.com

Abstract: **The present study is designed to investigate the protective efficacy of ashwagandha and quercetin against altered THRβ-1 expression, structural damages, and induced oxidative stress in the thyroid gland of hypothyroidism-modeled mice. Mice were orally exposed to cypermethrin for 28 days. The body weight of mice was recorded during the experiment at seven days intervals and the thyroid gland weight was recorded at the end of the experiment after sacrifices. The homogenate of thyroid tissue was prepared for biochemical examinations such as LPO, H_2O_2, NO, SOD, CAT, GSH, GST, GR, and tissues were fixed in Bouin's fluid for histopathological evaluations by double staining (hematoxylin and eosin) and immunohistochemistry (THRβ-1) methods. Cypermethrin-induced hypothyroidism showed increased body weight and decreased thyroid gland weight. The MDA concentration and activity of H_2O_2 and NO increased and the activity of CAT, SOD, GSH, GST, and GR decreased in hypothyroidism. The histopathological examinations showed decreased numbers and size of thyroid follicles in hypothyroidism mice. The immunohistochemistry showed decreased THRβ-1 expression in thyrocytes of cypermethrin-induced hypothyroidism mice. The co-administration of ashwagandha and quercetin showed amelioration efficacy in biochemical changes and histopathological deformities in hypothyroidism mice. The present study concluded that hypothyroidism caused oxidative stress and histopathological changes in the thyroid gland and the use of ashwagandha and quercetin as an antioxidant showed prevention against the damage caused by hypothyroidism.**

Index Terms: **Ashwagandha,Cypermethrin, Hypothyroidism, Oxidative stress, Quercetin, Thyroid gland**

I. Introduction

3-phenoxy benzoic acid is a metabolic byproduct of type II pyrethroid insecticides including cypermethrin. 3-PBA reaches into the blood and exerts toxicological effects governing oxidative stress, immunomodulation, endocrine disruption, and neurodegeneration (Chen et al., 2011). Cypermethrin is a type II synthetic pyrethroid insecticide and anendocrine-disrupting agent. Deltamethrin, fenvalerate, and cyhalothrin are also pyrethroids and cause endocrinedysfunction (Mnif et al., 2011). The LD50 value of cypermethrin is about 250 mg/kg body weight in rodents (Raj et al., 2013). Hyperthyroidism is characterized by higher serum thyroid hormone and lower TSH levels, whereas declined thyroid hormones and increased TSH is known as hypothyroidism,both hypo and hyperthyroidism are pathological conditions. The thyroid hormone plays an important role in the regulation of basal metabolism of the body and helps in growth and development (Hanley et al., 2016). 3-PBA caused decreased binding of TSH to its receptors resulting in increased TSH, causing decreased secretion of T3 and T4 *via* a negative feedback mechanism(Requena et al., 2019).

Oxidative stress is the state of failure of the total antioxidant capacity of the body against the generated free radicals. Induced hypothyroidism altered oxygen consumption and metabolic modifications causing the generation of superoxide, hydroxy, and hydrogen peroxide radicals subsequent toincreased lipid peroxidation and decreased glutathione resulting in oxidative damage and pathological condition. Lipid peroxidation, hydrogen peroxide, and nitric oxides are the oxidative stress markers, and glutathione, superoxide dismutase,

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Five-Year Meta-analysis of Ashwagandha Used as an Antioxidant: A Systematic Review

Narendra Namdev[1]
Endocrinology lab, Department of Zoology, Dr. Harisingh Gour Vishwavidyalaya Sagar (M.P) India (470003)
Surbhi Chourasiya[2]
Endocrinology lab, Department of Zoology, Dr. Harisingh Gour Vishwavidyalaya Sagar (M.P) India (470003).
Gayatri Rai[3]
Endocrinology lab, Department of Zoology, Dr. Harisingh Gour Vishwavidyalaya Sagar (M.P) India (470003).
Payal Mahobiya[4*]
Endocrinology lab, Department of Zoology, Dr. Harisingh Gour Vishwavidyalaya Sagar (M.P) India (470003), *Corresponding author

Abstract
The present systematic review is to survey the literature regarding *Withania somnifera*, the most commonly used herb in Ayurveda. It shows the scavenging activities towards the free radicals, which are induced due to exogenous chemical sources. We have mainly focused on *W. somnifera* as an antioxidant, as hepatoprotective and neuroprotective phytoconstituents, and its mechanistic action on various pharmacological disorders. The roots of *W. somnifera* have thirty-five bioactive components, and the important bioactive components of *W. somnifera* are mentioned in the review. This review is prepared by the different sources of databases, PubMed, Google Scholar, and AYSUH Pharmacopoeia data libraries, and by using different keyword datasets searched. A sum total of 355 research articles were found in the database, PubMed (188) and Scopus (167). 149 research items were removed as duplicates and 47 were assessed and the rest were removed in screening. Only 13 original research articles were included for meta-analysis for the selected time and the criteria. It signifies the outcomes of current studies on *W. somnifera* that indicate its immense action as an antioxidant in abundant related disorders as supported by preclinical research. Interpretations of the mechanistic pathways elaborate on the hepatoprotective and neuroprotective effects of *W. somnifera*. The study further validates its properties to promote it as a promising drug.
Keywords: Antioxidant, Free radical, Hepatoprotective, Neuroprotective, endocrine system, *Withania somnifera*.

I. INTRODUCTION

The continued exposure to environmental toxicants and pathogenic exposures leads to suppressingthe immune response and accelerated free radical generation causing oxidative stress or system disorders. Exposure to different chemical and heavy metal exposures alter endogenous defense line system. The increased free radicals and decreased antioxidants lead to oxidation. In such cases, additional antioxidants are required to maintain physiological balance(El-Bahr 2013).Antioxidants are compounds that repress oxidation, whereas oxidation is a process that enhances the production of pro-oxidants that disrupt cellular integrity and cause damage. The special mechanism is in the form of enzymes used by animals and plants to maintain cellular integrity. Natural and synthetic antioxidants were taken to overcome the oxidation. Plants are valuable sources of natural antioxidants rich in different kinds of bioactive compounds. *Withania somnifera* is a medicinal herb used in the ayurvedic medicine system from the ancient time since 4000-500 B.C. China is the first country to use herbal preparations for disease management after India. The study of plants and their parts for therapeutic use has been recorded in Ayurvedic Medicine System (Verma et al. 2011).World Health Organization listed more than 20,000 herbal plant species worldwide (Pandey et al. 2008). More than 80% of the total population believed in herbal medicine and its therapeutic actions (Vijayan et al. 2007).*Withania somnifera* is commonly known as ashwagandha known for its antioxidant properties. Itbelongs to the family Solanaceae and is also known as "Indian ginseng", and "winter cherry", and is usually found in tropical and sub-tropical regions such as middle-east Asia (Dar et al. 2015). It is a xeric plant native to India, Sri Lanka, Afghanistan, Baluchistan, and Sind's temperate Mediterranean regions. The name ashwagandha is derived due to its horse-like smell and energy level after its consumption (Singh et al. 2015).

Gayatri Rai

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Preventive Role of Dietary Antioxidants Against Cypermethrin-Induced Toxicological Effects: Ashwagandha and Quercetin

Narendra Namdev[1], Gayatri Rai[2], and Payal Mahobiya[3]*
[1,2&3*] Endocrinology Lab
Department of Zoology, School of Biological Sciences
Dr. Harisingh Gour Vishwavidyalaya, Sagar (M.P.), India

Abstract: *The present study aimed to find the protective effects of dietary antioxidants ashwagandha and quercetin against cypermethrin-induced alterations in vital organ weights. The male mice of 20-25 gm were housed at optimum temperature (25±5 °C) and humidity (45±10) with 12-12 hours of dark light for acclimatization and then divided randomly into four groups with five mice in each group. Group I served as control, Group II received cypermethrin (15 mg/kg, body weight), Group III received ashwagandha (200 mg/kg, body weight) along with cypermethrin, and Group IV received quercetin (150 mg/kg, body weight) along with cypermethrin. All doses were given orally for 28 days. The body weight was measured at seven days intervals and recorded separately and the weight of the vital organs was measured after sacrifices and recorded. The results showed a comparative gain in body weight on day 28 as compared to day 0 in the cypermethrin-exposed group and comparatively less gain in body weight in the ashwagandha and quercetin co-treated groups. Significant gain in the thyroid gland and kidney weight in the cypermethrin-exposed group as compared to control and co-administrative groups. Testes weight, GSI, liver weight, liver index, intestine, and spleen weight were decreased significantly in the cypermethrin-exposed group as compared to the control and increased significantly after coadministration with ashwagandha and quercetin. The results concluded that the alteration caused in vital organ weights is probably due to the alterations in the physiological activities and ashwagandha and quercetin helped in amelioration against the cypermethrin-induced alterations.*

Keywords: Cypermethrin, Ashwagandha, Quercetin, Body Weight, Vital Organ Weight, GSI, Liver Index.

1. INTRODUCTION

Cypermethrin is a type II synthetic pyrethroid insecticide used for agricultural processes as well as in the domestic and veterinary to control vectors for pests in households. The increased domestic use of cypermethrin and other insecticides increases exposure manifolds. Repeated exposure leads to toxicity and diseases [1]. The alterations in the body weight and the vital organ weight reflect the metabolic alterations under toxicological symptoms. Exposure to environmental toxicants including radiation, pesticides, chemicals, drugs, and alcohol abuse caused disrupted food and water intake resulting in dysmetabolism [2]. Reduced food and water intake, fewer locomotory activities, altered behavior, loose fecal pellets, anxiety, and depression are the general toxicological symptoms shown after getting in contact with environmental pollutants [3]. Cypermethrin after reaching the body gets converted into 3-phenoxy benzoic acid (3-PBA) and accelerates the free radical generation that decreased antioxidant activities and induces oxidative stress. Under such conditions, an additional antioxidant supply is needed to overcome the generated oxidative stress [4].

Withania somnifera commonly known as ashwagandha is a typical herb found in the tropical to temperate regions of Asia and Africa. It is the most commonly used herb in

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Protective Role of Ashwagandha and Quercetin over Cypermethrin Induced Hypothyroidism: A Hematological Study in Mice

Narendra Namdev, Gayatri Rai, Payal Mahobiya*

Endocrinology Lab, Department of Zoology, School of Biological Sciences, Dr. Harisingh Gour Vishwavidyalaya (A Central University) Sagar (M.P.), India

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Abstract Cypermethrin is a synthetic pyrethroid insecticide used worldwide for domestic as well as agriculture purposes. The current research is designed to investigate the protective role of ashwagandha and quercetin on cypermethrin-induced hematological alteration via declined thyroid function. *Swiss albino* male mice weighing around 25–30 g were divided into four groups of six animals each at random. Group I served as a control with normal food and water; Group II cypermethrin treated 15 mg/kg body weight; Group III ashwagandha co-treated 200 mg/kg body weight, and Group IV quercetin co-treated 150 mg/kg body weight. Doses were applied orally for 28 days. Blood was drawn, and hematological parameters and a serum thyroid hormone calculation were performed on it. Increased body weight and decreased thyroid weight were observed in the cypermethrin exposure group. The decreased T3 and T4 and increased TSH hormone levels were observed in the cypermethrin-treated group as compared to the control signified hypothyroidism. A significant decrease in erythrocyte count, hemoglobin percentage, and platelet counts was observed in the cypermethrin exposure group. Total leukocyte counts, neutrophil%, and lymphocyte% were increased significantly in the cypermethrin exposure group as compared to the control. A significantly decreased platelet count was observed in the cypermethrin exposure group. The antioxidant co-administered animals showed significant prevention as compared to cypermethrin-exposed animals.

Keywords Cypermethrin, Ashwagandha, Quercetin, Thyroid Hormones, Hematological Indices

1. Introduction

Pesticides are used against the organism detrimental to crops, human beings, and other animals, but their poisoning causes morbidity and mortality in developing countries like India. More than 3 million cases most resulting in death have been reported due to poisoning and suicidal attempts related to pesticides [1]. Synthetic pyrethroids are the analogs of naturally occurring pyrethrin found in chrysanthemum and daisy and are chemically and synthetically modified and become more stable and toxic to target species. Increased production and use of synthetic pyrethroids were first documented in 1970 and replaced the use of organophosphates in residential and veterinary use, which increases human exposure to pyrethroids [2]. Exposure to pyrethroid and other pesticides is categorized into occupational exposure and regular exposure. Occupational exposure happens during manufacture and transportation in industries to workers and farmers during application in fields. Regular or non-occupational exposure includes ingestion of contaminated fruits, vegetables,

Gayatri Rai

Niranjan Shrotriya
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IQAC Coordinator

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Brij Kishore Tiwari
24.12.2023 01:35
Principal

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Toxic effect of ultraviolet B exposure on the ovary of female Wistar rats

Gayatri Rai[1], Payal Mahobiya[2]*
[1,2*] Endocrinology lab,Department of Zoology, School of Biological Sciences,
Dr. Harisingh Gour Vishwavidyalaya, Sagar, M.P., India

Abstract
This study evolute the toxic effect of ultraviolet B exposure on the ovary of female Wistar rats. The Experimental study consisted of 12 rats, divided into two groups, each comprising six animals. Group was named group 1st Control, group 2nd ultraviolet B (2 hours/day). UVB exposure treat last for 15 consecutive days. The ovarian hormone changes were measured by methods. The histological changes in ovary tissue were done by Hematoxylin and Eosinand observed the slides under the microscope. Ultraviolet B radiation caused histological alteration in the female Wistar rat as compared with the control group. Ultraviolet B radiation damaged the ovarian cells and showed cellular injury. UVB exposure alters the hormone level (FSH, LH, Estrogen, and Progesterone) as compared to control. Overall UVB radiation induced oxidative stress and alter hormone levels and damaged the ovary structure.

Keywords: Ovary, UVB, Histology, Oxidative stress.

I. INTRODUCTION

UV radiation is an environmental stressor that animals are commonly exposed to along with other types of environmental stressors. UV rays have both good and bad effects, and they have an impact on the health of all creatures, including people. Three forms of non-ionizing UV radiation UVC, UVB, and UVA are electromagnetic in nature. Compared to UVB and UVA, UVC is more damaging. Animals are constantly exposed to radiation throughout their lives, which can have both positive and negative consequences on a person's health [1-2]. The sun is the principal source of direction for most animals. Solar UV radiation undergoes significant absorption by the atmosphere with the stratospheric ozone layer depletion, and animals and the environment will be exposed to higher intensities of UV radiation. Free radicals are produced by UVB radiation, which also causes oxidative stress and cell damage. It also affects the endocrine system and its physiological functions, including the ovarian cycle and the activity of thyroid hormones, among others [2]. The first line of defense against the harmful effects of electromagnetic radiation is thought to be hormones and their receptors [3]. Different types of non-ionizing radiation, such as radiofrequency fields, including microwaves and power-frequency fields, lead to structural and functional changes in the body [4]. The 3G cell phones and Wi-Fi generate electromagnetic radiations that have become an unavoidable part of human life. Cell phones and their base antennae produce 900–1800 MHz electromagnetic radiation for GSM (Global System for Mobile communications) [5].

Gayatri Rai.

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Zinc(II) complexes constructed from an adamantane-functionalized pyridine Schiff base - Influence of the counterion on the supramolecular organization by means of C-H···O, C-H···N, C-H···π and $\pi\cdots\pi$ interactions

Tushar S. Basu Baul[a,*], Anurag Chaurasiya[a], María G. Vásquez-Ríos[b], Herbert Höpfl[b,*]

[a] Centre for Advanced Studies in Chemistry, North-Eastern Hill University, NEHU Permanent Campus, Umshing, Shillong 793 022, India
[b] Centro de Investigaciones Químicas, Instituto de Investigación en Ciencias Básicas y Aplicadas, Universidad Autónoma del Estado de Morelos, Av. Universidad 1001, Cuernavaca 62209, Mexico

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ABSTRACT

Using (*E*)-*N*-(pyridin-2-ylmethylene)adamantan-1-amine (**L**), four zinc(II) complexes, namely, $[ZnL(AcO)_2]$ (**1**), $ZnL(NO_3)_2$ (**2**), $[ZnL(N_3)_2]$ (**3**), and $[ZnL_2(AcO)][ClO_4]$ (**4**), have been synthesized. Ligand **L** and compounds **1**–**4** were characterized by elemental analyses, IR, ^1H and ^{13}C NMR spectroscopic studies. In addition, the molecular and crystal structures of **L** and **1**–**4** were established by single crystal X-ray diffraction studies. Aside from Van der Waals contacts in **1**–**3**, the molecular arrangements in the 2D structures are controlled by C-H···O, C-H···N, C-H···π and $\pi\cdots\pi$ interactions depending on the anion attached to the zinc(II) ions. The 3D Hirshfeld surfaces and fingerprint plots were mapped and used to examine the intermolecular interactions in comparative manner.

1. Introduction

Schiff bases derived from 2-pyridinecarboxaldehyde and amines are among the most widely used ligands for the complexation of transition metals, e.g., Ni(II) [1,2], Pd(II) [3–11], Pt(II) [7,10,12–14], Cu(II) [15,16], Fe(II) [17], Mn(II) [18] and Co(II) [1]. The majority of metal complexes derived from such 2-pyridylimines so far carry bulky aromatic groups attached to the iminic nitrogen atom. Complexes with analogous *N*-alkylated ligands are also known but scanty [19–24]. Examples with small alkyl groups are Ni(II), Pd(II) and Pt(II) compounds employing (*E*)-*N*-(pyridin-2-ylmethylene)methanamine and (*E*)-*N*-(pyridin-2-ylmethylene)ethanamine [19] while long chain alkyls are Pd(II) compounds involving (*E*)-*N*-(pyridin-2-ylmethylene)pentan-1-amine, (*E*)-*N*-(pyridin-2-ylmethylene)octan-1-amine and (*E*)-*N*-(pyridin-2-ylmethylene)dodecan-1-amine [20,21]. With bulky aliphatic substituents, some reports on metal complexes with (*E*)-*N*-(pyridin-2-ylmethylene)adamantan-1-amine (**L**) are available [22], and, interestingly, most of these complexes exhibit interesting properties. A Mn(I) complex prepared by the Mascharak group, $[MnBr(CO)_3L]$, was found photosensitive and could be triggered to release CO upon exposure to visible light [22]. For related Re(I) complexes, similar and other photophysical and photochemical applications are envisioned [23]. The copper complex $[Cu(L)_2]BF_4$ displayed catalytic activity for the transformation of arylazides into anilines [24].

Schiff bases derived from 2-pyridinecarboxaldehyde and the resulting metal complexes might be also good candidates for analyzing the occurrence and influence on the crystal structure organization of non-covalent interactions of the C-H···*N* type in competition with C-H···π and $\pi\cdots\pi$ contacts. In the past, C-H···X hydrogen bonds (with X = O, N, S, Hal, etc.) were considered occasionally with skepticism until the fundamental contributions from the Desiraju and Steiner groups left no doubt about their influence on the supramolecular solid-state organization of organic and other solids [25]. Moreover, subsequent contributions revealed that aside from the impact on the formation of crystal lattices [26–28] such weak contacts play also an important role for the stabilization of molecular conformations and in reaction mechanisms [29–31]. So far, supramolecular structure analyses of 2-pyridylimines and their metal complexes are scarce [32–38], despite exhibiting some particular characteristics that deserve further investigation. The crystal structures of Zn(II)/Cd(II) coordinated Schiff base ligands revealed intermolecular interactions in the aggregated or crystalline state.

* Corresponding author.
E-mail addresses: [redacted], [redacted] (T.S. Basu Baul), [redacted] (H. Höpfl).

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Signature Not Verified
Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
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Principal

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Benzimidazole-1,2,3-triazole-piperazine hybrids: design, synthesis, antidiabetic evaluation and molecular modelling studies

Laxmi Deswal[1] · Vikas Verma[1] · Jagat Singh Kirar[2] · Devinder Kumar[1] · Yogesh Deswal[1] · Ashwani Kumar[3] · Meenakshi Bhatia[3]

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Abstract

Sixteen new benzimidazole hybrids containing 1,2,3-triazole and piperazine scaffolds have been synthesized by click reaction. The synthesized hybrids were characterized by various spectroscopic techniques like IR, NMR and HRMS, and further examined in-vitro for their α-amylase and α-glucosidase inhibitory potential. The hybrid **5p** was active against α-amylase with IC_{50} value of 0.0327 µmol/mL and hybrids **5h**, **5o** and **5p** were active against α-glucosidase with IC_{50} values of 0.0154, 0.0156 and 0.0144 µmol/mL, respectively, comparable to acarbose. Docking analysis of α-glucosidase with **5o** and **5p** showed effective binding to hydrophobic cavity and form hydrogen bonding with the His348 and Arg439 residues. DFT and molecular electrostatic potential studies supported *in-silico* and in-vitro biological screening results. The pharmacological profile revealed that **5o** and **5p** might be the possible lead compounds for the treatment of diabetes.

Extended author information available on the last page of the article

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Article

Fabrication and Characterization of Cu Nanoparticles Dispersed on ZnAl-Layered Double Hydroxide Nanocatalysts for the Oxidation of Cyclohexane

Jagat Singh Kirar,* Neeraj Mohan Gupta, Kailash Chandra, Hitesh Kumar Vani, Savita Khare, Neha Tiwari, and Yogesh Deswal

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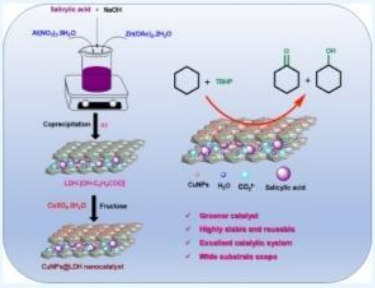
ABSTRACT: In the chemical industry, designing high-performance catalysts for the oxidation of cyclohexane into value-added products such as cyclohexanol and cyclohexanone (the combination is known as KA oil) is critical. The catalytic activity of copper nanoparticles supported on layered double hydroxide (LDH) for the liquid phase oxidation of cyclohexane was examined in this study. In this work, we have developed Cu nanoparticles supported on layered double hydroxide nanocatalysts, abbreviated as CuNPs@LDH, by the chemical reduction approach. Various physical methods were used to characterize the resulting material, including ICP-AES, XRD, FTIR, SEM, EDX, HRTEM, and BET surface area. The catalytic activity of copper nanoparticles supported on LDH was examined for the liquid phase oxidation of cyclohexane with *tert*-butyl hydroperoxide. CuNPs@LDH nanocatalysts with an excellent 52.3% conversion of cyclohexane with 97.2% selectivity of KA oil was obtained after 6 h at 353 K. The hot filtration test further indicated that CuNPs@LDH was a heterogeneous catalyst that could be recycled at least six times without suffering a substantial reduction in its catalytic activity.



1. INTRODUCTION

The development of catalysts for the selective oxidation of cyclohexane under moderate conditions with environmentally benign oxidants is of academic as well as industrial interest.[1,2] Catalytic oxidation of cyclohexane is one of the most challenging reactions due to the high stability of the C−H bond.[3,4] The oxidation products cyclohexanol and cyclohexanone are known as KA oil, which is the important raw material of adipic acid and caprolactam used as a precursor in the manufacturing of nylon-6 and nylon-66 polymers.[5,6] Generally, to obtain higher selectivity (70−80%) in the oxidation of cyclohexane, certain procedures using soluble Co and Mn salts are frequently used as catalysts and the conversion efficiency was found to be quite low (5%).[5,7] As a result, high-efficiency heterogeneous catalysts for selective oxidation of cyclohexane are desirable. Heterogeneous catalysts have evident benefits in terms of easier catalyst separation from the reactant, recycling, and better at meeting the demands of sustainable chemistry.[2,8,9] Therefore, several researchers have worked hard to design a suitable heterogeneous catalytic system for the oxidation of cyclohexane. Several catalytic systems have lately been investigated, with transition metal catalysts getting the most attention.[10−19] Han et al. described the fabrication of transition metal oxide/graphene composites as heterogeneous catalysts for cyclohexane oxidation. Under optimal conditions, a maximum of 34.4% conversion of cyclohexane with 74.4% selectivity of KA oil was achieved after 6 h over the CoO/graphene catalyst.[10] Liu et al. developed hydrotalcite-derived Co-MgAlO-mixed metal oxides as stable and efficient heterogeneous catalysts for the selective aerobic oxidation of cyclohexane to KA oil. The catalyst Co-MgAlO is active and selective for the oxidation of cyclohexane. The synergistic catalysis of Co^{3+} and Co^{2+} may efficiently enhance the decomposition of the cyclohexyl hydroperoxide (CHHP) intermediate to KA oil. A maximum of 9.1% of cyclohexane conversion and 82.0% of KA oil selectivity over 2% Co-MgAlO catalysts were obtained at 423 K and 0.6 MPa for 2 h in this oxidation reaction.[11] Jian et al. synthesized a Cu-MgAlO catalyst derived from hydrotalcite for the partial oxidation of cyclohexane with molecular oxygen. According to the findings, copper, as the active species, could activate the C−H bond and successfully enhance the decomposition of CHHP to KA oil. A maximum of 8.3% of cyclohexane conversion and 82.9% of

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Facile synthesis, characterization, and catalytic activity of Cr(III) Schiff base complex immobilized on layered double hydroxide

Jagat Singh Kirar [a,*], Savita Khare [b]

[a] Department of Chemistry, Govt. P. G. College, In-Front of Sanjay Stadium, Guna, MP 473001, India
[b] School of Chemical Sciences, Devi Ahilya University, Takshashila Campus, Khandwa Road, Indore (M. P.) 452001, India

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ABSTRACT

In the chemical industry, designing high-performance catalysts for the oxidation of aromatic hydrocarbon into value-added products such as benzaldehyde and benzoic acid is critical. In this study, the catalytic activity of chromium Schiff base complex supported on layered double hydroxide for the liquid phase oxidation of toluene was examined. The chromium Schiff base complex supported catalyst was synthesized by the intercalation method and abbreviated as LDH-[NAPABA-Cr(III)]. The obtained material was characterized by various physical techniques such as ICP-AES, XRD, FTIR, SEM, EDX, TEM, TGA, and EPR. The catalytic activity of the heterogenized Cr(III) Schiff base complex was tested for the oxidation of toluene using *tert*-butyl hydroperoxide as an oxygen source. Furthermore, the hot filtration experiment revealed that the LDH-[NAPABA-Cr(III)] was a heterogeneous catalyst that could be reused at least seven times without significant loss of catalytic activity.

1. Introduction

Selective oxidation of the C—H bond of toluene has drawn immense attention, because oxidation products benzaldehyde, benzoic acid, benzyl alcohol, and benzyl benzoate were useful in fine chemical industries, laboratories, pharmaceutical industries, and food industries [1]. Benzoic acid is commercially produced by partial oxidation of toluene with molecular oxygen (O_2) at 165 °C with acetic acid as solvent, in the presence of homogeneous cobalt and manganese naphthenates, but the conversion was only 15% [2,3]. This method suffers from its corrosive and environmentally unfriendly. Oxidation of toluene with molecular oxygen, hydrogen peroxide and *tert*-butyl hydroperoxide (*t*-BuOOH) is the preferred process for terminal oxidation [4,5]. Most of these catalysts are having certain drawbacks like difficulty in separation of catalyst at the end of reaction for reuse as well as decomposition during the catalytic reaction. Therefore, heterogenization of homogeneous metal complexes on insoluble support to develop new heterogeneous catalysts using various methods has attracted a lot of attention. Heterogeneous catalysts have a high surface area of the catalytically active sites to the reactants and have separation and recycling advantages compared to homogeneous catalysts. However, either leaching or low selectivity was the main problem regarding their applications as oxidation catalysts. Therefore, several researchers have worked extensively to design a suitable heterogeneous catalytic system for the oxidation of toluene [6–11].

Layered double hydroxides (LDHs) also known as hydrotalcite-like compounds, have the general formula $[M^{II}_{1-x}M^{III}_{x}(OH)_2]^{x+}.(A^{n-}_{x/n}).mH_2O$, where A^{n-} is the interlayer anion of charge n that leads to the electro-neutrality of LDH. The coefficient x is equal to the molar ratio $[M^{II}/(M^{II}+M^{III})]$, and m is the number of water molecules located in the interlayer region together with the anions [12]. Recently the LDHs have received intensive attention in intercalation chemistry [13], ion exchangers [14] and heterogeneous catalyst precursors [15–17]. LDH has also been studied extensively as strong support for the immobilization of a variety of transition metal complexes [18–21]. Recently, we have published Cu(II), Co(II), Mn(II) and Fe(III) Schiff base complexes immobilized on layered double hydroxide for the oxidation of toluene using TBHP as an oxidant [22,23].

The current research will concentrate on the solvent-free catalytic oxidation of toluene over LDH-supported heterogeneous catalysts, LDH-[NAPABA-Cr(III)], with *tert*-butyl hydroperoxide as an oxidant. To optimize the reaction conditions for maximum conversion and selectivity, we investigated the effects of various solvents, oxidants, the molar ratio of TBHP to toluene, the quantity of catalyst, and the effect of temperature. A hot filter experiment was also used to investigate metal leaching, as well as a plausible mechanism.

* Corresponding author.
E-mail address: j.skirar007@gmail.com (J. Singh Kirar).

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Donor–Acceptor Biarylcarbazoles as Efficient Host Materials for Solution-Processable High-Performance Phosphorescent Organic Light-Emitting Diodes

Jagriti Singh,[‖] Mangey Ram Nagar,[‖] Chandra P. Sharma, Neeraj M. Gupta, Abhijeet Choudhury, Kundan S. Rawat, Ravi P. Vats, Shashwat Gupta, Jwo-Huei Jou, and Atul Goel*

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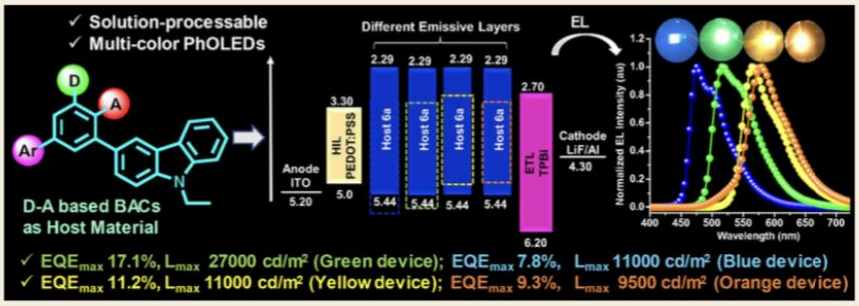

ABSTRACT: Host materials having high triplet energies offer great commercial potential for the development of solution-processable high-performance phosphorescent organic light-emitting diodes (PhOLEDs). While plenty of vacuum-deposited host materials are available, the literature reveals a dearth of solution-processable host materials. Therefore, a series of biarylcarbazoles (BACs) were designed as host materials by incorporating donor–acceptor functionalities and doped with blue, green, yellow, and orange phosphorescent emitters to develop energy-saving high-performance PhOLEDs with low turn-on voltages. All of the synthesized host materials exhibited good thermal stability in the range of 294–355 °C and exhibited remarkably high triplet energies of 2.50–2.81 eV. Surprisingly, PhOLEDs prepared by incorporating a host material **6a** doped with a green phosphorescent emitter, i.e., $Ir(ppy)_3$, displayed admirable efficiencies with a maximum power efficiency (PE) of 55.6 lm/W, a current efficiency (CE) of 53.2 cd/A, and an external quantum efficiency of 17.1% with a maximum brightness (L_{max}) of 27 000 cd/m^2. BAC host material **6a** exhibited better performance compared to that of commercial host 4,4′-bis(*N*-carbazolyl)-1,1′-biphenyl (CBP) and 4,4′,4″-tris(carbazol-9-yl)triphenylamine. The BAC **6a** host was also found to be compatible with orange, yellow, and blue phosphorescent emitters, which displayed PEs of 31.9, 21.4, and 14.1 lm/W, respectively, at a brightness of 100 cd/m^2. Notably, the green PhOLED with donor–acceptor-based host **6a** exhibited 23% roll-up in CE while moving from 100 to 1000 cd/m^2. The enhancement of the performance of the green PhOLED is attributed to higher singlet and triplet energies of host **6a** compared to that of the utilized green emitter tris(2-phenylpyridine)iridium(III), leading to effective host–guest energy transfer and the ability to form efficient excitons in the host–guest matrix, thus enhancing the OLED performance. Thus, BAC **6a** has commercial potential as a suitable host material for the fabrication of efficient multicolor PhOLEDs.

KEYWORDS: *dopants, hosts, carbazole, energy transfer, roll-up, excitons, OLED*

INTRODUCTION

Full color flat-panel displays based on phosphorescent organic light-emitting diodes (PhOLEDs) have become the dominant commercial technology for the lighting industry due to their unique advantages such as easier fabrication, color tunability, low weight, and large-area roll-to-roll manufacturing.[1−7] Since the invention of the first organic light-emitting diode (OLED) by Tang et al., OLED panels for the lighting industry are expected to surge to a more than multibillion-dollar value by the year 2023.[8,9] Fluorescent organic emitters in traditional OLEDs generate light from only singlet excitons leading to a low internal quantum efficiency (IQE, ≤25%). However,

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ANALYTICAL AND BIOCIDAL STUDIES OF SOME NEWLY SYNTHESIZED Sm(III) HYDRAZONE COMPLEXES.

JITENDRA AMBWANI* AND RANI MUGAL**
* Department of Chemistry S.M.S. Govt. Model Science College, Gwalior - (India)
** Department of Chemistry Govt. P.G. College, Guna - (India)

Abstract : Very recently some new hydrazone complexes of Sm(III) were synthesized which bear the formulae M(DPTPH)(BF4)2 and M(DCTPH)(BF4)2 where M = Sm(III), (DPTPH) = (2,6-diacetyl pyridine-N,N'-thiodipropionoyl dihydrazone), (DCTPH) = (2,6-pyridine dicarbonyl dichloride) and (BF4)2 = Bis tetrafluoro borate. These complexes were analyzed by preliminary laboratory methods and then by elemental estimation and spectroscopic techniques like UV-Visible, IR and NMR spectra. The complexes were found to be hard, colored solids which had high decomposition points. The complexes had high conductivity values. These complexes showed octahedral geometries in their structures. Then these were also treated against some bacteria viz. E. coli and S.alternaria and fungi C. albicans and A. niger. The results of these studies showed that both complexes are biocidal in nature and their activity is four times greater than that of the ligand.

Keywords :

Experimental :

The synthesized ligand and its complexes were analyzed first by preliminary laboratory methods and then by elemental estimation and spectroscopic techniques like UV-Visible IR and NMR spectra. The results of these studies showed that both complexes are solid, highly stable, colored and possess high decomposition points. Materials used for synthesis of ligand and its complexes:- (1). 2, 6-diacetyl pyridine. (2) 2,6-pyridine dicarbonyl dichloride. (3) Hydrazine hydrate. (4) Thiodipropionic acid. (5) Samarium acetate. The ligand was synthesized by mixing 1:2 ratios of Thiodipropionic acid and Hydrazine hydrate in a R.B. flask and then refluxed over water-bath for four hours. The complexes were formed by mixing 1:1:1 stoichiometric ratios of ligand, 2,6-diacetyl pyridine/2,6- pyridine dicarbonyl dichloride and metal acetate. Then mixture was refluxed over water-bath for three hours when an off white/ light yellow solid separated out. The solid was cooled, filtered and dried over anhydrous CaCl2 in a desiccator.

Results and discussion :

The compounds synthesized were analysed by preliminary laboratory methods and then by spectroscopic techniques like UV-Visible IR and NMR spectra. The ligand and both the complexes were found to be hard solids, stable, colored and possess high decomposition points. The complexes when analysed for conductivity showed quite high conductance values. Both complexes showed strong, sharp peaks at 3,000 cm-1, 1100, 1650, 1550, 2250, 550, 460 cm-1 which confirmed the presence of CH3 group, aromatic benzyl ring, C=O, C=N, NH, M-N and M-O groups in the complexes. The results of IR spectra showed that both complexes were found to be octahedral in their structures. Further the spectra of UV-Visible method exhibited presence of two main bands, one at 12,500 to 12,200 cm-1 and other at 23,000 to 22,600 cm-1 showing one due to charge transfer bands and other due to t2g.....eg band.

Biocidal studies :

Both complexes and their ligand were studied for their biological activities against bacterial strains E. coli and S. alternaria and fungal strains C.albicans and A. niger. Both complexes showed greater biocidal activity against both bacteria and the fungi in comparison to the ligand.

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Tracing the Absent-Present Gandhi in Raja Rao's Kanthapura

Dr Shalini Kaushik
Assistant Professor of English
Govt. P.G. College, Guna, M.P.
Madhya Pradesh Higher Education Department
Email: shalinikaushik93@yahoo.com

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ABSTRACT

The paper tries to analyse the role of Gandhi in the nationalist movement which can be witnessed in the novel Kanthapura. The figure of Gandhi is not present in the text as one of the characters (apart from the interaction which Moorthy tells about that he had with Mahatma) but the whole narrative revolves around him. It is through media and Moorthy that women in the text get to know Gandhi and they are all united in spirit though they have never met Gandhi in person. This paper also tries to explore that how Gandhi challenges, contests, and redefines masculinity and femininity, thus blurring the lines between genders. The binaries of pure and impure, the issue of caste are examined and a new meaning to pilgrimage has been given. The political thinking of Gandhi seems to transform traditional meanings and one gets an alternative vocabulary of "home"' and "masculinity".

Keywords: *Nationalist, Caste, Moorthy, Gandhi, Truth.*

****

The moment one utters nationalism, the ideas of oneness, brotherhood/sisterhood, love and respect towards one's country begin arousing. The novel *Kanthapura* (1938) deals with the nationalist movement in the pre-independence era. It beautifully brings to light the role of Mahatma Gandhi in the movement. The title of the paper tries to point towards the absence of Gandhi in terms of being a character in the text; he is not one of the characters in the text as Moorthy, Ratna, or Rangamma are yet the whole narrative revolves around Gandhi. Therefore, the absence of Gandhi as a character also makes it for the presence of Gandhi as a theme. The Gandhian ideals of ahimsa/non-violence, truth, and propagating the use of khadi could be traced in the text. Gandhi also challenges, contests, and redefines masculinity and femininity,

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Prevalent fixed point theorems on MIFM-Spaces using the (CLR_{SR}) property and implicit function

Praveen Kumar Sharma[a,*], Shivram Sharma[b]

[a]Department of Mathematics, SVIS, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore-453111, MP, India.
[b]Department of Mathematics, Govt. P. G. College, Guna-473001, MP, India.

Abstract

The main goal of this study is to use an implicit function to demonstrate the existence of a common fixed point on modified intuitionistic fuzzy metric spaces by using the concept of common limit range property with regard to two self-mappings S and R, i.e., (CLR_{SR}) property. Our primary result is supported by an example that validates the hypotheses of our result. Our findings improve and generalize the findings of Tanveer et al. [M. Tanveer, M. Imdad, D. Gopal, D. K. Patel, Fixed Point Theory Appl., 2012 (2012), 1–12], and other existing results related to this study.

Keywords: Common fixed point, modified intuitionistic fuzzy metric space (MIFM-Space), common property (E-A), common limit in range property (CLR property), implicit function.

2020 MSC: 47H10, 54H25.

1. Introduction

Zadeh [48] introduced the notion of a fuzzy set. Atanassov [4] introduced the concept of an intuitionistic fuzzy set by generalizing the idea of a fuzzy set introduced in [48]. Coker [12] developed the notion of topology on intuitionistic fuzzy sets after that. The intuitionistic gradation of openness was introduced by Mondal [33]. In 2004, Park [36] suggested the notion of intuitionistic fuzzy metric spaces (IFMS), which is a generalization of George and Veeramani's fuzzy metric space [15]. Many authors have recently proven fixed point theorems in IFMS ([2, 3, 6, 20, 35, 38, 40, 42, 44]).

Gregory et al. [16] went on to show that "the topology induced by fuzzy metric coincides with the topology induced by intuitionistic fuzzy metric". Saadati et al. [37] reframed the definition of intuitionistic fuzzy metric spaces by adding the concept of continuous t-representable and proposed a new concept known as modified IFMS. They also characterized strong (introduced by Jungck [29]) and weak (introduced by Jungck and Rhodes [30]) compatibility to modified IFMS. Pant's [34] research into common fixed points of non-compatible maps is also natural. In the recent past, Tanveer et al. [46] and Imdad et al. [22] proved some results in MIFM-Spaces using the notions of the property (E-A) (defined by Aamri and El-Moutawakil [1]) and the common property (E-A) (originated by Liu et al. [32]). It is worth noting

*Corresponding author
Email address: praveen_jan1980@rediffmail com (Praveen Kumar Sharma)

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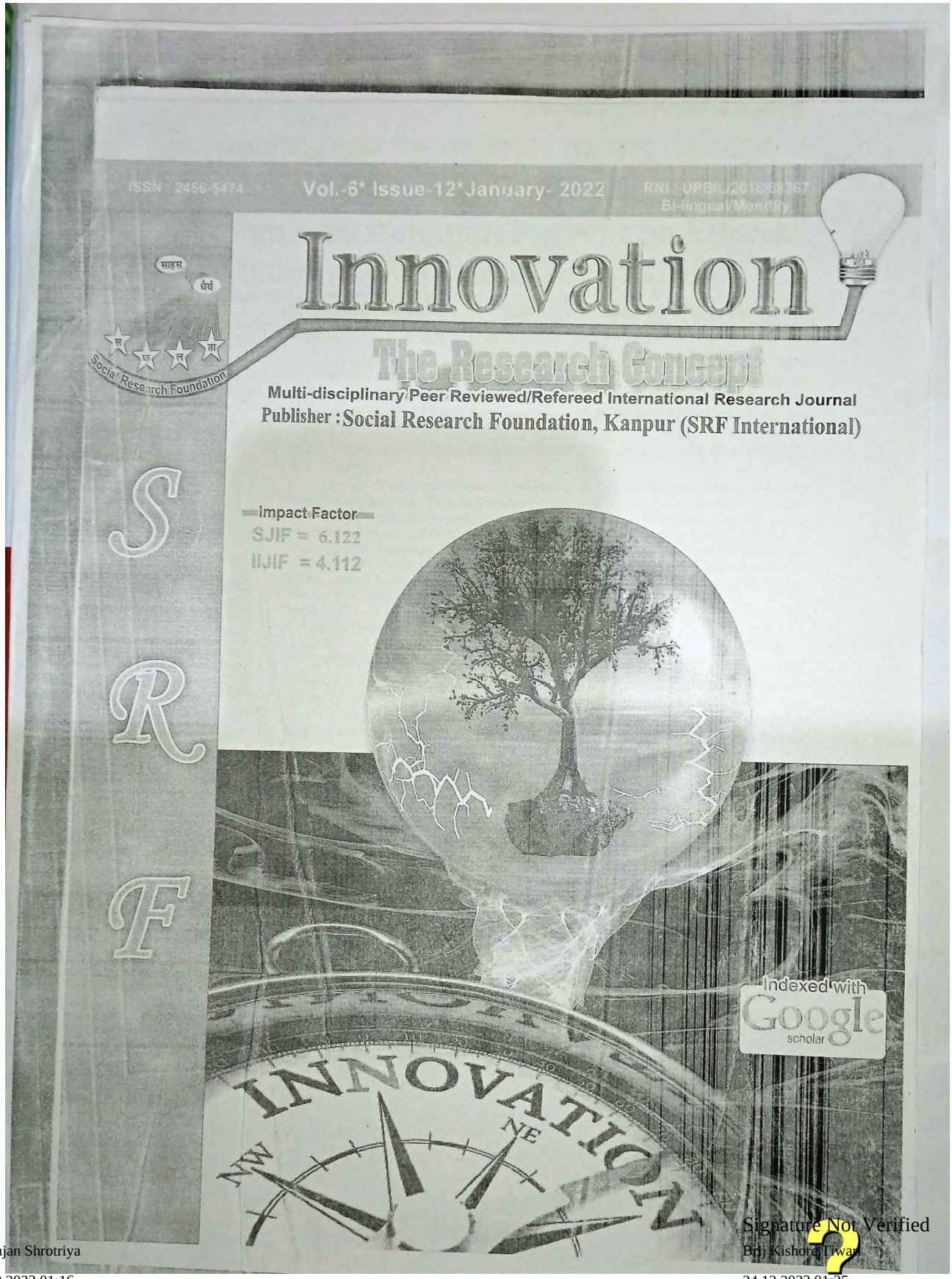

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IQAC Coordinator

Signature Not Verified
Brij Kishora Tiwari
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Principal

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Innovation The Research Concept

अन्तराष्ट्रीय स्तर पर पर्यावरण प्रदूषण निरोधक प्रयास - एक विश्लेषण

Environmental Pollution Prevention Efforts At International Level - An Analysis

Paper id: 15631 Submission: 11/01/2022, Date of Acceptance: 21/01/2022, Date of Publication: 23/01/2022

अनीता मेवाफरोश
सहायक प्राध्यापक,
राजनीति शास्त्र विभाग,
शासकीय स्नातकोत्तर
महाविद्यालय गुना, मध्य
प्रदेश, भारत

सारांश

मानव एक सामाजिक प्राणी है । इसी समाजिक परिवेश में वह बड़ा होता है, तथा उसी के अनुरूप गतिविधियाँ भी करता है । यही सामाजिक परिवेश, मनुष्य के आचार-विचार क्रिया-कर्म आदि का निर्माण कर उसे समाज में रहने लायक बनाता है । लेकिन यह सामाजिक परिवेश चारों ओर से प्राक्रतिक परिवेश - हवा, पानी, नदी, पहाड़, समुद्र तथा मैदान आदि से घिरा रहता है । अतः स्वस्थ्य एवं अच्छे जीवन के लिए सामाजिक एवं प्राक्रतिक परिवेश में तदातम्य होना नितांत आवश्यक है । वे एक दूसरे के पूरक है । दूसरे शब्दों में दोनों का संतुलन अनिवार्य है । संतुलन के अभाव में जीवन का विनाश कोई रोक नहीं सकता ।

Human is a social animal. He grows up in this social environment, and does activities accordingly. This social environment, by creating the conduct, thoughts, actions and actions of a person, makes him fit to live in the society. But this social environment is surrounded by natural surroundings - wind, water, river, mountain, sea and plain etc. Therefore, it is absolutely necessary to be identified with the social and natural environment for a healthy and good life. They complement each other. In other words a balance of both is essential. In the absence of balance no one can stop the destruction of life.

मुख्यशब्द : अन्तराष्ट्रीय, पर्यावरण, विश्लेषण
Keywords: International Environment Analysis

प्रस्तावना

वर्तमाल वैज्ञानिक एवं औद्योगिक युग में सामाजिक एवं प्राक्रतिक परिवेश से संतुलन क्रमशः क्षरित हो रहा है और हम सभी विनाश की ओर अग्रसर होते जा रहे है । आज न केवल हमारे लिए वरन सम्पूर्ण विश्व के लिए पर्यावरण में संतुलन तकनीक संसाधनों की अधिकता तथा औद्योगिक प्रति-स्पर्द्धा के कारण और अधिक विकराल होती जा रही है । विशेष रूप से विकासशील तथा त्रतीय विश्व के देशों में पर्यावरण अधिक प्रदूषित होता जा रहा है, क्योंकि यहां आर्थिक स्थिति को उपर उठाने तथा विकसित देशों द्वारा ओर अधिक लाभ की प्रतिस्पर्द्धा ने आज प्रदूषण को काफी बड़ा दिया है ।

वर्तमान वैज्ञानिक एवं औद्योगिकयुग में सामाजिक एवं प्राक्रतिक परिवेश में संतुलन क्रमशः क्षरित हो रहा है और हम सभी विनाश की ओर अग्रसर होते जा रहे है । आज न केवल हमारे लिए वरन सम्पूर्ण विश्व के लिए पर्यावरण में संतुलन एक समस्या बन गई है । निश्चय ही अत्यधिक औद्योगीकरण जनसंख्या में सुरक्षा गति, संससाधनों का अनुचित दोहन जनमानस की लापरवाही, पर्यावरण के ज्ञान की अनभिज्ञता तथा गलत तकनीक आदि कारणों से पर्यावरण दिनों-दिन प्रदूषित हो रहा है । राजनीतिक जागरूकता से लोगों में थोड़ी बहुत पर्यावरण के प्रति चेतना अवश्य आई है तथा प्रशासनिक स्तर पर भी थोड़ा बहुत ध्यान इस दिशा में दिया जा रहा है लेकिन इस विकराल समस्या के बढ़ने के पीछे राष्ट्रीय तथा अन्तर्राष्ट्रीय ठोस पहल एवं कानूनों का अभाव है, फिर भी पर्यावरण प्रदूषण निरोधक प्रयास अन्तराष्ट्रीय स्तर पर विभिन्न देशों द्वारा अपने-अपने ढंग से किये जाते रहे हैं । इन प्रयासों में सरकारी एवं गैर सरकारी विभिन्न संगठनों समूहों द्वारा किए जा रहे कार्य सम्मिलित है, लेकिन सभी का उल्लेख किया जाना संभव नहीं हैं । तथापि विकसित देशों द्वारा विभिन्न कार्यक्रमों के अन्तर्गत पर्यावरण संरक्षण सम्बंधी विभिन्न प्रयासों को कानूनी स्वरूप प्रदान किया गया है । चीन, भारत, इन्डोनेशिया, मलेशिया, फिलीपींस, कोरिया, पाकिस्तान, श्रीलंका, नेपाल, भूटान तथा बांग्लादेश आदि देशों द्वारा पर्यावरण प्रदूषण निरोधक विभिन्न कानूनी प्रावधान तो किए ही है साथ ही समाजिक स्तर पर जन-चेतना के भी प्रयास निरन्तर किए जाते रहे है, वस्तुतः इस दिशा में सक्रियता 1970 के बाद विभिन्न देशों द्वारा विभिन्न स्तरों पर दृष्टिगोचर हुई है । विकासशील देश पर्यावरण सरंक्षण हेतु कानूनी स्तर पर प्रयासरत है । अधोलिखित तालिका द्वारा प्रथम द्रष्टवय अवलोकन उपयुक्त होगा ।

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2022

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IQAC Coordinator

Brij Kishore Tiwari
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चीन में उइगर मुसलमानों के मानव अधिकारों का हनन

कुमार, ललित
राजनीति विज्ञान विभाग, शासकीय स्नातकोत्तर महाविद्यालय, गुना मध्यप्रदेश, भारत

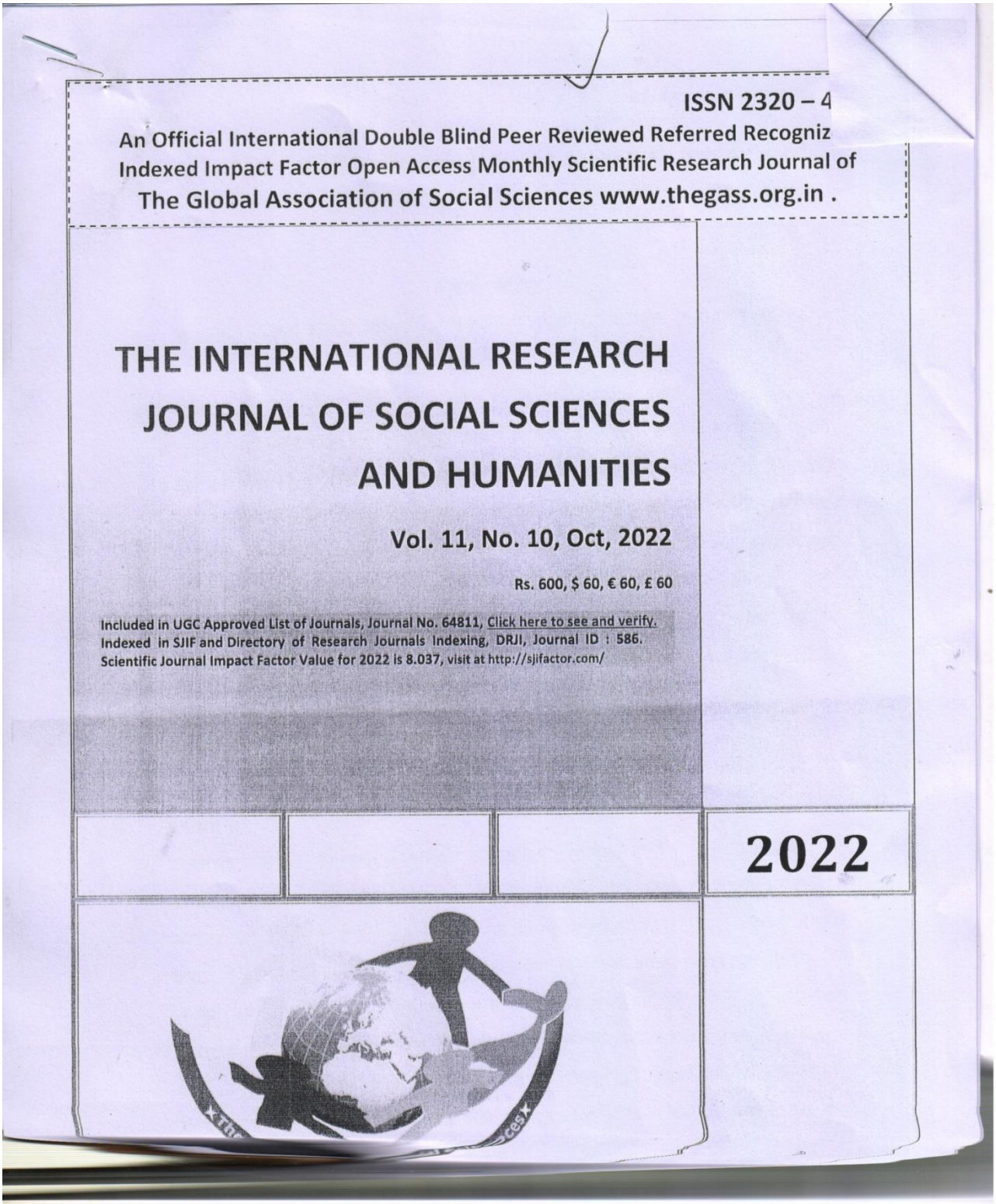
सारांश

चीन में उइगर मुसलमानों के मानवाधिकारों का हनन पिछले कई दशकों से किया जा रहा है। कट्टरपंथी उइगर मुसलमानों के विरूद्ध एक सुनियोजित रूप से अभियान चलाया जा रहा है। उइगरों को उनकी धार्मिक स्वतंत्रता से वंचित किया जा रहा है, ताकि धर्म के नाम पर किसी भी प्रकार की कट्टरपंथी विचारधारा को बढ़ने से रोका जा सके। चीन में रहने वाले उइगर मुसलमान चीन के विरूद्ध आंदोलन भी चला रहे हैं, जिनका दमन चीन पूरी शक्ति से कर रहा है। चीन का शिनजियांग प्रांत उइगर मुस्लिमों के दमन का प्रमुख केन्द्र बना हुआ है, क्योंकि उइगर मुस्लिमों की सर्वाधिक आबादी इसी क्षेत्र में निवास करती है।

शब्दकुंजी *: चीन, उइगर मुसलमान, एवं मानव अधिकारों का हनन।*

प्रस्तावना

चीन के शिनजियांग प्रान्त में एक करोड़ से अधिक मुस्लिम समुदाय के लोग रहते हैं, जिनमें अधिकतर मुस्लिम उइगर अल्पसंख्यक हैं। चीन के शिनजियांग प्रांत मे मुस्लिम समुदाय विशेषकर उगइर मुसलमानों के विरुद्ध अत्याचार निरन्तर बढ़ते जा रहे हैं और इसी प्रान्त में उइगरों पर अत्याचार और हिंसा के अधिक मामले प्रकाश में आते हैं। चीन उइगर मुसलमानों के मानव अधिकारों का भी पूर्ण रूप से हनन कर रहा है। उइगर मुस्लिमों के समर्थन में भारत सहित विश्व का कोई भी देश अपनी सशक्त प्रतिक्रिया व्यक्त नहीं कर रहा है। पश्चिम में पनपा इस्लामोफोबिया अब चीन में भी बढ़ता जा रहा है। वर्ष 2020 में अमेरिका के हाउस ऑफ रिप्रेजेंटेटिव्स ने उइगर मुसलमानों के उत्पीड़न के लिये जिम्मेदार चीनी अधिकारियों पर प्रतिबंध लगाने हेतु एक कानून को मंजूरी दी थी। वर्ष 2021 में तुर्की में कई उइगर मुस्लिम महिलाओं ने चीन के साथ तुर्क के प्रत्यर्पण समझौते



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झाबुआ जिले की भील जनजाति में मतदान व्यवहार को प्रभावित करने वाले कारक

कुमार, ललित
राजनीति विज्ञान विभाग, शासकीय स्नातकोत्तर महाविद्यालय, गुना, मध्यप्रदेश, भारत

सारांश

भारत एक लोकतंत्रात्मक शासन प्रणाली वाला देश है। यहाँ पर देश के आम चुनाव सहित प्रदेशों की विधानसभा और स्थानीय स्तर पर चुनाव होते रहते हैं। मताधिकार के माध्यम से जनता अपने जनप्रतिनिधियों का चुनाव करती है। मताधिकार एक ऐसी शक्ति होती है जिसके द्वारा आमजन सरकार तक को बदलने की ताकत रखते हैं, जो उनकी इच्छाओं का सम्मान नहीं करती है। भील जनजातियों की भी अपनी समस्याएँ हैं, जिनका संपूर्ण निराकरण स्वतंत्रता के बाद आज तक नहीं हो पाया है। जनजातियों की समस्याओं को हल करने की घोषणाएँ प्रत्येक स्तर के चुनाव में की जाती है, किन्तु इन समस्याओं का निराकरण हो नहीं पाता है। यही समस्याएँ मतदान व्यवहार को प्रभावित करती है।

शब्दकुंजी *: लोकतंत्र, मतदान, घोषणा पत्र, क्षेत्रवाद, एवं जातिवाद।*

प्रस्तावना

प्रजातंत्र के सफल संचालन में निर्वाचन की महत्वपूर्ण भूमिका होती है। चुनाव लोकतंत्र की आधारशिला होते हैं, यही वह माध्यम होता है जिसके द्वारा मतदाता अपनी इच्छानुसार सरकार का निर्वाचन करता है। निर्वाचन के समय मतदाता यह निश्चित रूप से विचार करता है कि उसे अपना मत किस उम्मीदवार या किस दल को देना है। यह निर्णय लेने से पूर्व वह उस दल की नीति, घोषणा–पत्र एवं पूर्व में किए गए कार्यों का अवलोकन करता है, साथ ही सत्तारूढ़ दल द्वारा किए गए चुनावी वादों एवं धरातल पर किए गए कार्यों का लेखा–जोखा उसके दृष्टिपटल पर होता है। यही विचार–विमर्श और चिन्तन मतदाता को प्रेरित करता है कि उसे किस उम्मीदवार और किस दल को अपना मत देना है। मतदान व्यवहार को परिभाषित करते हुए *एन. जी. एस. किनी* ने लिखा है – "व्यक्तियों

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Influence Of Types Of Hospital, Length Of Service And Their Interaction On Personality Factor B (Less Intelligent Vs More Intelligent) Of Nurses

Dr. Anjali Pandey
Assistant Professor of Psychology, Govt E.V.P.G. College Korba, INDIA

Abstract :- The aim of the present study was to find out the impact of types of hospital on Personality of nurses. For this a sample of 300 Nurses with of 0-5 Years, 5 -10Years and more than 10 Years of Length of Service of Government and Private Hospital was randomly selected. Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adoptation) by S.D Kapoor was used. It was found that there was impact of type of hospital on Personality Factor 'B'(Less Intellligent Vs More Intelligent). Those working in Government hospital were found to be significantly more Intelligent as compared to than those working in Private hospital.

Keywords :- Nurses, Types of Hospital, Length of Service , Personality Factor

1. Introduction :- In the medical profession for taking proper care of the patients the intelligence of nursing staff has a big role to play. An intelligent nurse would be able to take care of any difficult situation in a much better way compare to the one who is Less intelligent. This makes intelligence A very significant factor in the personality of nurses. This study was conducted to find out correlation of type of hospital (Government and Private) and Length of service and there interaction on personality factor 'B' (Less Intelligent Vs More Intelligent) of nurses.

2. Objective :- To study the influence of Types of Hospital, Length of Service and their interaction on Personality Factor B (Less Intelligent Vs More Intelligent).

3. Hypothesis :- There is no significant influence of Types of Hospital, Length of Service and their interaction on Personality Factor B (Less Intelligent Vs More Intelligent).

4. Sample :- A sample of 150 Nurses each was selected randomly from Government and Private Hospitals. They were stratified on the basis of Length of Service 0-5 Years, 5 -10Years and above 10 Years.

Test :- Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adaptation) by S.D Kapoor

5. Method :- Through random sampling four hospitals were selected (two government and two private hospitals). The nurses of the selected hospitals were administered upon a structured Sixteen Personality Factor questionnaire by S.D Kapoor by the researcher. The scoring was done and the score were analysed.

6. Analysis And Discussion Of Results :- The objective was to study the influence of Types of Hospital, Length of Service and their interaction on **Personality Factor B** (Less Intelligent Vs More Intelligent) of Nurses. There were two Types of Hospital, namely, Government and Private There were three levels of Length of Service, namely 0-5year, 5-10 year, and above 10 year. Thus the data were analyzed with the help of 2X3 Factorial Design ANOVA

Table 1

Types of Hospital wise N, Mean, SD of **Personality Factor B** (Less Intelligent Vs More Intelligent) of Nurses

Types of Hospital	N	Mean	SD
Government Hospital	150	4.00	2.06
Private Hospital	150	3.29	1.55

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Niranjan Shrotriya
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IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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Alteration of the Reproductive Cycle of Female Wistar Rat *via* UVB Induced Hyperthyroidism and Therapeutic Effect of Curcumin and Ascorbic Acid

Gayatri Rai[1] and Payal Mahobiya[2*]

[1]Department of Zoology, Dr. Harisingh Gour Vishwavidyalaya, Sagar (M.P.), India. pgrai008gayatri@yahoo.in
[2*] Department of Zoology, Dr. Harisingh Gour Vishwavidyalaya, Sagar (M.P.), India. 1607payal@gmail.com

Abstract: **The present study therapeutic effects of curcumin and ascorbic acid against the alteration of the reproductive cycle *via* UVB-induced hyperthyroidism in female Wistar rats. Thirty-six female Wistar rats sexually matured older weight 130-150 g and aged 12-16 weeks had arbitrarily divided into six groups. The first group was a control group, which received standard food and water ad libitum. The second UVB group was exposed to a dose of 280 nm to UVB radiation for two hours daily. The third UVB+Curcumin group received 280 nm of UVB radiation for two hours daily and an oral dose of curcumin (25 mg/kg body weight) daily. The fourth UVB+Ascorbic acid group received 280 nm UVB radiation for two hours daily and an oral dose of ascorbic acid (250 mg/kg body weight) daily. The fifth, curcumin groups (25 mg/kg body weight), and the sixth is ascorbic acid groups (250 mg/kg body weight). All the treatments last for 15 consecutive days. UVB-induced hyperthyroidism caused structural alteration of the estrous cycle in the female Wistar rat compared to the control group. Curcumin and ascorbic acid prevent the estrous phases and their morphology.**

Index Terms: **Ascorbic acid, Curcumin, Hyperthyroidism, Reproductive cycle, Wistar rat**

I. Introduction

Ultraviolet B (UVB) radiation is the medium wavelength (280-320 nm) electromagnetic radiation and reaches the earth's surface due to ozone depletion and affects the biological system (Rai et al., 2018). Electromagnetic radiation has been used considerably in many resources such as mercury lamps, dental polymerizing devices, X-rays devices, blacklight lamps, welding systems, counterfeit money detectors, and so forth. Radiation influences the body organs such as the thyroid gland (Walters et al., 1930 and Esmekaya et al., 2010), eyes (Balci et al., 2009), liver (Mahobiya 2020), pores, and skin (Matsumura et al., 2004). Previously reported radiation causes thyroid dysfunction with various structural, functional, and behavioral changes, with reproductive illnesses in females (Choksi et al., 2003).

The reproductive cycle in mammals is known as the estrous cycle and the best exception of primates, which have menstrual cycles. The estrous cycle of non-primate vertebrates consisting of mice, rats, horses, and so on represented the cyclic pattern of the ovarian action that allowed females to go from a duration of reproductive receptivity to non-receptivity, subsequently leading to being pregnancy after successful mating. In rodents' inclusive rats, the estrous occurred every 4-5 days, with sequential stages of proestrus, estrus, metaestrus, and diestrus for 1, 1, 1, and two days, respectively (Mclean et al., 2012). These stages occurred in each cycle and in a sequential way. The phases of the estrous period were the first-rate decided by way of the cellular kinds discovered within the vaginal smear. In estrous cycles, females are only sexually energetic during the estrus phase. Animals have this cycle reabsorb the endometrium if conception does not arise throughout the estrous period. On the other hand, animals' menstrual cycles shed the endometrium through menstruation instead. The estrous period is from the onset of estrus until the upcoming estrus. The length of the estrous period varies depending on the animal species. The average length of the estrous cycle is 4–5 days in rats, but it is highly variable. The estrus stage signifies a period when females show signs of mating behavior. Rat spontaneously ovulates during each estrous cycle. Females become cyclic when they reach puberty by four weeks (Rai et al., 2020). The different phases of the estrous cycle in mature females have regulated the mode of a functional hypothalamic- pituitary–ovarian axis.

Thyroid hormones are vital for the appropriate functioning of the female reproductive system since they modulate the metabolism and development of ovarian, uterine, and placental tissues. Consequently, hypothyroidism and hyperthyroidism may result in

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Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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Research Article

Ameliorative effect of curcumin and ascorbic acid against ultraviolet B radiation-induced thyroid toxicity in female Wistar rats: A haematological and biochemical study

Gayatri Rai
Department of Zoology, Endocrinology Laboratory, Dr. Harisingh Gour (A Central University) Vishwavidyalaya, Sagar -470003 (M.P.), India
Payal Mahobiya*
Department of Zoology, Endocrinology Laboratory, Dr. Harisingh Gour (A Central University) Vishwavidyalaya, Sagar-470003 (M.P.), India

*Corresponding author. Email: 1607payal@gmail.com

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Abstract
The present study aimed to investigate the ameliorative effect of curcumin and ascorbic acid against ultraviolet (UVB)-induced thyroid toxicity and to study the haemtological and biochemical parameters. Twenty-four female Wistar rats, aged 3-4 months and weighing 130-150 g, were used, and the rats were divided into four Groups (Groups I to IV). Group I received standard food and water ad libitum and was treated as a control; Group II received a dose of 280 nm of UVB radiation for 2 hrs/day. Group II received 280 nm UVB radiation for 2 hrs/day and received curcumin 25 mg/kg body weight given orally. Group IV received 280 nm of UVB radiation for 2 hrs/day and received ascorbic acid 250 mg/kg body weight given orally. All the treatments were consequently performed for 15 days. The results showed that haemtological parameters such as haemoglobin (Hb) ($p<0.05$), red blood cells (RBCs), white blood cells (WBCs), MCV, MCH, and MCHC decreased significantly. Biochemical parameters included lipid peroxidation (LPO) ($p<0.05$), H_2O_2 ($p<0.01$), nitric oxide (NO), superoxide dismutase (SOD) ($p< 0.01$), catalase ($p<0.01$), glutathione-S-transferase (GST) ($p<0.01$), and glutathione reductase. NO increased, and glutathione (GSH) ($p<0.01$) decreased significantly. However, cotreatment with curcumin and ascorbic acid significantly increased the haemtological parameters. In addition, oxidative parameters such as LPO ($p<0.01$), SOD ($p< 0.01$), CAT ($p<0.01$), GST ($p<0.01$), and NO ($p<0.01$) significantly increased, and GSH ($p<0.01$) significantly decreased upon cotreatment with curcumin and ascorbic acid. The results indicated the ameliorative effect of curcumin and ascorbic acid against UVB-induced thyroid toxicity in female Wistar rats.

Keywords: Ascorbic acid, Curcumin, Hematology, Oxidative stress, UVB radiation

INTRODUCTION

UVB radiation generates free radicals and causes oxidative stress affecting the endocrine system and its physiological processes, such as thyroid hormone action and the ovarian cycle (Rai *et al.*, 2018, and Rai *et al.*, 2020). Thyroid hormones have played a biological role in animals; they regulate haematopoiesis in the bone marrow (Golde *et al.*, 1977). It is known that haematological imbalance and thyroid dysfunction are linked together. Fein reported that Graves' disease correlated with anemia (Fein *et al.*, 1975). Previously, hypothyroidism was shown to cause positive forms of anemia and hyperproliferation of immature thyroid progenitors. The anemia is commonly hypochromic anemia of slight severity (JP and Srikrishna, 2012). Erythrocytosis is relatively not unusual, and anemia is not regularly determined in sufferers with hyperthyroidism (Iddah *et al.*, 2013). Previously, it was found that when the euthyroid condition earns returns to normal, all haematological parameters (Lima *et al.*, 2006).
In the hypothyroid, patients had decreased overall leucocyte matter, neutropenia, and thrombocytes (Axelrod *et al.*, 1951). Moreover, reduced general leucocyte counts were observed in hyperthyroid sufferers. There is a relatively lower variety of neutrophils and a boom in the range of eosinophils and mononuclear cells (MNCs). Nonetheless, hyperplasia of all myeloid mobile traces occurs in hyperthyroidism (Chen *et al.*, 2006).

Gayatri Rai

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24.12.2023 01:16
IQAC Coordinator

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Brij Kishore Tiwari
24.12.2023 01:35
Principal

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Eventual study of ultraviolet B radiation and their peril on thyroid gland of female Wistar rat

G. Rai and P. Mahobiya*

Department of Zoology, Dr Harisingh Gour (A Central University) Vishwavidyalaya, Sagar (M.P.), India

► *Short report*

***Corresponding author:**
Payal Mahobiya, Ph.D.,
E-mail:
1607payal@gmail.com

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Keywords: *UVB radiation, hormones, hyperthyroidism, curcumin, female Wistar rat.*

ABSTRACT

Background: The present study was carried out to estimate the effect of Ultraviolet B (UVB) radiation on the thyroid gland of female Wistar rats. ***Materials and Methods***: Female rat (n=24) of 12-16 weeks with body weight of 130-150gm were housed in standard cages, fed sterilized food and water ad libitum. Animals were divided into four groups. Ist group was control, IInd group was exposed to 280 nm of UVB radiation for 2 h/day. IIIrd group was exposed to 280 nm of UVB radiation for 2 h/day and 25 mg/kg body weight curcumin orally. IVth group was given 25 mg/kg body weight curcumin orally. All treatments last for 15 days. ***Results***: The results showed that UVB radiation decreased body and thyroid gland weight. However at the same time increased T3, T4, FT3, and FT4 levels ($p<0.01$: $p<0.001$; $p<0.05$) and decreased the level of TSH ($p<0.001$) significantly. Histologically, UVB radiation-damaged follicular cells and disappeared colloid fluid, and decreased follicle diameter significantly ($p<0.01$). ***Conclusion***: It is concluded that UVB radiation generates imbalance in thyroid hormones and induced hyperthyroidism on female Wistar rat and curcumin play protective role in hyperthyroidism against UVB radiation.

INTRODUCTION

UV radiations carry both positive and negative effects and affect the health of animals with humans. UV radiations are non-ionizing, electromagnetic and categorized into three kinds, UVB and UVC. UVC is ranging 200-280 nm and detrimental than UVB (280-320nm) and UVA (320-400nm) [1-3]. The exposure of animals to radiation is the worldwide and lifelong event with numerous beneficial and adverse effects on the individual [1]. UVB radiations generate free radicals, cause oxidative stress, damage the cells, and affect the endocrine system and their physiological process like the action of thyroid hormones and ovarian cycle, etc[2]. Although classically considered resistant to acute effects of radiation[3], thyroid gland has proved to be particularly sensitive to long-term effects of radiation exposure as demonstrated in studies of human subjects exposed to sub lethal radiation doses[4]. It is believed that hormones and their receptor are the first line of health to be adversely affected in electromagnetics radiations [5]. Both hypothyroidism and hyperthyroidism are associated with oxidative stress, moreover thyroid hormone-induced oxidative damage is believed to be factor responsible for progression of heart failure, as suggested by benefit of T3 administration on antioxidant systems in heart after pharmacological-induced hypothyroidism [6, 7]. Many forms of non-ionizing radiation caused the morphological and physiological changes in thyroid gland [8].

The present study was designed to estimate the effect of UVB radiation on histopathological changes in thyroid follicles and thyroid hormones concentration in female rats.

MATERIALS AND METHODS

Chemicals

Curcumin, Hematoxylin, Eosin obtaining from Himedia, and rest used chemicals were bought from Central Drug House Private Limited, New Delhi.

Experimental setup

Animals were irradiated in UVB chamber measuring 120×56×56 cm. UVB source was high pressure mercury developed by Philips, generating radiations range from 280-320nm, and distance between UV generator lamp and animals were 10cm. Animals were irradiated being 2 h/day for 15 days.

Experimental design and treatment

12-16 weeks with body weight of 130-150gm were obtained from Veterinary Sciences and Animal Husbandry College, Mhow M.P, India. The present study was approved by animal ethical committee,

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Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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Mini Review

Retaliating Properties of Naringin: A Mini-Review

Shashank Shakyawal, Gayatri Rai and Payal Mahobiya*

Endocrinology Laboratory, Zoology Department, Dr Harisingh Gour Vishwavidyalaya, India

***Corresponding author:** Payal Mahobiya, Endocrinology Laboratory, Zoology Department, Dr Harisingh Gour Vishwavidyalaya, Sagar, MP, India, Tel: 9407265618; Email: 1607payal@gmail.com

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Abstract

Plants contain a flavonoid called naringin, which has a variety of medicinal uses. Tomatoes, grapefruits, and other citrus fruits contain the flavanone glycoside known as 4',5,7-trihydroxyflavanone-7-rhamnoglucoside. There are seven enzyme-catalyzed stages in the phenylpropanoid route, which runs from phenylalanine to prunin. Naringin possesses anti-inflammatory, anti-tumor, and antioxidant effects. Naringin has been shown to have impacts on tumours, osteoclastogenesis, and asthma in both in vivo and in vitro studies using a range of test animals and cell lines. In vitro and in vivo studies have proven the effectiveness of naringin in a number of preclinical models of atherosclerosis, cardiovascular disease, neurodegenerative disease, osteoporosis, and rheumatological illnesses. Naringin may be a useful natural medication for treating human metabolic diseases, according to research on animals. Since there are few studies on naringin in humans, this review concentrates on the substance's various known activities in in-vitro and in vivo preclinical models as well as its potential therapeutic uses based on what is currently understood, such as its bone regeneration, anti-inflammatory, and antioxidant properties. But additional analysis of naringin's impact on people is required.

Keywords: Naringin; Antioxidant; Anti-inflammatory; Bone regeneration; Medical applications

Introduction

Flavonoids are naturally occurring phenolic compounds having a wide range of bioactivities. Most the fruits, vegetables, and herbs contain flavonoids. The flavonoid structure is composed of three rings having 15 carbon atoms, two of which are heterocyclic rings linked together by a three-carbon chain. Flavanones, flavones, isoflavones, flavanols, anthocyanidins, and flavanols are all flavonoids found in plants. In the body, these flavonoids act as free radical scavengers, preventing oxidative stress [1]. Albert Szent-Gyorgi, a Nobel Prize-winning biochemist, discovered and named them "Vitamin P." Bioflavonoids are polyphenolic phytochemicals. Polyphenolic acids, flavonoids, stilbenes, and lignans are examples of major polyphenols. The most abundant polyphenols in our diets are flavonoids [2]. Citrus fruits may help with diabetes and obesity treatment. Flavonoids are potent antioxidants that encourage the strengthening of capillary walls, the prevention of bruising and bleeding, the protection against free radicals, and the improvement of circulation. Some flavonoids are powerful anti-inflammatory agents that aid in tissue repair [3]. In human umbilical vein endothelial cells, citrus fruit extract demonstrated significant antioxidant activity [4].

Naringin (Figure 1), one of the main active components of Chinese herbal medicines is a flavanone glycoside formed from the flavanone naringenin and the disaccharide neohesperidose. such as Drynaria fortunei (Kunze) J. Sm. (DF), Citrus aurantium L. (CA) and Citrus medica L. (CM) [5,6]. The naringin content of different fruits varies as follows: CA>Immature CA, Immature Ponciri Fructus>Citri Unshiu peel>Immature Citri Unshiu peel [7]. Naringin's molecular formula is $C_{27}H_{32}O_{14}$, and its molecular weight is 580.4 g/mol. It is also found in citrus fruits and gives citrus juices a bitter taste [8].

Naringin and naringenin are both powerful antioxidants [9,10] whereas, because of the sugar moiety in the latter, naringenin is more potent than naringin. Naringin is water soluble. The gut microflora degrades naringin to its aglycon naringenin, which is then absorbed [11]. Naringin is gaining popularity as a result of its synergistic activity with a variety of supplements and potential drugs. It enhances nutrient absorption so after supplementation.

Gayatri Rai

Niranjan Shrotriya
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IQAC Coordinator

Signature Not Verified
Brij Kishore Tiwari
24.12.2023 01:35
Principal

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AYURVEDA FOR VIRUS: A REVIEW

SHRIVASTAVA M*, PITRE V AND SHRIVASTAVA S
Department of Zoology, Govt. P. G. College, Guna, Madhya Pradesh
*Corresponding Author: Megha Shrivastava: E Mail: meghapatan@gmail.com

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ABSTRACT

There are several microorganisms in nature, which are one of the important components of the trophic structure of the ecosystem. They act not only as decomposers but also act as causatives of several deadly diseases. Virus are among one of the major factors for causing several untreatable ailments. They rapidly undergo amplification and get converted into various strains which are difficult to diagnose for the cure. Although researchers are continuously doing their efforts to find out proper treatment for viral diseases, still lots of work needs to be done in this field. Ayurveda for a long period of time proved itself the best remedy for several deadly diseases including virus. Present paper is an effort to review the role of Ayurveda in treating some specific viral diseases.

Keywords: Virus, disease, treatment, Ayurveda

1. INTRODUCTION

Any abnormal condition originating at physical, mental and social level is called a disease. It is generally associated with specific signs and symptoms. A disease may be caused by some external factors such as pathogens e.g., bacteria, virus, protozoa etc. or by internal dysfunctions. Among pathogens viruses are the smallest of all the microbes and are regarded as obligate intracellular parasites classified as "connecting link between living and nonliving. Virus are made up of DNA or RNA and protein capsid. As they don't have their protein synthetic machinery, the virus interrupts the host's protein synthetic machinery and replicates. As a result of this repeated replication cycle increased population of virus causes severe infection which may lead to hospitalisation and may death.

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The COVID-19 (SARS-CoV-2) Pandemic: An Era to Rejuvenate Wildlife and Environmental Rehabilitation in India

Devendra Kumar[1], Saha Dev Jakhar*[2], Ajay Kumar Kumawat[3] and Megha Shrivastava[4]

[1,2 &3]Department of Zoology, University College of Science, Mohanlal Sukhadia University, Udaipur 313 001, Rajasthan, India
[4]Department of Zoology, Govt. P.G. College, Guna (M.P.), India

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ABSTRACT

The novel Coronavirus Disease 2019 (COVID-19) is caused by a newly emerged coronavirus named Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) that is key responsible for severe respiratory disease and emerged first at Wuhan city of Hubei province, China and spread-out global level with an unpredictably fast speed. The COVID-19 was also declared as a Global Public Health crisis by the World Health Organization (WHO) and after this crisis emergence, the lockdown was announced by the Government of India and because of this, the human being ware locked in their homes and due to their immobility, the traffic was almost negligible, all industries and factories were closed, the constructions were on halt, that's why smog and air pollution graph was reduced. significantly In contrast to wildlife, poaching activities were observed increasingly but illegal animal trafficking was observed in decreasing manner during and after The lockdown. After the corona crisis lockdown, nature has started rehabilitation to gain its natural shape and density; wildlife became progressive due to a lack of disturbance as fearless animal movements are also observed in the rural and urban areas that are also reported by various news channels and researchers. In contrast to the atmosphere, the era of the corona crisis was working like a sparkle in the Air Quality Index (AQI) where air pollution was recorded very low in the whole world. The ocean and other water bodies like rivers and lakes were found clear during this crisis period. However, some negative effects of the corona crisis on wildlife were also observed like- street dogs, ducks, and some birds were found hungered due to the unavailability of food which is provided by humans.

Key words : COVID-19, Environment, Nature, Rehabilitation, Air Quality Index (AQI).

Introduction

Coronaviruses are a group of viruses consisting of several lethal and non-lethal viruses that are affecting the human population through mild to severe zoonotic transmission. Most of the coronaviruses cause normal range infections and don't harm at a broad level. Infection range is different amongst coronaviruses that are respiratory infections from the mild common cold to severe illness amongst people which has been seen in Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) and the Middle East Respiratory Syndrome Coronavirus (MERS-CoV). In the last two decades, the coronavirus has created three pandemic conditions including the recent COVID-19. Out of these three, the first pandemic condition occurred during 2003 due to Severe Acute Respiratory Syndrome

*Corresponding author's email: sahadevjakhar4@gmail.com

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Review Article

AMAZING ANTIMICROBIAL AND WOUND HEALING POTENTIAL OF *ACACIA CATECHU* BARK EXTRACTS- A REVIEW

ARCHANA TIWARI[1]*, AVINASH TIWARI[2]
[1]Department of Botany, Government P.G. College, Damoh, Madhya Pradesh, India. [2]Department of Microbiology, School of Studies in Microbiology, Jiwaji University, Gwalior, Madhya Pradesh, India. Email: archanaashish19@gmail.com

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ABSTRACT

Plants are not only the source of food, oxygen, and shelter, but the same are also a potential foundation of medicines. Many natural and plant-derived antimicrobial and wound healing compounds have been recognized. In the present review, we have studied the main bioactive components of *Acacia catechu* with their medicinal roles. Most of these bioactive components are secondary metabolites which are produced by plants as side products of certain physiological reactions and are of no use for the plant itself. These components have been reported for their medicinal properties. In this review, we have mentioned some antibacterial, antifungal, and wound healing properties of *A. catechu* with its known bioactive components. The aim of this review article is, to enlist the possible potent bioactive components of the plant, against pathogenic microbes that can replace the use of chemicals and synthetic antibiotics for the treatment of skin infections and other diseases.

Keywords: *Acacia catechu*, Bioactive compounds, Antimicrobial activity, Synthetic antibiotics, Wound healing, Secondary metabolites.

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INTRODUCTION

Over long ago both humans and animal are depend on plants for food and also for their primary health care. In all over the world, more than 30% of the plant species are in use for medicinal purposes [1]. Recent data revealed that more than Rs. 20,00,000 million/annum is spent in the world market for plant-derived drugs. Though India is rich in vegetation and medicinal plants, but the Indian contribution for the same is less than Rs. 20,000 million/year [2,3]. India has great diversity and origin of many crops and medicinal plants. In India, the importance of medicinal plants has already been highlighted by several workers [3-5].

During the searching of available literature on antimicrobial plants and their extracts we have found many treatments based on plant-derived oil, extract, fine powder, etc. In addition to this, the data also revealed that from the 19th sanctuary to 21st sanctuary the use of these natural products is increased to double [4,6]. Many numbers and categories of plant-based antimicrobial and anti-infectious compounds have been recognized. More common of them are essential oils, alkaloids, flavonoids, sesqui-terpene lactones and naphtoquinones, etc [5,7-9]. The same has documented for wound healing activity of different parts of plant extracts with or without their mechanism of action [8,10-14].

In this section we have focused on antimicrobial and wound healing activities of *Acacia catechu* wild bark extracts. *A. catechu* Wild is one of the remarkable medicinal plants having immense medicinal potential in almost all parts of its body [15]. From long it has been widely using in Ayurveda and other medical systems for many diseases, both as an external and oral ingredient [16,17]. *A. catechu* is abundantly spread throughout the greater part of India due to its more adaptability in different atmospheric conditions, though in the desert and most humid areas limited varieties are reported [15-18]. In India, the most common varieties seen are *A. catechu* namely, Catechu, Catechuoides, and Sundra. From which, the *Catechu* variety is most commonly used to obtain Katha [18,19]. Some common names of this plant in different languages are "black catechu" in English, "Kher" in Gujarati, "Khayera" in Bengali, "Katha" in Hindi, "Kachinamara" in Kannada, "Kath" in Kashmiri, "Kharira" in Assamese, "Karingali" in Malayalam, "Kharira in Marathi" "Kaviri" in Urdu, "Chanbe" in Telugu etc [17,19].

Already the different parts of the same has been reported to be effective against skin diseases, melancholia, conjunctivits, diabetes, haemaptysis, hepato-protective activity, catarrah, cough, pruritus, leprosy, body surface infection, leucoderma, colon diseases, helminthiasis, norexia, diarrhea, dysentery, foul ulcers and wound treatment, hemorrhages, fever, anemia, and pharyngodynia [16,18-20]. Because of such vast medicinal values, the same is widely used in various drug formulations too. *A. catechu* also known as Katha in Hindi which is a dispensable ingredient of pan (betel leaf preparation) chewed in India and other countries [19,21].

It is useful pan due to its capability to cure throat infections and dental problems [20]. This plant is also known for its various pharmacological effects like anti-inflammatory, antioxidative, antipyretic, anticancer, anti-ulcer, etc [20-22]. In this review, we have mentioned the anti-microbial and wound healing activities of this plant with special reference to its bark extracts. Here, we have also mentioned the studied bio-active components associated with the above-given activities with their mechanism of action. For basic understanding, a brief classification of plants with its morphology has also been given here.

MORPHOLOGY OF *A. CATECHU* PLANT

A. catechu wild is a medium to the higher-sized deciduous tree. Its stem is usually straight in the beginning and becomes branched after attending a certain height. The stems are usually brown to grayish in color with think bark [17]. This plant has bipinnately compound, small leaves with 2-6 mm length and arrange in pairs of pinnae. These leaves are supported by a glandular rachis in pairs. Inland areas the plant showed cylindrical inflorescence in the winter season with axillary pedunculate spike [17,19,20]. Its flowers are actinomorphic to zygomorphic, 5-10 cm long, sessile, pentamerous, which exhibit creamy whitish to pale yellow color with a 1-1.5 mm long campanulate calyx. The corolla is normally 2.5-3 mm long. Stamens are abundant in number and arrange in the far exerted form from the corolla [22]. These are white to yellowish-white filaments, having bisexual configuration and with single superior carpel; pod is one chambered legume, glabrous oblong, 3-10 seeded, straight, flat and brown with a triangular beak at the apex, shiny, narrowed at the base [21,23-25].

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Happiness Curriculum: Covid-19 and Impacts

Jyoti Agrawal[1], Prabina Yadav[2], Prerana Sikarwar[3], Shweta Sharma[4], Archana Tiwari[5], Abhilasha Savale[6], Bhavana Shakyawar[7]
Assistant Professor, Department of Botany, Government College, Umarban, Dhar, M.P. India[1]
Assistant Professor, Department of History, Government College, Umarban, Dhar, M.P. India[2]
Assistant Professor, Department of Sociology, Government College, Umarban, Dhar, M.P. India[3]
Nirvindhya College, Biaora, Rajgarh (M.P.) India[4]
Assistant Professor, Department of Botany, Government College, Damoh, M.P., India[5]
Department of Library, Government College, Umarban, Dhar, M.P. India[6]
Assistant Professor, Department of Sociology, Government College, Unhel, Ujjain, M.P., India[7]

Abstract: *Happiness is an important aspect to accomplish self pleasure in life. Happiness of children can be determined by some signs like companionship, support and confidence. Childhood experiences can impact on personality and perspective of a person. It is equal responsibility of teachers and parents to get the emotional, psychological and social requirements of the children. Day by day the concept of positive education psychology is becoming more famous. The main focus of positive education is the difference between what people desire for their children and what does school teach. Parent's wants from their children to be alert, optimistic, happy and self satisfied but a school focuses on ranks, schools work and rules-regulation. The prime responsibility of guardian and pedagogue is to guide balance in student's life. This research paper was accomplished based on three concerns. Firstly, childhood is an essential development period that forms the establishment for the emotional security and future learning development of children. Secondly, the occurrence of child and youth behavioural problems is increasing, supposed to be source of unhappiness. Thirdly, studies connected to happiness are early childhood. Therefore, this study wants to investigate the importance of circumstances and parties related with happiness in children. Further we try to understand the important feature of learning and happiness and the role of teachers and parents in children life. Also we examine the approach of Delhi Government to start "Happiness Curriculum" program.*

Keywords: Happiness, Learning, School, Students, Teachers, Positive Education, Covid-19.

I. Introduction

Education is essential for students to promote strengths and give them full protected growth evolution. The main role of concerns for teacher in the schools is to look- behaviour, positive attitude and well being of students. For overall development of children it is important to give them joyful learning[1]. Parents always support their children through financially, emotionally and psychologically to raise their happiness. The duty of parents is to prepare their children to face every kind of situation in life with courage. Parents play very important role in the life of children to determining the learning environment at home. Parents are the one and only person who make choice to decide in which type of school their children will attain the education[2].

According to student "Happiness" defines during a Happiness Class is that the curriculum employs teaches awareness, deep in thought, dependent activities, and expression to provide students with the necessary skills and viewpoint to answer the following questions like: What is the reason behind my happiness? How can I help to make other people happy? Teachers manually used to help and explore pupils about these questions, whose main aim is to understand the pupil's relationship between their thoughts, emotions, their families, their environment, the society at large and themselves. So, according to all this the learning outcomes of the curriculum are based on awareness, focus, critical thinking, reflection, social-emotional skills, and a confident - pleasant personality[3].

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Organotin(IV) derivatives containing heteroditopic pyridyl-quinolin-8-olate ligands: Synthesis and structures

Tushar S. Basu Baul[a,*], Anurag Chaurasiya[a], Banteilang Lyngdoh Nonglait[a], Antonin Lyčka[b], Dieter Schollmeyer[c], Klaus Jurkschat[d,*]

[a] Centre for Advanced Studies in Chemistry, North-Eastern Hill University, NEHU Permanent Campus, Umshing, Shillong 793 022, India
[b] University of Hradec Králové, Faculty of Science, Rokitanského 62, CZ-500 03, Hradec Králové 3, Czech Republic
[c] Johannes Gutenberg-Universität Mainz, Institut für Organische Chemie, Duesbergweg 10-14, 55099, Mainz, Germany
[d] Technische Universität Dortmund, Fakultät für Chemie und Chemische Biologie, D-44221, Dortmund, Germany

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ABSTRACT

Six novel neutral organotin(IV) complexes, *viz.* [*n*-$Bu_2Sn(L^{4\text{-PyAQ}})_2$] **1**, [$Bz_2Sn(L^{4\text{-PyAQ}})_2$] **2**, [$Ph_2Sn(L^{4\text{-PyAQ}})_2$] **3**, [$Ph_2Sn(L^{3\text{-PyAQ}})_2$] **4**, [$Bz_3Sn(L^{4\text{-PyAQ}})$] **5** and [$Ph_3Sn(L^{4\text{-PyAQ}})$] **6** have been synthesized via reactions of 3/4-pyridyl-quinolin-8-ol pro-ligands, with appropriate diorganotin oxide and triorganotin hydroxide precursors, respectively. The compounds **1**-**6** were characterized in solution by means of NMR spectroscopy while the solid-state structures of **1**, **6**, and of the solvates **2**·1.5C_6H_6, **3**·0.25C_6H_6, 2·**4**·C_6H_6, and **5**·0.5H_2O were authenticated by single crystal X-ray diffraction analysis. In the solid-state, the tin centers in **1**-2·**4**·C_6H_6 are hexacoordinated and reveal a distorted *cis*-octahedral environment. In **5**·0.5H_2O and **6**, the tin centers are pentacoordinated and show a coordination environment between trigonal-bipyramidal and square pyramidal.

1. Introduction

Quinolin-8-ol (HL^Q) and its derivatives are well known bidentate chelating pro-ligands. They can selectively bind and precipitate metal ions and were utilized for gravimetric analysis [1,2]. HL^Q has also emerged as a scaffold for the development of new drug candidates. It also includes a very large spectrum of properties such as fungicidal, insecticidal, anti-microbial, anti-oxidant, anti-inflammatory, anti-neurodegenerative and anti-tumor/antineoplastic agents [3–14]. The pro-ligand HL^Q possesses N-containing heterocyclic and aromatic rings, has a planar structure, shows π-conjugation, and a plurality of electron donor sites. Hence, it was widely used for the construction of novel functional metal-organic complexes with desired structures and properties [15–18]. Recent research mainly focused on the application of rare earth metal complexes for fluorescence, magnetism, gas separation and adsorption, catalysis, biomedicine etc. [19–22]. Among these, rare earth complexes of HL^Q with good luminescence properties were used in fluorescent anti-counterfeiting materials, printing inks, as fluorescent probes, and in other fields [23–25]. Another recent modern potential of HL^Q encompasses thin film formation of nano-sized metal quinolin-8-olates [26] and nanobelt structures [27] involving metals of the first transition series.

The HL^Q scaffold has been functionalized by electrophilic aromatic substitution at the 5-position to obtain 5-[(*E*)-2-(aryl)-1-diazenyl]-quinolin-8-ol (HL^{XAQ}). The coordination behavior of such reagents was investigated towards a wide range of metal ions, including main group, transition, and rare earth metal ions to understand the effect of the metals on supramolecular architectures as well as the properties of the final products [28–41]. Recent research efforts have also been focused on new colorimetric sensors [36], porous fumed silica grafted with HL^{XAQ} for the extraction of Cu(II) and Ni(II) at low concentrations [37], nanosized [$Co(L^{XAQ})_2$] thin films [38], dyeing [39], cobalt and zinc complexes, and zinc oxide nanoparticles [40]. Also studied were the photophysical properties of Ir and Rh complexes containing the $[L^Q]^-$ anion [41].

Besides, monoazo-substituted compounds of HL^Q having heterocyclic anilines as diazo-forming moieties have also emerged as a privileged scaffold with high tinctorial strength and brightness properties [42]. Owing to these, amino-substituted thiazole, benzothiazole, isothiazole, thiadiazole, and thiophene, etc. were cou-

* Corresponding authors.
E-mail address: basubaul@nehu.ac.in (T.S. Basu Baul).

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Research Article

SLS-catalyzed Multi-component One-pot Reactions for the Convenient Synthesis of Spiro[indoline-3,4'-pyrano [2,3-c]pyrazole] Derivatives

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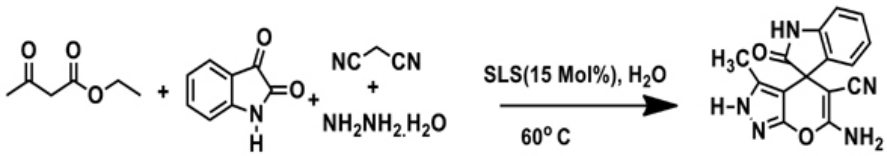

Synthesis of spiro[indoline-3,4'-pyrano [2,3-c]pyrazole] derivative *via* four component reaction of ethyl acetoacetate, malononitrile, isatin and hydrazine hydrate.

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Catalysis

Cu(II) and Co(II) Schiff-Base Complexes Immobilized on Layered Double Hydroxide: Synthesis, Characterizations, DFT Calculations and Catalytic Activity

Jagat Singh Kirar,*[a] Savita Khare,[b] and Neha Tiwari[b]

In this study, we are reporting the synthesis, characterization, theoretical studies, and catalytic activity of Cu(II), and Co(II) Schiff base complexes immobilized on layered double hydroxide abbreviated as LDH-[NAPABA-M] {where M = Cu(II), and Co(II)}. The Schiff base ligand (E)-4-((2-hydroxynaphthalen-1-yl)methyleneamino)benzoic acid have been synthesized from the condensation of 2-hydroxy-1-naphthaldehyde and 4-amino benzoic acid. The complexes were characterized using Inductively coupled plasma-Atomic emission spectrometry (ICP-AES), X-Ray diffraction (XRD), Scanning electron microscopy (SEM), Energy dispersive X-Ray (EDX), Fourier transform infrared (FTIR), Electron paramagnetic resonance (EPR) spectroscopy, Thermogravimetric analysis (TGA) etc. and the geometry of the ligand has been calculated using Density Functional Theory (DFT) calculations at the B3LYP/6-31G level of theory. The catalytic activity of synthesized catalysts was tested for toluene oxidation with *tert*-butyl hydroperoxide under solvent-free conditions. The LDH-[NAPABA-Cu(II)] catalyst was recycled up to seven cycles. Hot filtration experiments demonstrate that the catalyst was heterogeneous in nature and stable.

1. Introduction

Benzaldehyde and benzoic acid are the most versatile and important organic intermediates, which are widely used for the production of dyes, pharmaceuticals, foodstuff, medicine, preservatives, inhibitors, agrochemical, and perfumery in industries.[1–5] Benzaldehyde has mainly produced by hydrolysis of benzylidene chloride in the domestic industry.[6] The generation of hydrochloric acids and acidic solvents makes this process corrosive and environmentally unfriendly.[7] Furthermore, homogeneous catalysts were showing some major drawbacks such as separation from the reaction mixture for reuse, while Heterogeneous catalysts can be easily separated for reuse after the reaction. Therefore, extensive researchers had paid great attention to develop an appropriate heterogeneous catalytic system for the oxidation of toluene.[8–14] Gu et. al.[8] synthesized a series of core-shell Co-MOF-74@Mn–MOF-74 samples with different shell thicknesses by the seed growth method and applied them to the catalytic oxidation of toluene. The conversion of toluene 22.4% and the selectivity of benzaldehyde 98.1% were achieved over Co-MOF-74@Mn–MOF-74-4 after 6 h. G. Song et. al.[9] have reported oxidation of toluene using copper nanoparticles (CuNPs) supported graphene oxide. The 11.5% conversion of toluene with 66.5% selectivity towards benzaldehyde was achieved after 8 h of reaction. Nabab et. al.[10] have reported the synthesis of copper and iron modified MCM-22 with the wet impregnation method. The synthesized material was tested off the solvent-free catalytic oxidation of toluene using hydrogen peroxide as the oxidant at 90 °C. he has also investigated the recycling and possible reaction mechanism.

On the other hand, layered double hydroxides (LDHs), have received immense attention as excellent support for catalysts due to their attractive features, such as expansion properties, anion exchange properties, high surface area, and chemical inertness with different potential applications such as intercalation chemistry,[15–17] a precursor for heterogeneous catalyst,[18–20] adsorbents,[21–23] drug delivery,[24] and anion exchangers.[25,26] The LDH having the general formula, $[M^{II}_{1-x}M^{III}_{x}(OH)_2]^{x+}.(A^{n-}_{x/n}).mH_2O$, where M^{II} and M^{III} respectively represent the metallic divalent (Mg^{2+}, Cu^{2+}, Co^{2+}, Zn^{2+}) and trivalent (Al^{3+}, Fe^{3+}) cations.[27] These trivalent (M^{III}) cations are located octahedrally (OH^-) at the center of the brucite-like layer. A is the interlayer anion such as Cl^-, OH^-, NO_3^-, CO_3^{2-}, SO_4^{2-}.[28,29] The value of x and m depends on the substitution rate between M^{II} and M^{III} cations. In order to use LDH as precursors for the preparation of stably supported catalysts, it is useful to the uniform dispersion of the cations M(II) and M(III) into the layers of LDH and the preferred interlayer anion orientation.[30] We have previously studied heterogeneous oxidation catalysts for aromatic hydrocarbons assisted by transition metal.[31–34] Mn(III) and Fe(III) Schiff base complexes supported on layered double hydroxide have been recently tested for the oxidation of toluene.[35]

[a] Dr. J. S. Kirar
Department of Chemistry
Govt. P. G. College, Guna
in-front of Sanjay Stadium, Guna,
MP 473001, India
E-mail: j.skirar007@gmail.com
[b] Dr. S. Khare, N. Tiwari
School of Chemical Sciences
Devi Ahilya University
Takshashila Campus, Khandwa Road,
Indore, MP 452001, India

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Transition metal Schiff base complexes supported on layered double hydroxide: synthesis, characterization and catalytic activity for the oxidation of toluene

Jagat Singh Kirar[1] · Savita Khare[2] · Neha Tiwari[2]

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Abstract

The catalytic oxidation of toluene was studied over Mn(III) and Fe(III) Schiff base complexes supported layered double hydroxide catalysts. The supported catalysts were synthesized by intercalation method and abbreviated as LDH-[NAPABA-M], {where M = Mn(III) and Fe(III)}. The obtained material was characterized by various physical techniques such as ICP-AES, EDX, XRD, FTIR, SEM, TEM, BET surface area, EPR, and TGA. The liquid-phase catalytic oxidation of toluene was studied using LDH-[NAPABA-M]/TBHP system. A maximum conversion of toluene (55.3%) and selectivity of benzaldehyde (86.1%) was observed with LDH-[NAPABA-Mn(Cl)]/TBHP system, when the reaction is carried out at toluene to *tert*-butylhydroperoxide (TBHP) molar ratio 1:3, temperature 373 K, and catalyst amount, 100 mg. The catalyst, LDH-[NAPABA-Mn(Cl)] gave excellent; conversion of toluene and selectivity of benzaldehyde in comparison to LDH-[NAPABA-Fe(Cl)] catalyst. The catalyst, LDH-[NAPABA-Mn(Cl)] showed good stability and reusability up to five cycles without significant loss of catalytic activity.

✉ Jagat Singh Kirar
j.skirar007@gmail.com

[1] Department of Chemistry, Govt. P. G. College, Guna, Jiwaji University, Gwalior, MP 473001, India

[2] School of Chemical Sciences, Devi Ahilya University, Takshashila Campus, Khandwa Road, Indore, MP 452001, India

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Original Article

On the Hamiltonicity of Closure of Graph

Richa Jain

Department of Mathematics, Govt. P.G. College Guna -473001(M.P.), India

Abstract *- In this paper we discuss about the number of spanning cycles in closure of graph. The closure of graph obtained by adding edges between non-adjacent vertices whose degree sum is at least $|V(G)|$, until th be done. There are countless generalizations of paths and cycles and Hamiltonian properties in graphs, generalizations is the uniquely Hamiltonian graph. A graph is uniquely Hamiltonian if it contains exactly one We proved the results about the Hamiltonicity, uniquely Hamiltonicity of closure of graph.*

Keywords *- Line graph, length of path, spanning cycle, spanning path, etc.*

I. INTRODUCTION

Unless otherwise referred, throughout the paper by a graph we always mean a simple finite undirected connec vertex set $V(G)$ and edge set $E(G)$. In general, we follow the most common graph-theoretical terminology path and a cycle in a graph G that contains every vertex of graph G is called spanning path and spanning cycle Hamiltonian graph if it contains spanning cycle and a graph is traceable if it contains spanning path. The clos denoted by $Cl(G)$, is the graph obtained by adding edges between non-adjacent vertices whose degree sum is until this can no longer be done. For two vertices u and v, let $d(u,v)$ be the length of a minimum path betwe v in G, or equivalently the distance between u and v. The minimum degree of a graph G is denoted by δ survey on the Hamiltonian problem see Gould[8].

II. RESULTS AND DISCUSSION

Dirac[6] obtained a nontrivial sufficient condition for a graph to be Hamiltonian, which was most likely the firs the area.

Theorem 2.1. Dirac[6]. If G is a graph of order $n \geq 3$ with minimum degree $\delta(G) \geq n/2$, then G is Hamilt

Ore[9] elaborate the Dirac's theorem.

Theorem 2.2. Ore[9]. If G is a graph of order $n \geq 3$ and $d(x) + d(y) \geq n$ for each pair of nonadjacen $V(G)$, then G is Hamiltonian.

Benhocine and Wojda [3] gave the following result

Theorem 2.3. Benhocine and Wojda[3]. If G is a 2 −connected graph of order $n \geq 3$ with independence $n/2$, and $max\{d(x), d(y)\} \geq (n-1)/2$ for each pair of vertices x, y with distance 2, then either G is Ha G_n or $G = H_9$ where G_n is a class of well characterized graphs and H_9 is a specific graph of order 9.

Chao, Song and Zhang[4] drop the independence restriction as stated in above theorem and assu relaxed Fan type condition to give a Hamiltonian characterization,

Theorem 2.4. Chao, Song and Zhang[4]. If G is a 2 −connected graph of order $n \geq 3$, and $max\{d(x), d($ for each pair of vertices x, y with distance 2, then either G is Hamiltonian or $G \in G_n$ or $G \in J_n$ or $G = H_9$, wh two classes of well characterized graphs and H_9 is the graph prescribed in above theorem.

Faudree, Gould, Lesniak and Lindquester[7] gave the sufficient conditions for Hamiltonicity prop with bounded independence number and the generalized degree of vertex,

Signature Not Verified
Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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A study of SIQR model with Holling type–II incidence rate

Shivram Sharma[1] and Praveen Kumar Sharma[2*]

Abstract
In this study, we propose an SIQR epidemic model with a Holling type-II incidence rate. In this model, the total population N is divided into five compartments; namely susceptible individual class (S), infective individual class (I), quarantine from susceptible individual class (Q_1), quarantine from infective individual class (Q_2), and recovered individual class (R). The basic reproduction number ($\Re_0$) of the model is found by the next generation method and then disease-free (DF) and endemic equilibrium points of the system are found and their existence conditions are presented. This study concludes that if the basic reproduction number $\Re_0$ is less than one, the disease-free equilibrium is globally asymptotically stable and if the basic reproduction number $\Re_0$ is greater than one, then the endemic equilibrium exists and globally. In this study, we also discuss the behavior of the disease-free equilibrium points by using manifold theory when the basic reproduction number $\Re_0$ is equal to one. This study is very helpful in those pandemic diseases wherein the quarantine process of an infected individual is one of the most effective solutions to get recover from the disease and also to control the spreading of disease from an infected individual to uninfected individuals. The numerical simulation is given, and to analyze the found results, at the last conclusion is also given.

Keywords
SIQR epidemic model, Holling type-II incidence rate, basic reproductive number, Routh-Herwitz criterion, second additive compound matrix, Lyapunov function, Stability.

AMS Subject Classification
34D23, 93A30, 93D20.

[1] *Department of Mathematics, Government P.G. College, Guna-473001, India.*
[2] *Department of Mathematics, SVIS, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore-453111, India.*
***Corresponding author:** [1] shivramsharmajnu85@gmail.com; [2]praveensharma@svvv.edu.in
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Contents

1. Introduction

Looking at the present situation, spreading and controlling infectious diseases is very important for the interest of society. There is a huge role of Mathematical models for making policies, health-economy policy, emergency planning, risk assessment, control program evaluation, and for optimizing various detection. Many authors [3–5, 7, 10] considered the various incidence rates in their literature, and the reproduction numbers and subthreshold endemic equilibrium for compartmental models of disease transmission are discussed by Van den Driessche and Watmough [8].

Treatment is a key to controlling the spread of diseases such as measles and an epidemic model with non-monotonic incidence rate under treatment is considered by Kar and Batabyal [4]. Wang and Ruan [9] discussed on the piecewise treatment function in their research work

$$T(I) = \begin{cases} r & I > 0, \\ 0 & I = 0. \end{cases}$$

where r is a constant removal rate of the infectives

2. Preliminaries

Definition 2.1. Susceptible Individuals (S(t)). *Susceptible*

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Common Fixed Point Theorems for Six Self Maps in FM-Spaces Using Common Limit in Range Concerning Two Pairs of Products of Two Different Self-maps

Praveen Kumar Sharma[1]; Shivram Sharma[2]
[1]Department of Mathematics, SVIS Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, MP, India.
[1]praveen_jan1980@rediffmail.com; praveensharma@svvv.edu.in
[2]Department of Mathematics, Govt. P.G. College, Guna, MP, India.
[2]shivramsharmajnu85@gmail.com

Abstract
In this article, we do a study of common fixed point theorems for six self-maps in FM-Spaces using common limit in range property concerning two pairs of products of two different self-maps. We use the properties (CLRTH) and (CLRSR) along with contractive type implicit relations to prove our results. In support of our result, an example has been provided. Our findings are like those of Kumar and Chouhan [12]. Kumar and Chauhan demonstrated their primary result in [12] by improving and generalizing Aalam, Kumar, and Pants' [1] results. In past, many authors have done study of common fixed point using (E-A) property (like Aalam et. al. [1] proved results using this property), and then these results were improved and generalized by using common (E-A) property as this property is superior to (E-A) property, as the closeness of subspace is required to prove a required result on common fixed point by using these properties, which is a drawback. We improve and generalize all results on these properties using common limit in range property. The goal of this note is to refine and generalize Kumar and Chauhan's [12] results on a common fixed point, as well as some earlier comparable results.

Key-words: Fuzzy Metric Spaces (FM-spaces), Common Fixed Point (CFP), Weak Compatible Maps (WCM), Implicit Relations, CLR Property.
MSC: 54H25, 47H10.

1. Introduction

In 1965, Zadeh [23] proposed fuzzy sets, and Kramosil and Michalek [10] proposed FM-spaces in 1975. The contraction principle was then proven in the context of FM-spaces by Grabiec [6]. As a result, George and Veeramani [5] used continuous t-norm to revise the design of FM-spaces.

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ON COMMON α-FIXED POINT THEOREMS

SHIVRAM SHARMA[1], PRAVEEN KUMAR SHARMA[2,*]

[1]Department of Mathematics, Govt. P.G. College, Guna-473001, MP, India

[2]Department of Mathematics, SVIS, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore-453111, MP, India

Abstract: In this research article, we give a new concept of common α-fixed point, α-compatible mappings, weakly α-compatible mappings, α-commuting mappings, weakly α-commuting mappings, and α-continuous mappings and then prove some common α-fixed point theorems for these mappings under new contractive conditions. Further, we generalize the results of Singh and Chouhan [17] for common α-fixed points and give some results for common α-fixed points under this newly introduced concept along with α- contractive conditions. Many examples have also been given and proved in support of our concept and results.

Keywords: common fixed point; common α-fixed point; weakly α-compatible maps; α-continuous mappings.

2010 AMS Subject Classification: 47H10.

1. INTRODUCTION

The fixed point theory is an important area in the fast-growing fields of non-linear analysis and non-linear operators. Using fixed point techniques, it is possible to analyze several concrete problems from science and engineering, where one is concerned with a system of

*Corresponding author
E-mail address: praveen_jan1980@rediffmail.com
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INDIAN JOURNAL OF SCIENCE AND TECHNOLOGY

RESEARCH ARTICLE

The basic reproduction number and herd immunity for COVID-19 in India

Mohit Soni[1]*, Rajesh Kumar Sharma[1], Shivram Sharma[2]

1 Department of Mathematics, Government Holkar Science College, Indore, M P, India
2 Government P. G. College, Guna, M P, India

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* **Corresponding author.**
sonimohit895@gmail.com

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Abstract

Objectives: To estimate the basic reproduction number and herd immunity in India relative to the viral disease COVID-19. **Methods:** In this study, we analyzed literature from March-2020 to January-2021, which were related to the basic reproduction number and herd immunity of COVID-19 in India. Also, we found the mean value of the basic reproduction number and herd immunity as a result. **Findings:** According to our study, the basic reproduction number and the percentage of the herd immunity ranged from 1.2561 to 3 and from 20% to 66%, respectively. The mean value of the basic reproduction number and the percentage of the herd immunity is 2.0546 and 51% respectively. **Novelty:** To the best of our knowledge, no such studies have been conducted in India.

Keywords: Basic reproduction number; Herd immunity; COVID19; Vaccination; Regression; etc

1 Introduction

COVID-19 is a viral disease that has been rampant around the world since its inception. India is also not untouched by COVID-19. Even though the vaccine was produced, the cases of infection are steadily increasing. The higher population density, carelessness of people, lack of medical resources, lack of testing and tracing, are some responsible factors for the coronavirus explosion.

The second wave of the epidemic COVID-19 has caused havoc in India. The first peak of COVID-19 cases was on 16 September 2020. After that, lots of fluctuations came, but from 11 February 2021 (9353 cases), the confirmed cases began to increase. After the 1st confirmed case on 30 January 2020, on 4 April 2021, it crossed the 1 lac mark.[(1)]. Now, on the 13th April 2021, in the number of total confirmed cases, India holds the 1st place in the Asia and the 2nd place in the world[(2)]. The size of the epidemic and the rising statistics of deaths once again forced many states in India to take rigorous and drastic decisions.

Kermack and Mckendrick[(3–5)] discovered initial SIR (Susceptible, infected, recovered) compartmental model. After that many researchers followed them and made some extended/modified compartmental models such as SIRS (Susceptible, infected, recovered, susceptible), SEIR (Susceptible, exposed, infected, recovered), SEIRS (Susceptible, exposed, infected, recovered, susceptible) SIQR (Susceptible, infected, quarantined, recovered), SIRD (Susceptible, infected, recovered, deaths), ESIR (Extended susceptible, infected, recovered), SAIU (susceptible, asymptomatic, reported symptomatic

INDIAN JOURNAL OF SCIENCE AND TECHNOLOGY

RESEARCH ARTICLE

Uncertainty in the Spread of COVID-19: An Analysis in the Context of India

Mohit Soni[1]*, Rajesh Kumar Sharma[1], Shivram Sharma[2]

1 Department of Mathematics, Government Holkar Science College, Indore, M. P, India
2 Government P. G. College, Guna, M. P, India

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***Corresponding author.**
sonimohit895@gmail.com

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Abstract

Objectives: Prevention measures play an important role in controlling infectious diseases. We eagerly want to know how to observe the impact of prevention measures, just by looking at the pandemic curve. To explain this impact, we observe that the graphical representation of an infectious disease on a logarithmic scale is more suitable compared to a linear scale. To achieve our result, we also verified that the curve of the cumulative confirmed cases of pandemic COVID-19 follows an almost exponential growth. Furthermore, we tested the flattening of the logarithmic curve, which indicates the effect of prevention measures are working well. **Methods:** We use the numerical and statistical method introduced by Baruh. We divided the cumulative confirmed COVID-19 data of 240 days into 12 equal parts (20 days per part) after the starting of the vaccination programme in India. We apply the exponential growth model to check the exponential growth of cumulative confirmed cases of COVID-19 on a linear scale and verify it by the comparison of the actual and the predicted values obtained by exponential model. Also, we compute the first difference of logarithmic cumulative confirmed cases and find its strong linear relationship with time 't'. Furthermore, we apply the student t-test to confirm the linear relationship between them. We find the number of days require to flatten the logarithmic curve. **Findings:** Our results show that the uncertainty of the cumulative confirmed cases of COVID-19 spread pattern may continue in the upcoming days. The logarithmic curve would be flattened within 127 days from 23rd August 2021. The logarithmic scale explains the impact of the prevention measures better than the linear scale. Because the flattening of the logarithmic curve appears earlier than the flattening of the linear scale. **Novelty:** In the context of India, our study exhibits the importance of graphic presentation of COVID-19 data and compare between the logarithmic scales to the linear scale. As per our knowledge, this kind of study is new in the context of India.

Keywords: COVID-19; Exponential growth model; Linear regression; Student t-test; Cumulative confirmed cases; Logarithmic scale

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Effective suppression of nanotextured black silicon surface recombination channels by aluminum oxide: comparison from sputtered and ALD grown films

Piyush K Parashar[1], S A Kinnunen[2], T Sajavaara[2], J Jussi Toppari[2,3] and Vamsi K Komarala[1,*]

[1] Department of Energy Science and Engineering, Indian Institute of Technology Delhi, New Delhi 110016, India
[2] Department of Physics, University of Jyväskylä, PO Box 35, Jyväskylä, 40014, Finland
[3] Department of Physics and Nanoscience Center, University of Jyväskylä, PO Box 35, Jyväskylä, 40014, Finland

E-mail: vamsi@iitd.ac.in

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Abstract

Effective surface passivation of nano-textured silicon (NT-Si) using sputtered aluminum oxide (AlO_x) films is demonstrated and compared with the atomic layer deposition (ALD) grown AlO_x films. Silver-assisted wet chemical etching is used to obtain sub-wavelength size features of black NT-Si, and then the NT-Si surface is chemically polished to minimize the surface defect states that act as trap centres for charge carriers. The NT-Si surface passivation is characterized by the density of interface trap states (D_{it}) and the fixed charge density (Q_f), which also correlate with the surface recombination rate (S_{eff}). For the sputtered AlO_x films, the estimated D_{it} and Q_f are $\sim 4 \times 10^{11}$ eV^{-1} cm^{-2} and $\sim 7 \times 10^{12}$ cm^{-2}, respectively, yielding the S_{eff} of ~ 34 cm s^{-1}. Whereas, for the ALD AlO_x films the estimated D_{it}, Q_f, and S_{eff} are $\sim 1.6 \times 10^{11}$ eV^{-1} cm^{-2}, $\sim 7.4 \times 10^{12}$ cm^{-2}, and ~ 20 cm s^{-1}, respectively. The chemical and field-effect passivation are evident for the ALD AlO_x films with the reduced S_{eff}. However, the sputtered AlO_x films have shown only an indication of field-effect passivation with a small variation in the Q_f. Still, the observed larger D_{it} is due to the sputtering damage on the NT-Si surface compared to ALD AlO_x films.

Supplementary material for this article is available online

Keywords: nano-textured silicon, surface defect states, surface passivation, aluminum oxide, sputtering, atomic layer deposition

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

* Author to whom any correspondence should be addressed.

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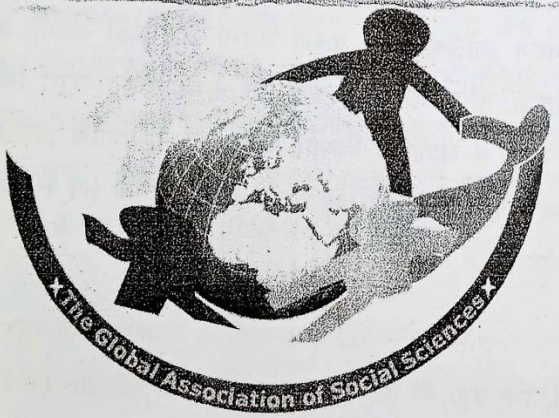
2021



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Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

The Int. Res. J. Soc. Sc. Hum. Vol. 10 (9) Sep (2021) ISSN 2320 - 4702

अफगानिस्तान संकट और भारत की चुनौतियाँ

कुमार, ललित
राजनीति विज्ञान विभाग, शासकीय महाविद्यालय, मोहनगढ़, जिला टीकमगढ़,
मध्यप्रदेश, भारत

सारांश

अफगानिस्तान पर तालिबान के कब्जे ने न सिर्फ भारत अपितु विश्व समुदाय की चिन्ताएँ बढ़ा दी है। तालिबान एक आतंकी संगठन है जिसका पालन–पोषण पाकिस्तान की तरफ से किया जा रहा है। पाकिस्तान की मंशा भारत में सदैव अशांति फैलाने और सीमा पार से आतंकियों की घुसपैठ कराने की रहती है। इन बदली परिस्थितियों में भारत के समक्ष कई चुनौतियाँ बढ़ गई है। अफगानिस्तान की जेलों में बंद आतंकवादियों को तालिबान ने छोड़ दिया है और उन्हें पाकिस्तान में शरण मिल चुकी है। यह आतंकी भारत में घुसने की निरन्तर कोशिश करेंगे। भारत ने अफगानिस्तान के बुनियादी ढाँचे में विकास करने के लिए कई परियोजनाएँ संचालित कर रखी है, जिसमें कई भारतीय नागरिक कार्य कर रहे हैं। इनके अतिरिक्त अफगानिस्तान में हिन्दू एवं सिख अल्पसंख्यकों को भी वहाँ से सुरक्षित भारत लाने की चुनौती बनी हुई है।

शब्दकुंजी *: अफगानिस्तान संकट और भारत।*

प्रस्तावना

अफगानिस्तान पर आतंकी संगठन तालिबान का कब्जा करना और वहाँ अपनी अंतरिम सरकार बनाना जिसमें कई आतंकी सम्मिलित हैं, निश्चित ही भारत सहित संपूर्ण विश्व के समक्ष चिन्ता की बात है। इस संबंध में सर्वाधिक चिन्ताएँ भारत की है, क्योंकि तालिबानियों को पाकिस्तान अपना पूर्ण समर्थन दे रहा है, जिसका प्रयोग वह निश्चित रूप से भारत के विरूद्ध आतंकी कार्यवाही में करेगा।

उद्देश्य

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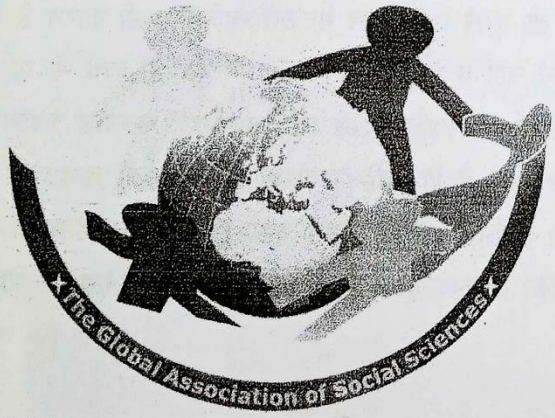
2021



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24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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जनजातीय समाज में शिक्षा के प्रति उत्पन्न जागरूकता का अध्ययन (धार जिले के विशेष संदर्भ में)

कुमार, ललित
राजनीति विज्ञान विभाग, शासकीय महाविद्यालय, मोहनगढ़, जिला टीकमगढ़,
मध्यप्रदेश, भारत

सारांश

जनजातियों की अधिकांश समस्याओं का मुख्य आधार उनका अशिक्षित होना है। परिवार की आर्थिक स्थिति कमजोर होने के कारण बच्चे भी माता–पिता के काम में हाथ बँटाते हैं, यही कारण है कि वे विद्यालय जाकर शिक्षा प्राप्त नहीं कर पाते हैं। अशिक्षित होने के कारण इन्हें न तो अच्छा रोजगार मिलता है और न ही आधुनिक सुविधाओं का लाभ उठा पाते हैं। अपने परिवार की आर्थिक आवश्यकताओं की पूर्ति करने के लिए यह बच्चे सरकार की विभिन्न शैक्षणिक योजनाओं का लाभ नहीं ले पाते हैं।

शब्दकुंजी *: जनजातीय समाज, शिक्षा, और जागरूकता।*

प्रस्तावना

जनजातियों की अशिक्षा की समस्याओं को दूर करने के लिए केन्द्र तथा विभिन्न राज्य सरकारों द्वारा विभिन्न प्रकार की शैक्षणिक योजनाओं का संचालन किया जा रहा है। जनजातीय परिवारों की मुख्य समस्या अपने परिवार का भरणपोषण करना है, इस कारण वे रोजगार की तलाश में एक स्थान से दूसरे स्थानों पर भटकते रहते हैं, यही कारण है कि वे बच्चों की शिक्षा पर अधिक ध्यान नहीं दे पाते हैं। अधिकांश परिवारों में बच्चे भी या तो माता–पिता के कामों में हाथ बँटाते हैं या फिर अपने से छोटे बच्चों की देखभाल करते हैं। जनजातीय परिवारों की सोच यही रहती है कि यदि बच्चों को विद्यालय में पढ़ने के लिए भेज देंगे तो परिवार के छोटे–मोटे कार्य, पशुओं को चराना तथा परिवार के छोटे बच्चों की देखभाल कैसे हो पाएगी। हालाँकि सरकार द्वारा बच्चों को छात्रवृत्ति, निःशुल्क शिक्षा,

Naveen Shodh Sansar (An International Refereed / Peer Review Research Journal)
RNI No. - MPHIN/2013/60638, ISSN 2320-8767, E- ISSN 2394-3793, Cosmos Impact Factor - 6.780
July to September 2021, E-Journal, Vol. I, Issue XXXV

Influence of Types of Hospital, Length of Service and their Interaction on Personality Factor C (Affected by Feeling Vs Emotionally Stable) of Nurses

Dr. Anjali Pandey*

*Assistant Professor (Psychology) Govt. E.V.P.G. College, Korba (C.G.) INDIA

Abstract - The aim of the present study was to find out the impact of types of hospital on Personality Factor C (Affected By Feeling Vs Emotionally Stable) of nurses. For this a sample of 300 Nurses with of 0-5 Years, 5 -10Years and more than 10 Years of Length of Service of Government and Private Hospital was randomly selected. Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adoptation) by S.D Kapoor was used. It was found that there was impact of types of hospital on Personality Factor C (Affected by Feeling Vs Emotionally Stable). Those working in Government hospital were found to be significantly more emotionally stable as compared to than those working in Private hospital.

Keywords- Nurses, Types of Hospital, Length Of Service , Personality Factor.

Introduction - The purpose of the present investigation is to determine if there is relationship between personality Factor C (Affected by Feeling Vs Emotionally Stable) and length of service in Government and Private hospital nurses. A second purpose is to see what types of relationships (if any) is there, and to find out any differences between government and private hospital nurses. As found in previous researches, there are relationships between personality Factor C (Affected by Feeling Vs Emotionally Stable) and Length of service in Government and Private nurses. This research will add to the existing literature.

In the medical profession for taking proper care of the patients the Emotionally Stable of nursing staff has a big role to play. An Emotionally Stable nurse would be able to take care of any difficult situation in a much better way compare to the one who is Affected by Feeling. This makes Emotionally Stability A very significant factor in the personality of nurses. This study was conducted to find out correlation of type of hospital (Government and Private) and Length of service and there interaction on personality Factor C (Affected by Feeling Vs Emotionally Stable) of nurses.

Objective- To study the influence of Types of Hospital, Length of Service and their interaction on Personality Factor C (Affected by Feeling Vs Emotionally Stable)

Hypothesis- There is no significant influence of Types of Hospital, Length of Service and their interaction on Personality Factor **C** (Affected by Feeling Vs Emotionally Stable).

Sample- A sample of 150 Nurses each was selected randomly from Government and Private Hospitals. They were stratified on the basis of 0-5year, 5-10 year, and above 10 year of Length of Service

TEST- Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adaptation) by S.D Kapoor

Method- Through random sampling four hospitals were selected (two government and two private hospitals). The nurses of the selected hospitals were administered upon a structured Sixteen Personality Factor questionnaire by S.D Kapoor by the researcher. The scoring was done and the score were analysed.

Analysis And Discussion Of Results - The objective was to study the influence of Types of Hospital, Length of Service and their interaction on **Personality Factor C** (Affected by Feeling Vs Emotionally Stable) of Nurses. There were two Types of Hospital, namely, Government and Private. 0-5year, 5-10 year, and above 10 year working in nursing were the three levels of Length of Service of Nurses. Thus the data were analyzed with the help of 2X3 Factorial Design ANOVA

Table 1: Types of Hospital wise N, Mean, SD of **Personality Factor C** (Affected by Feeling Vs Emotionally Stable) of Nurses

Types of Hospital	N	Mean	SD
Government Hospital	150	4.71	1.85
Private Hospital	150	4.32	1.60

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Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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म.प्र.के अध्ययन, अशासकीय विद्यालयों में कार्यरत महिला शिक्षकों के व्यावसायिक तनाव का अध्ययन

हरिओम खटीक
शासकीय स्नातकोत्तर महाविद्यालय, गुना

डॉ.एन.के.नगाईच
विभागाध्यक्ष, मनोविज्ञान,
शा.के.आर.जी. महाविद्यालय, ग्वालियर

सारांश (Abstract)

पिछले एक दशक से सामाजिक पर्यावरण में बड़ी तीव्रता से परिवर्तन आये है जिसने व्यक्ति से जुड़े हर क्षेत्र में आधारित मूलभूत प्रभाव पड़ा है उसी का एक सामान्य प्रभाव तनाव के स्वभाविक क्षेत्र में स्पष्ट दिखता है पहले जो घटनायें, परिस्थिति सामान्य समझकर स्वीकार कर ली जाती थी या जिनमें द्वन्द होने के बावजूद भी तनाव के समायोजित स्तर को पार नहीं कर पाती थी, अब उनमें भी तनाव स्पष्ट दिखता है। व्यक्ति का एक महत्वपूर्ण भाग उसकी वृत्ति से जुड़ा है, शिक्षण कार्य भी व्यक्तियों द्वारा चुनी गयी वृत्ति है। पहले से अधिक प्रतिस्पर्धी, भागदौड़, परिश्रम, अधिक खर्च, कार्य दबाव आदि कारणों से शिक्षकों में व्यावसायिक तनाव के स्तर में भी निरंतर वृद्धि होती लगी है, शिक्षा, आधुनिक शैली, सामाजिक परिवर्तन, धन का महत्व आदि बढ़ने के एक प्रभाव से महिलाओं में आर्थिक सामाजिक गतिविधियों में सक्रियता बढ़ी है। व्यावसायिक तनाव का प्रभाव पुरुषों की भाँति महिलाओं में पड़ता है। अध्ययन में म.प्र. के अशासकीय विद्यालयों में शैक्षणिक कार्य में पहले से लगी महिलाओं (वरिष्ठ शिक्षकों एवं पिछले कुछ वर्षों से संलग्न कनिष्ठ शिक्षकों के व्यावसायिक तनाव में अंतर पाया गया इस अंतर में वरिष्ठ महिला शिक्षकों का तनाव अधिक पाया गया एवं दोनों समूहों सम्भागवार में अंतर (०.०१ स्तर) पर पाया गया।

व्यावसायिक तनाव में यह अंतर (वरिष्ठ महिलाओं में) का कारण ज्यादा जिम्मेदारी (नयी तकनीक की कम जानकारी) पाठ्यक्रम परिवर्तन आदि होती है जबकि कनिष्ठ महिला शिक्षकों में तनाव की कम मात्रा का कारण प्रारंभ में शिक्षण कार्य अतिरिक्त योग्यता बढ़ाने के रूप में, अन्य अवसरों के उपलब्ध होने तथा विद्यालय में कम जिम्मेदारी होने के कारणों से हो सकती है।

Key words — समायोजन स्तर, कार्य दबाव, आधुनिक शैली, वृत्ति

परिचय (Introduction) —

'तनाव' सामान्य रूप से प्रयुक्त होने वाला सामान्य शब्द बन गया है इसकी कम मात्रा (स्वीकारात्मक मात्रा) व्यक्ति को सक्रिय, संतुलित बनाये रखती है जो उसके वातावरण के साथ सामंजस्य स्थापित करने में सहायक होती है परंतु इसकी अपेक्षाकृत अधिक मात्रा समायोजन को ही नहीं बुरे तरीके से प्रभावित करती है बल्कि व्यक्ति के मानसिक स्वास्थ्य को भी विकृत कर देती है इसके साथ–साथ यह कार्डियक ७६ प्रतिशत रोगों का कारण भी है। (Klecolt; glaser 1992)

व्यवसाय–पेशा आदि से संबंधित तनाव व्यावसायिक तनाव कहलाता है जो कि वयस्क मनुष्य का बहुत महत्वपूर्ण समय इसमें व्यतित होता है जिसमें वह आर्थिक गतिविधियों के साथ मानसिक–सामाजिक समायोजन बनाने का प्रयास करता है व्यावसायिक तनाव, व्यवसाय (व्यवसाय, पेशा एवं नौकरी आदि) में निहित तनाव होता है जो व्यक्ति के व्यक्तिगत कारकों एवं कार्य वातावरण के कारकों से उत्पन्न होता है।

साधारण स्तर के व्यावसायिक तनाव आर्थिक गतिविधियों की निरंतरता के साथ–साथ मनो–सामाजिक स्थिरता एवं समायोजन प्रदान करता है तो इसी को बड़ी मात्रा व्यवसाय में असफलता–हानि के साथ–साथ मनो–शारीरिक विकृति भी उत्पन्न करता है।

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शासकीय एवं अशासकीय विद्यालय के वरिष्ठ पुरुष शिक्षको के व्यावसायिक तनाव का तुलनात्मक अध्ययन

1.हरिओम खटिक, सहायक प्राध्यापक
शा.स्नातकोत्तर महाविद्यालय,गुना
2.डॉ.एन.के.नगाईच,प्राध्यापक
शा.क.रा.क.महाविद्यालय,ग्वालियर

सारांश (Abstract)

तनाव हम सब के जीवन में महत्वपूर्ण स्थान रखता है, हम अक्सर तनाव के शिकार होते रहते है, जो कि बहुआयामी प्रक्रिया है। यह नकारात्मक घटनाओं के साथ-साथ सकारात्मक घटनाओं से भी होता है जिसे यूकारात्मक तनाव (Eustress) कहते हैं। तनाव का असर व्यक्ति के व्यावसाय पर और व्यक्ति के व्यावसाय से संबंधित कारकों पर पड़ता है। तनाव का एक सामान्य स्तर व्यक्ति की सक्रियता के लिए आवश्यक है, परंतु इसका स्तर बढ़ने से विभिन्न प्रकार की व्यवहारगत एवं स्वास्थ्यगत समस्याएँ उत्पन्न होती है।

व्यावसाय से संबंधित तनाव ही व्यावसायिक तनाव है। अध्ययन में शासकीय एवं अशासकीय विद्यालयों के वरिष्ठ पुरुष शिक्षकों के व्यावसायिक तनाव की तुलना की गई है जिसमें 50-50 शिक्षक दोनों प्रकार के विद्यालयों से उद्देश्यात्मक प्रतिदर्श चयन विधि द्वारा लिये गये। तनाव स्तर मापन हेतु OSI प्रपत्र का उपयोग किया गया जिसके परिणाम में शासकीय विद्यालय के वरिष्ठ पुरुष शिक्षकों का व्यावसायिक तनाव औसत निम्न स्तर एवं अशासकीय विद्यालय के वरिष्ठ पुरुष शिक्षकों का व्यावसायिक तनाव औसत सामान्य स्तर का प्राप्त हुआ, परंतु मध्यमान के मध्य अंतर सार्थक रूप से नही पाया गया, जिसके कारण आंतरिक एवं वातावरणीय कारकों से है, आंतरिक कारक अंतर्गत रूचि, लगन, मनोवृत्ति, शारीरिक स्वास्थ्य आदि इसी प्रकार वातावरणीय कारक अंतर्गत कार्य का दबाव, भूमिका संबंधी, अन्य कर्मचारी से संबंध, वेतन, कार्य के प्रकार, कार्य की अवधि, कार्य में परिवर्तन आदि प्रमुख हैं जो दोनों समूह के शिक्षकों द्वारा महसूस की जाती है।

Keyword – Eustress, व्यावसायिक तनाव, OSI, तनाव के आंतरिक कारक और वातावरणीय कारक

परिचय (Introduction)

व्यावसायिक तनाव

तनाव हम सब के जीवन में महत्वपूर्ण स्थान रखता है, हम सब तनाव के शिकार होते रहते है, यह कभी साधारण मात्रा में उभर कर हमारे जीवन की घटनाओं को प्रभावित करता है और कभी गम्भीर रूप में उथल पुथल मचा देता है, हमारे मानसिक सन्तुलन में आघात लाता है जिससे हमारी जीवन शैली प्रभावित होती है। जब यह सन्तुलन की मात्रा में होता है तब यह हमारे व्यक्तित्व विकास में लाभप्रद होता है, किन्तु इसकी अनुकूलतम मात्रा जो विभिन्न व्यक्ति में भिन्न-भिन्न होती है बढ़ जाती है तो विभिन्न समस्यायें (जैसे - स्वास्थ्य, समायोजन, अशांति आदि) पैदा करता है, आधुनिक शोधो से पता चला है कि करीब 75 प्रतिशत रोगो का कारण तनाव ही है, जिसमें हृदय रोग, कैंसर जैसे जान लेवा रोग शामिल है (Kiecolt, glaser and glares,1992)

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ANTIOXIDANT ACTIVITY OF BIOACTIVE FLAVONOID: QUERCETIN

Narendra Namdev[1], Gayatri Rai[2] and Payal Mahobiya[3]*

[1,2]Department of Zoology, School of Biological Sciences, Dr. Harisingh Gour Vishwavidhyalaya, Sagar 470001 India.
[3]*Assistant Professor, Department of Zoology, School of Biological Sciences, Dr. Harisingh Gour Vishwavidhyalaya, Sagar 470001 India.

***Corresponding Author: Dr. Payal Mahobiya**
Assistant Professor, Department of Zoology, School of Biological Sciences, Dr. Harisingh Gour Vishwavidhyalaya, Sagar 470001 India.

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ABSTRACT
Toxicant exposure and free radical generation are closely associated with number of complications due to oxidative stress. Greater free radical generation and reduced antioxidant leads to diseased condition. Endogenous antioxidant prevents free radical generated oxidative stress but fails in case greater free radical generation. In such cases, phytoconstituents including flavonoids are needed. Quercetin and other flavonoid exhibit protective potential against toxicants inducing reproductive and endocrine toxicities. The summarized data of recent investigations which emphasized upon reproductive and endocrine protective efficacy of quercetin against their abnormalities. Changes in serum hormones, biochemical reactions, histopathological structures, behavioral changes etc. are occurred by toxicants and these are neutralized with the help of quercetin supplementation. Among flavonoids, quercetin has medicinal importance and potential antioxidant properties by affecting the activity and level of generated free radicals. The present review article summarized the data obtained from PubMed, Google Scholar, Scopus which highlighted the antioxidant properties of bioactive flavonoids quercetin and its mechanism of action against free radicals and oxidative stress. The data of previous study also supporting the different kinds of toxicants inducing complications by free radical generation.

KEYWORDS: Quercetin, Oxidative stress, ROS, Endocrine system, Reproductive system.

INTRODUCTION

The production of reactive oxygen species (ROS) is because of normal cellular metabolism. At low to moderate concentration of free radicals they do not affect physiological processes, but at high concentrations, they produced adverse modifications in biological components such as lipids, proteins, and DNA.[1] The normal cellular metabolism produces free radicals having one or more unpaired electrons in their outermost shell and thus giving the reactivity to the molecule. Superoxide anion (O_2^-), hydroxyl radical (^oOH), and hydrogen peroxide (H_2O_2) are three major ROS that have physiological significance and these all are endogenous source of oxidative stress. Other than that, the exogenous source of free radicals are cigarette smoking producing superoxide and nitric oxide[2], ozone exposure due to ozone layer depletion causing lipid peroxidation affecting pulmonary functions[3], hyperoxia producing reactive oxygen and nitrogenous species[4], in the presence of O_2 ionizing radiations like X-rays convert hydroxyl and superoxide radicals into hydrogen peroxides, which reacts with redox active metals like Fe and Cu, which induces oxidative stress[5], other than that heavy metals and chemical fertilizers are also capable to generate free radicals and oxidative stress.

Under normal condition the generated free radicals are neutralized by the antioxidant system of the body, but under stress condition antioxidant system fails to neutralize then exogenous antioxidants are required. The total antioxidant capacity of body comprises of enzymatic and non-enzymatic antioxidants. The enzymatic scavengers of antioxidant defense are superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GTPx), glutathione peroxidase (GST) etc. and vitamin A, vitamin E, glutathione (GSH), and carotenoids like β-carotene are some non-enzymatic scavengers of antioxidant defense system. The accumulation of ROS results in oxidative stress and antioxidant defense system counteracts and restores the redox balance by either activating or inhibiting the genes encoding defensive enzymes, transcription factors, and structural proteins.[6]

Other than the endogenous source of antioxidants, exogenous sources are also required in case of oxidative stress. Many phytoconstituents are acts as antioxidants and develop the great interest for researchers.[7] Among the various classes of phytochemicals flavonoid also have antioxidant properties. In the variety of food and food products like fruits, vegetables, grains, bark, roots, tea, red wine etc. possess flavonoid with variable

Gayatri Rai

Signature Not Verified
Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

Research Paper

Evaluation of Anti-Malarial Effect of *Moringa oleifera* (Lam) in *Plasmodium yoelii* Infected Mice

MEGHA SHRIVASTAVA*, ARTI PRASAD[1] AND D. KUMAR[1]

Department of Zoology, Government PG College Guna, Madhya Pradesh 473001, [1]Department of Zoology, University College of Science, Mohanlal Sukhadia University, Udaipur, Rajasthan 313001, India

Malaria kills a lot of people every year in the world, yet this has been observed with little progress in controlling this disease. Moreover, the number of cases is increasing, resulting from the rise of drug-resistant parasites and insecticide-resistant mosquitoes. In the present study the antimalarial efficiency of flowers and leaves of the *Moringa oleifera* (Lam.) plant was evaluated against rodent malaria parasite: *Plasmodium yoelii* (Chloroquine resistant N-67 strain) infected Swiss albino mice. For the study, crude extracts of flowers and leaves of the *Moringa oleifera* (Lam.) plant were given at different doses i.e., 125, 250, 500 and 1000 mg/kg to *Plasmodium yoelii* infected Swiss albino mice, then various parameters llike percent of suppression of parasites, haematological parameters, survival time and body weight of mice, were determined. Percent of suppression of parasites were evaluated by observing Giemsa stained blood smears, which were prepared from different treated groups of experimental mice and haematological testing was done with an automated haematological analyser. The percent of suppression exerted by the flower and leaf against *Plasmodium yoelii* count ranged between 59 to 41% and 56 to 32%, respectively. Both extracts were found to give positive results as they prevented the major changes in haematological parameters i.e., count of red blood cells, white blood cells and platelets, haemoglobin concentration and haematocrit value which occurred due to *Plasmodium* infection. Maximum antimalarial effect was observed with the highest dose of the flower extract at 1000 mg/kg followed by leaf extract at the same dose. The crude extract prolongs the survival time of mice as well as prevents body weight loss compared to negative control groups. The results are collectively indicated that the *Moringa oleifera* (Lam.) plant has a promising anti plasmodial activity against *Plasmodium yoelii*. Thus, it might be considered as a potential source for the development of novel antimalarial agents.

Key words: Malaria, *Plasmodium*, plant, extract, blood, *Moringa oleifera*

Malaria is one of the most serious as well as widespread disease and also becoming more complicated due to the emergence of drug resistance in parasites. In many countries it has been observed that where *Plasmodium falciparum* is endemic, drug resistance is in prominent condition. Due to the above reason in such countries, unavailability of effective and affordable drugs is becoming a major problem. Hence there is an urgent need for a novel effective antimalarial treatment. Medicinal plants have been proved as a potential target for research and development in alternative antimalarial drugs with novel modes of action. Therefore, it becomes very important to explore nature systematically for the benefit of mankind.

Moringa oleifera (*M. oleifera*) belongs to the Moringaceae family and commonly known as `drumstick or `horseradish tree'. This plant grows throughout tropical and native parts of sub-Himalayan tracts including north-west India, Pakistan, Bangladesh and Afghanistan[1]. The above plant has a very high nutrition value and impressive range of medical properties. Various parts of the above plant like- flower, leaf, seed, root, bark and fruit are used medically in different health problems such as cardiac and circulatory disease, cancer, inflammation, parasitic disease, bacterial infection and fungal disease. And are

*Address for correspondence
E-mail: meghapatan@gmail.com

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Scientific Correspondence

Potential antiviral efficacy of herbal drugs to fight against COVID-19

Megha Shrivastava[1]* and Devendra Kumar[2]

[1]*Department of Zoology, Govt. P.G. College Guna, Madhya Pradesh, India*

[2]*Department of Zoology, University College of Science, Mohanlal Sukhadia University, Udaipur, Rajasthan, India*

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ABSTRACT

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered virus named as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) that belongs to the coronavirus family. It was immersed in December, 2019 and has become a pandemic. Thousands of clinical treatments are undergoing to cure the disease. There is an urgent need to explore the available antiviral drugs which are used to treat different viral infections. Herbal medicines are reported to fight against viruses by boosting the immune system. This article summarised some of available drugs from herbal medicines which could be useful for treatment of COVID-19.

Keywords: Corona virus, treatment, herbal drugs

INTRODUCTION

COVID-19 was first reported in December from Wuhan city of China. Later it quickly spread all over the world due to its high contagious nature and was declared as a public health emergency by WHO. Cases of COVID-19 are increasing day by day, and there have been 179,686,071 confirmed cases and 3,899,172 deaths up to 25 June, 2021 (WHO, 2021). This virus is similar to earlier coronavirus SARS-CoV and MERS-CoV (Gurunathan *et al*., 2020). It probably originated from bats and spread to other mammal hosts as it belongs to a single stranded RNA family which can cross species barriers and create respiratory complications in humans.

Currently, thousands of clinical trials are going on to explore the effective treatment against COVID-19 in different countries. Some of the tested drugs are proved to be effective for other viral diseases like SARS-CoV and MERS-CoV and right now they are also being tested for COVID-19 treatment. There is an urgent need to develop more effective antiviral agents from herbal sources to fight against COVID-19. In this article, we have discussed some herbal remedies that may be used for the treatment of COVID-19.

There are some chemical drugs which are currently used to treat COVID-19 such as: Tocilizumab, Chloroquine, Hydroxychloroquine (HCQ), Favipiravir, Umifenovir, Remdesivir, Oseltamivir (Tamiflu) and Lopinavir-ritonavir. Tocilizumab prevents the inflammation in lungs and other body tissue caused due to COVID-19. It also normalises the count of lymphocytes in blood which indicates its effectiveness (Luo *et al*., 2020) and reduces the symptoms of COVID-19 like fever, oxygen level and other blood factors significantly (Xu *et al*., 2020). Chloroquine drug is used widely for the treatment of malaria and viral infection (Savarino *et al*., 2006). So it can be used to treat the pneumonia, caused by COVID-19 (Gao *et al*., 2020). Similarly, hydroxychloroquine affects the normal activities of viruses like viral replication, viral assembly and virus release (Fox, 1993) and is responsible for controlling the

*Corresponding author e-mail: meghapatan@gmail.com

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THERAPEUTIC APPROACH OF AYURVEDA AGAINST SOME SPECIFIC RNA BASED VIRAL AILMENTS

Vikas Pitre[1], Megha Shrivastava[2*], Sushmita Shrivastava[3]

[1,2,3]Govt. P. G. College, Guna, Madhya Pradesh

Abstract: *Nature is full of organisms which have their specific role in the maintenance of ecosystem. Like other organisms, microbes keep their utmost importance not only as decomposers but also as pathogens. Virus are now become a key microbe in present scenario which are responsible for causing several harmful and deadly diseases among humans, which are still untreatable. They rapidly undergo amplification and get converted into various strains which are difficult to diagnosed for the cure. Although researchers are continuously doing their efforts to find out proper treatment for viral diseases but still lots of work need to be done in this field. Ayurveda since long period of time prove itself best remedy for several deadly diseases including virus. Present paper is an effort to review out role of Ayurveda in treating some specific viral diseases.*

Keywords: Virus, RNA, Plant, Infection, Treatment

1. INTRODUCTION:

We are living in the world of microorganisms like bacteria, viruses, archaea, fungi and protozoa. Virus are the smallest of all the microbes, they regarded as infectious particles made up of nucleic acid core either DNA or RNA and protein capsid. Virus are obligate intracellular parasite means they show their multiplication or reproduction only inside the living host cell but outside the host cell they never reproduce and remain inanimate.

Some more properties of virus constitute their non-culturable nature like bacteria, host specificity, don't have their own protein synthetic machinery so always use host's protein synthetic machinery for their protein synthesis. All these properties enabled them to call as, "connecting link between livings and non-livings".

Virus are responsible for several dreadful diseases which may be pandemic, the recent example is COVID-19. Viral pathogenesis defined as the process by which the viral infection leads to the diseased condition. Virus only exist to produce new virus by penetrating host cell and replicating using host cell's machinery. After completion of replication cycle virus leave the host cell by cell lysis. As a result of this replication cycle increased population of virus cause severe infection which may lead to hospitalization of patients or even deaths.

Virus can be classified according to their morphological characters, nucleic acid types, host organisms and the type of disease caused by them and mode of replication.

In this paper we are focusing on RNA viruses. These are the virus which have RNA as genetic material. These include Ebola virus, Hepatitis C virus, HIV, SARS virus, dengue virus and recently discovered SARS –CoV-2 also known as Novel corona virus. All these viruses are responsible for pandemic diseases. And still we all are suffering from pandemic COVID-19 caused by corona virus SARS –CoV-2.

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A REVIEW ON STRESS RESPONSE STRATEGIES AMONG SHRIMPS AND FISHES

SHRIVASTAVA S
Government P. G. College, Guna (M.P.)
*Corresponding Author: Dr. Sushmita Shrivastava: E Mail: rssush@gmail.com

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ABSTRACT

Our surroundings are full of animals dwelling in their specific habitat. Each one of them has to adapt itself to survive and flourish. Every organism whether its terrestrial or aquatic has to face variety of stress agents or stressors which influence and leave huge impact on their life and normal functioning. Stressors are the agents or factors which imposes several psychological, physiological and behavioural impacts on organisms. The impact of these factors could be termed as stress. Stress is a condition which imposes huge impact on terrestrial as well as aquatic animals. Aquatic animals like fishes and prawn have to face several stressors which cause change in their physiological condition. In the present article, an effort has been made to sum up the response of aquatic animals towards these stressors.

Keywords: Aquatic animals, stress, response, stressors

INTRODUCTION

Stress is basically a condition which denotes discomfort and uneasiness. It is the general nature of each creature that it gets affected by its surroundings, but if the prevailing surround imposes negative impact then it may cause disturbance in their morphology, physiology as well as survival. Such type of disturbing elements ae considered as stress agents which influence normal life of creatures. Like terrestrial animals, aquatic animals also undergone stress conditions due to several extrinsic and intrinsic environmental factors. There are so many factors (stressors) which may cause stress to the aquatic animals like unavailability of food, competitors, enemies, several abiotic factors like variation in light, temperature, humidity and chemical conditions like salinity, pH, hardness, solutes, etc. Even

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Effect of nanoparticles on electrical properties of PVDF-based Mg^{2+} ion conducting polymer electrolytes

NIDHI, SANDHYA PATEL* and RANVEER KUMAR
Department of Physics, Dr. Harisingh Gour Vishwavidyalaya Sagar, Sagar 470003, India
*Author for correspondence (sandhyaparipalak@gmail.com)

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Abstract. Polyvinylidenefluoride (PVDF)-based nanocomposite polymer electrolyte (NCPE) thin films for electrochemical applications have been synthesized by solution cast technique. NCPEs have 70PVDF:30$Mg(NO_3)_2$ solid polymer electrolyte (SPE) with conductivity $\sim 7.3 \times 10^{-8}$ S cm^{-1} as phase-I and various nanoparticles as phase-II, dispersed in SPE for enhancement in its conductivity. These NCPE films were characterized by Fourier transform infrared (FTIR) spectroscopy, X-ray diffraction (XRD) and impedance spectroscopic techniques to study the structural and electrical properties. XRD and FTIR studies of film confirms formation of complexes. From composition and temperature dependence of conductivity analysis, we have obtained an optimum conducting composition of NCPE, i.e., 70PVDF:30$Mg(NO_3)_2$:3ZnO with conductivity $\sigma = 3.7 \times 10^{-4}$ S cm^{-1}. Ionic transport number ($t_{ion} = 0.99$) have been calculated from Wagner's dc polarization technique. Electrochemical cell has been fabricated using cell configuration Mg|NCPE|carbon cell and various cell parameters have been calculated from their discharge characteristics.

Keywords. Polyvinylidenefluoride; transport number; DSC–TGA; discharge characteristics.

1. Introduction

Since 1991, lithium ion batteries are potential candidates for power sources in portable electronics (camera, camcorder, electric vehicles, smart phones, laptops and calculators and so on) [1]. In batteries, electrolytes decide current density, energy density, power density, time stability, long shelf life, small shelf discharge capacity, good capacity of retention, low environment pollution, compatibility with electrode material, safety and so on [2–5]. Remarkable improvements have been made in the field of electrolytes used for battery applications [6–10]. Sundaram and Subramania [11] reported a gel polymer electrolyte, i.e., PVDF–HFP:PVA:$LiClO_4$ with conductivity value $\sigma = 7.94 \times 10^{-3}$ S cm^{-1} at room temperature and proposed their system for rechargeable Li ion batteries. Li ion-based electrolytes are highly reactive in nature and due to their high cost research has been focused on the concept of magnesium ion conducting electrolytes [12–16]. Polu and Kumar [17] reported magnesium ion conducting polymer electrolyte synthesized by solution cast technique and tested for battery properties in cell configuration Mg|PVA–PEG–$Mg(NO_3)_2$|carbon cell and Mg|PEG–$Mg(CH_3COO)_2$–Al_2O_3|carbon cell [18] with ionic conductivity $\sim 9.63 \times 10^{-5}$ and 3.45×10^{-6} S cm^{-1}, respectively. PVDF-based magnesium ion conducting gel polymer electrolyte reported by Pandey and Hashmi [19] have conductivity value $\sim 3.4 \times 10^{-3}$ S cm^{-1} at 20°C and discharge capacity of 200 mAh g^{-1} calculated from discharge characteristics for test cell fabricated in configuration of Mg|PVDF–HFP:$Mg(CF_3SO_3)_2$:EMITf|MoO_3. EMITf denotes ionic liquid: 1-ethyl-3methylimidazoleium trifluoromethanesulphonate. They suggest Mg ion in place of Li ion because it has comparable size, possesses good electrical properties, low cost material due to presence in large amount in our earth crust, safer, negative electrode potential, i.e., –2.3 V *vs.* standard hydrogen electrode, high charge density and so on [12,13]. It has been reported by various researchers for magnesium battery application in future, which gives efficiency nearly same as to that of lithium in terms of current and energy density, with Mg|polymer elecrolyte|cathode-carbon cell or $MgMn_2O_4$ or MoO_3 etc. [14–16].

Solid polymer electrolytes (SPEs) are safe to use but they have low conductivity values, so by addition of plasticizer into SPE (gel polymer electrolyte) or dispersion of ceramic fillers into SPE (composite polymer electrolyte/nanocomposite polymer electrolyte (NCPE)—when filler size is in nano range), ionic conductivity can be improved [20]. In 2015, Priya *et al* [21] reported ZnO dispersed NCPE system: PMMA–PEG/nZnO/KI/I_2 ($\sigma = 3.28 \times 10^{-5}$ S cm^{-1} at room temperature) used for conversion of sunlight into electricity using dye-sensitized solar cells (DSSCs), prepared by solution casting technique. ZnO nanoparticles used by them have been prepared by sol–gel method. They concluded that dispersion of ZnO nanoparticles improve

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Signature Not Verified
Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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Influence of Types of Hospital, Educational Qualification and their Interaction on Personality Factor Q_1 (Conservative Vs Experimenting) of Nurses

Dr. Anjali Pandey*

*Assistant Professor (Psychology) Govt. E.V.P.G. College, Korba (C.G.) INDIA

Abstract - The aim of the present study was to find out the impact of types of hospital on Personality Factor Q_1 (Conservative Vs Experimenting) of nurses. For this a sample of 300 Nurses with diploma or degree as Educational Qualification of Government and Private Hospital was randomly selected. Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adoptation) by S.D Kapoor was used. It was found that there was impact of type of hospital on Personality Factor Q_1 (Conservative Vs Experimenting). Nurses with Graduate Qualification were found to be significantly more Experimenting than those with Diploma Qualification.

Keywords- Nurses, Types of Hospital, Educational Qualification, Personality Factor Q_1 .

Introduction - The purpose of the present investigation is to determine if there is relationships between personality factor Q_1 (Conservative Vs Experimenting) and Educational Qualification in government and private nurses. A second purpose is to see what types of relationships (if any) is there to find out any difference between government and private hospital nurses. As found in previous researches, there are relationships between these personality Factor Q_1 (Conservative Vs Experimenting) and Educational Qualification of government and private nurses. This research will add to the existing literature. In this research 16 personality factor by R.B Cattlle has been used as research tool for the research work on this topic for the first time to the best of my knowledge.

In the medical profession for taking proper care of the patients the Experimenting nursing staff has a big role to play. An Experimenting nurse would be able to take care of any difficult situation in a much better way compare to the one who is Conservative. This makes Experimenting A very significant factor in the personality of nurses. This study was conducted to find out correlation of type of hospital (Government and Private) and Educational Qualification and there interaction on personality factor 'Q_1' (Conservative Vs Experimenting) of nurses.

Objective- To study the influence of Types of Hospital, Educational Qualification and their interaction on Personality Factor Q_1 (Conservative Vs Experimenting)).

Hypothesis- There is no significant influence of Types of Hospital, Educational Qualification and their interaction on Personality Factor Q_1 (Conservative Vs Experimenting).

Sample- A sample of 150 Nurses each was selected randomly from Government and Private Hospitals. They were stratified on the basis of Educational Qualification in Diploma and Degree holders.

Test- Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adaptation) by S.D

Method- Through random sampling four hospitals were selected (two government and two private hospitals). The nurses of the selected hospitals were administered upon a structured Sixteen Personality Factor questionnaire by S.D Kapoor by the researcher. The scoring was done and the score were analysed.

Analysis and Discussion of Results- The objective was to study the influence of Types of Hospital, Educational Qualification and their interaction on **Personality Factor Q_1** (Conservative Vs Experimenting) of Nurses. There were two Types of Hospital, namely, Government and Private. Diploma in Nursing and Graduation in Nursing were the two levels of Educational Qualification of Nurses. Thus the data were analyzed with the help of 2X2 Factorial Design ANOVA.

Table 1: Types of Hospital wise N, Mean, SD of **Personality Factor Q_1** (Conservative Vs Experimenting) of Nurses

Types of Hospital	N	Mean	SD
Government Hospital	150	6.92	1.73
Private Hospital	150	7.42	1.67

Table 2: Educational Qualification wise N, Mean, SD of **Personality Factor Q_1** (Conservative Vs Experimenting)

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IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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Diorganotin Compounds Containing α-Aminoacidato Schiff Base Ligands Derived from Functionalized 2-Hydroxy-5-(aryldiazenyl)benzaldehyde. Syntheses, Structures and Sensing of Hydrogen Sulfide

Tushar S. Basu Baul,*[a] Anurag Chaurasiya,[a] Monosh Rabha,[a] Snehadrinarayan Khatua,[a] Antonin Lyčka,[b] Dieter Schollmeyer,[c] and Klaus Jurkschat*[d]

Abstract: Three novel bicycloazastannoxides, namely, [nBu$_2$Sn(L^1)] (**1**), [nBu$_2$Sn(L^2)] (**2**) and [Bz$_2$Sn(L^3)] (**3**) were synthesized in one pot procedures by reacting diorganotin(IV) precursors with a mixture composed of an α-amino acid with either (*E*)-2-hydroxy-5-((4-nitrophenyl)diazenyl)benzaldehyde or (*E*)-2-hydroxy-5-(phenyldiazenyl)benzaldehyde. Single-crystal X-ray diffraction analysis reveal that compound **1** is monomeric, compound **2** consists of both a monomer and a dimer, while compound **3** is a coordination polymer for which two modifications **3A** and **3B** were identified. The ^{119}Sn NMR chemical shifts measured in $CDCl_3$ solutions indicate five-coordinate tin atoms for **1**–**3**. Further, compounds **1** and **2** were found to be highly selective for sensing hydrogen sulfide in UV/Vis channel in CH_3CN/H_2O (9:1) media. The development of orange red color is likely the results of a Brønsted-type acid-base reaction of H_2S with compounds **1** and **2**, respectively, giving di-*n*-butyltin sulfide and the corresponding pro-ligands H_2L^1 and H_2L^2, respectively. Theoretical calculations accompany the experimental work.

Introduction

The structurally vibrant organotin(IV) compounds have attracted immense interest in biological activity and catalysis.[1,2] Among the organotin(IV) compounds, the use of carboxylate ligands provided a great variety of structures ranging from discrete mononuclear to polymeric complexes with the tin centers showing different coordination numbers. Apart from traditional sustainable chemistry applications such as wood preservation to organic syntheses,[2] carbon dioxide capture, [3] homogeneous catalysts in PVC stabilization, polyurethane formation and transesterification,[4] strong cytotoxic agents and diverse medicinal applications,[1,5–9] organotin(IV) compounds have reached distinct heights as well. Strong Lewis acidity, rich molecular diversity and ease of synthesis led to the development of organotin-based molecular receptors for anions and ion pairs[10] and others such as biomolecule functionalization, material applications and ternary mixed-valance metal clusters[11–13] etc. to mention a few. On the other hand, the design and synthesis of multidentate bio-compatible amino acid derivatives with rich functional groups, possessing chirality and electronic asymmetry can offer fascinating properties and topologies when employed as building blocks for organotin(IV) compounds in supramolecular self-assembly, generating coordination polymers and multi-dimensional networks. Consequently, a variety of structurally characterized motifs based on diorganotin(IV) complexes of amino acetate Schiff bases were categorized viz., [R_2Sn(L)] (**I**), [R_2Sn(L)(solv)] (**II**), [R_2Sn(L)]$_2$ (**III**), [R_2Sn(L)SnR_2] (**IV**), [R_2Sn(L)(solv)]$_2$ (**V**), [R_2Sn(L)]$_3$ (**VI**), and [R_2Sn(L)]$_n$ (**VII**), where R = alkyl or aryl, L = variously substituted Schiff bases derived from α-amino acids and solv = donor solvent.[14] Coordination modes in these complexes can vary from five to seven, thus providing access to a large variety of structural entities. Accordingly, these complexes demonstrated obvious exciting progress in various fields, such as cytotoxicity and

[a] *Prof. Dr. T. S. Basu Baul, A. Chaurasiya, M. Rabha, Dr. S. Khatua*
Centre for Advanced Studies in Chemistry, North-Eastern Hill University, NEHU Permanent Campus, Umshing, Shillong 793 022, India
E-mail: basubaul@nehu.ac.in
basubaulchem@gmail.com
[b] *Prof. Dr. A. Lyčka*
Research Institute for Organic Syntheses (VUOS), Rybitví 296, 533 54 Rybitví, Czech Republic
[c] *Dr. D. Schollmeyer*
Johannes Gutenberg-Universität Mainz, Institut für Organische Chemie, Duesbergweg 10-14, 55099 Mainz, Germany
[d] *Prof. Dr. K. Jurkschat*
Technische Universität Dortmund, Fakultät für Chemie und Chemische Biologie, 44221 Dortmund, Germany
E-mail: klaus.jurkschat@tu-dortmund.de
Supporting information and ORCID(s) from the author(s) for this article are available on the WWW under https://doi.org/10.1002/ejic.202000177.

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ONE POT SYNTHESIS OF 4H-PYRAN DERIVATIVES USING AMBERLITE IR-120 RESIN AS REUSABLE CATALYST IN SOLVENT FREE CONDITION

Archana Rajput[1,*], Archana Dhakar[2], M. S. Kaurav[2], Laxmi Sharma[1], Ghazala Khanum[2], Monika Gaur[2], Aysha Fatima[2] Sadhana Shrivastav[1], D.D. Agarwal[2]

1. Govt. SLP College, Morar, Gwalior-474006 India
2. School of Studies in Chemistry, Jiwaji University, Gwalior-474011

Abstract
Amberlite IR-120, an ion-exchanger resin, can catalyze the three component reaction. The newly synthesized series of 4H-Pyran derivatives have been synthesized via one pot three component reaction of malanonitrile, aromatic aldehyde and a ketoester in the presence of Amberlite IR-120 acidic cation exchanger resin catalyst at 80°C in solvent free condition. The newly desired synthesis is environment friendly, simple and economic. This method provides several advantages including easy work-up, good yield, short reaction time and reusability of the catalyst. These compounds have been characterized using IR, NMR and LC-MS.
Keyword: - 4H-pyran derivatives, One-pot reaction, Multi-component reaction, Solvent free condition

1. Introduction

Multicomponent reaction (MCRs) is a powerful tool for drug discovery and has greatly contributed to the convergent synthesis of structurally interesting molecules from simple and readily available starting materials.[i] Multicomponent reactions are useful tool for modern organic synthesis and have advantages of selectivity in atom economic conversions and gives high yield.[ii, iii] In multicomponent reaction three or more reactants formed a single product which includes portion of all reactants in one pot. Multicomponent processes like Biginelli reaction,[iv] passerine,[v] Ugi[vi] and Hantzsch[vii] are the direct conversion of aromatic aldehydes into the corresponding nitriles.[viii] The Fischer indole reaction,[ix] the formation of N-benzylideneanilines[x] and more recently, the molecular rearrangement of perezone into isoperezone.[xi] Another advantage of MCRs in synthesis of 4H-pyran derivatives with synthetic effectiveness and easiness.[xii]

Pyran have an interesting, medicinally, remarkable and unique position in heterocyclic chemistry, 4H-pyran and its derivatives play an important role in synthetic and medicinal chemistry, biological and pharmacological activities,[xiii] such as antibacterial,[xiv-xviii] antitumor,[xix] antiallergic,[xx] 4H-Pyran derivatives are also potential calcium channel antagonists.[xxi]

As far preparation of 4H-pyrans is concerned some novel variety of methods have been used, which include various catalyst such as KF/AlO,[xxii] imidazole,[xxiii] NaBr,[xxiv] DMAP,[xxv] Nano-ZnO,[xxvi, xxvii] S-proline,[xxviii] Phenylboronic acid,[xxix] L-proline,[xxx] CTA-

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SYNTHESIS AND PHOTOLUMINESCENCE OF HIGH LUMINESCENTS CORPIONATE COMPLEX [Eu(Tp)3] INSIDE THEPORESOFMESOPOROUS SILICANANOPARTICLES OF LANTHANIDE IONS DOPED GLASSES

Praveen Kumar Tiwari
Research scholar, Department of Physics, Madyanchal Professional University, Bhopal, Madhya Pradesh, India.

GhizalF. Ansari
Guide, Department of Physics, Madyanchal Professional University, Bhopal, Madhya Pradesh, India.

Abstract
A route for europium (III) tris-pyrazolyl borate complex [Eu(Tp)3] formation inside the pores of mesoporous silica nanoparticles (MSNs) has been established to yield a highly luminescent nanostructured hybrid. Two different in situ chemical precipitation techniques have been explored for the nanoencapsulation of the Eu^{3+} complex [Eu(Tp)3] inside the pore channels of mesoporous silica nanoparticles, by varying the sequence order of precursor impregnation. In the first method, the Eu salt is introduced into the pores by wet impregnation and removal of the solvent, followed by wet impregnation of the ligand. In the second approach, the addition sequence is reversed. The importance of the addition sequence was demonstrated by the successful formation of the europium (III) tris-pyrazolyl borate complex in the pore network by following the first approach. The observed pyrazol-1-yl borate (Tp) to Eu^{3+} intramolecular energy transfer, i.e., the antenna effect, verified the formation of the complex. Photoluminescence spectroscopy, X-ray diffraction, N_2 adsorption, FT-IR spectroscopy, and TEM were used to characterize thematerial.

Introduction

Luminescent nanomaterials have received ever-increasing attention in recent years, due to a growing demand for new functional nanomaterials.[1] Amongst these, lanthanide based luminescent nanomaterials have been widely investigated because of their application in many different fields.
Mesoporous silica nanoparticles (MSNs) that are prepared by surfactant templating methods[2] display many attractive features and are ideal as host matrices for optical materials. Lanthanide complexes with organic ligands possess unique optical properties, and are widely used for biological applications. In particular, Eu (III) complexes with tailored antenna-ligands have been widely studied for applications that include biolabeling[3,4]. Although prior reports have been given for the doping of different Eu(III)-β-diketonates within inorganic matrices[5-7], their application as biolabels has been limited due to their poor stability in biological media. This inherent instability arises from their sensitivity to aqueous environments, and to acidic and alkaline conditions. In contrast, highly symmetric pyrazole based complexes show excellent stability under such conditions, which arises from their highly symmetric structure and hydrophobic coordination sphere. Their intense luminescence emission[8,9] and elevated stability therefore makes them viable candidates for use in biolabeling applications. In this context, their incorporation into an inorganic host which may be readily dispersed in different media and modified on the surface is of interest.

MSNs have shown to be a promising matrix material. They provide a protective structure which prevents the incorporated guest molecules from coming into contact with the immediate external environment[10] and a chemically and mechanically stable vehicle. In some cases they have also shown to enhance the photophysical properties of the encapsulated fluorophores.
In the last few years, numerous examples of lanthanide complexes being incorporated into the pore structure of silica nanoparticles have been reported, with their preparation most commonly and conveniently achieved by wet impregnation[3]. This procedure requires good solubility of thelanthanide complex, however, due to the low solubility of $Eu(Tp)_3$ in most common solvents, alternative routes for its incorporation into the matrix are required.
In this chapter we report a procedure for the in situ synthesis of $Eu(Tp)_3$ inside the pore channels of MSNs by two different routes: Eu salt impregnation followed by ligand impregnation(methodA) and ligand impregnation followed by Eu salt impregnation (method B). The luminescent nanostructured material obtained by method A was characterized by photoluminescence spectroscopy, XRD, TEM, and FTIR spectroscopy, demonstrating the successful formation of the complex within the MSNs pores. The study was systematically carried out as follows: a) the bare MSNs were prepared and characterized, b) the bare MSNs were loaded with different amounts of $Eu(Tp)_3$ via method A, c) the maximum nominal complex loading for which all ofthe $Eu(Tp)_3$ was confined inside the pores of the MSNs was determined by XRD and TEM analysis,
d) the MSNs were loaded with the same nominal concentration of $Eu(Tp)_3$ determined in step c via method B, and e) a comparison between the samples comprising the same nominal loading, prepared by the two different methods (A and B) was performed.

Experimental

Synthesis of $Eu(Tp)_3$ in the pore channels ofMSNs

Signature Not Verified
Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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Influence of Types of Hospital, Educational Qualification and Their Interaction on Personality Factor B (Less Intelligent vs More Intelligent) of Nurses

Dr. Anjali Pandey
Assistant Professor of Psychology, Sainath Institute, Katni, Affilited RDVV Jabalpur, India

Abstract :- The aim of the present study was to find out the impact of types of hospital on Personality Factor B (Less Intelligent Vs More Intelligent) of nurses. For this a sample of 300 Nurses with diploma or degree as Educational Qualification of Government and Private Hospital was randomly selected. Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adoptation) by S.D Kapoor was used. It was found that there was impact of type of hospital on Personality Factor B (Less Intelligent Vs More Intelligent). Those working in Government hospital were found to be significantly more Intelligent as compared to than those working in Private hospital.

Keywords :- Nurses, Types of Hospital, Educational Qualification, Personality Factor B.

1. Introduction :- As per recent report related by World Health Organisation on nursing, the nursing profession is heavily understaffed the report indicates that the number of nurses has increased by 4.7 million for the year 2013 to 2018 even so there is a shortage of 5.9 million nurses across the world countries that have the most significant gaps are in Africa, South Asia, the Mediterranean region some part of Latin America and South East Asia. We fall in South Asia region and we know how understaffed our hospitals are as far as nurses are concerned. On top of it, the Pandamic has caused a meteoric rise in requirement of nurses to make the matters worse. This signifies the importance of studies on nurses across subjects.

The purpose of the present investigation is to determine if there is relationships between personality factor B (Less Intelligent Vs More Intelligent) and Educational Qualification (Diploma or Degree) in government and private hospital nurses. A second purpose is to see what types of relationships (if any) is there, and to find out any difference between government and private hospital nurses.

2. Objective :- To study the influence of Types of Hospital, Educational Qualification and their interaction on Personality Factor B (Less Intelligent Vs More Intelligent).

3. Hypothesis :- There is no significant influence of Types of Hospital, Educational Qualification and their interaction on Personality Factor B (Less Intelligent Vs More Intelligent).

4. Sample :- A sample of 150 Nurses each was selected randomly from Government and Private Hospitals. They were stratified on the basis of Educational Qualification in Diploma and Degree holders.

Test- Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adaptation) by S.D Kapoor

5. Method :- Through random sampling four hospitals were selected (two government and two private hospitals). The nurses of the selected hospitals were administered upon a structured Sixteen Personality Factor questionnaire by S.D Kapoor by the researcher. The scoring was done and the score were analysed.

6. Analysis and Discussion of Results :- The objective was to study the influence of Types of Hospital, Educational Qualification and their interaction on **Personality Factor B** (Less Intelligent Vs More Intelligent) of Nurses. There were two Types of Hospital, namely, Government and Private. Diploma in Nursing and Graduation in Nursing were the two levels of Educational Qualification of Nurses. Thus the data were analyzed with the help of 2X2 Factorial Design ANOVA.

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Influence of Types of Hospital, Educational Qualification and Their Interaction an Personality Factor C (Affected By Feelings VS Emotionally Stable) of Nurses

Dr. Anjali Pandey
Assistant Professor of Psychology, Sainath Institute, Katni, Affiliated RDVV, Jabalpur (M.P.) INDIA

Abstract :- *The aim of the present study was to find out the impact of types of hospital on Personality of nurses. For this a sample of 300 Nurses with diploma or degree as Educational Qualification of Government and Private Hospital was randomly selected. Sixteen Personality Factor questionnaire by R.B Cattle (Hindi Adoptation) by S.D Kapoor was used. It was found that there was impact of type of hospital on Personality Factor C(Affected by Feelings Vs Emotionally Stable). Those working in Government hospital were found to be significantly more Emotionally Stable as compared to than those working in Private hospital.*

Keywords :- Nurses, Types of Hospital, Educational Qualification, Personality Factor

1. Introduction :- The purpose of the present investigation is to determine if there are relationships between personality Factor C (Affected by Feelings Vs Emotionally Stable) and Educational Qualification in government and private nurses. A second purpose is to see what types of relationships(if any) are there and to locate any differences between government and private nurses. As found in previous researches, there are relationships between these different personality Factor C and Educational Qualification in government and private nurses. This research will add to the existing literature

2. Objective :- To study the influence of Types of Hospital, Educational Qualification and their Interaction on Personality Factor C (Affected by Feelings Vs Emotionally Stable).

3. Hypothesis :- There is no significant influence of Types of Hospital, Educational Qualification and their Interaction on Personality Factor C (Affected by Feelings Vs Emotionally Stable).

4. Sample :- A sample of 150 Nurses each was selected randomly from Government and Private Hospitals. They were stratified on the basis of Educational Qualification in Diploma and Degree holders.

Test- Sixteen Personality Factor questionnaire by R.B Cattle (Hindi Adaptation) by S.D Kapoor

5. Method :- Through random sampling four hospitals were selected (two government and two private hospitals). The nurses of the selected hospitals were administered upon a structured Sixteen Personality Factor questionnaire by S.D Kapoor by the researcher. The scoring was done and the score were analysed.

6. Analysis And Discussion Of Results :- The objective was to study the influence of Types of Hospital, Educational Qualification and their interaction on **Personality Factor C** (Affected by Feelings Vs Emotionally Stable) of Nurses. There were two Types of Hospital, namely, Government and Private. Diploma in Nursing and Graduation in Nursing were the two levels of Educational Qualification of Nurses. Thus the data were analyzed with the help of 2X2 Factorial Design ANOVA.

Table 1

Types of Hospital wise N, Mean, SD of **Personality Factor C** (Affected by Feelings Vs Emotionally Stable) of Nurses

Types of Hospital	N	Mean	SD
Government Hospital	150	4.71	1.86
Private Hospital	150	4.32	1.60

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Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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Influence of Types of Hospital, Educational Qualification and their Interaction on Personality Factor Q_3 (Undisciplined Vs Controlled) of Nurses

Dr. Anjali Pandey*

Abstract - The aim of the present study was to find out the impact of types of hospital on Personality of nurses. For this a sample of 300 Nurses with diploma or degree as Educational Qualification of Government and Private Hospital was randomly selected. Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adoptation) by S.D Kapoor was used. It was found that there was impact of type of hospital on Personality Factor Q_3 (Undisciplined Vs Controlled). Those working in Government hospital were found to be significantly more Self -disciplined to than those working in Private hospital.
Keywords - Nurses, Types of Hospital, Educational Qualification, Personality Factor.

Introduction - The development of science and technology has made life easy for all. The researches in the field of medicine and health care have identified many new illnesses resulting in specialized treatment of them. With the increase in number of specialized treatments, new scope for hospitals has emerged. This requires large number of paramedical staff to help in the health care service of the patients. This has also led to opening of multispecialty hospitals which require even more nurses. In the Pre-research spade work done for finding a suitable topic for research, no study was found relating on this topic. That is why this study was undertaken.

Objective - To study the influence of Types of Hospital, Educational Qualification and their interaction on Personality Factor Q_3 (Undisciplined Vs Controlled).

Hypothesis - There is no significant influence of Types of Hospital, Educational Qualification and their interaction on Personality Factor Q_3 (Undisciplined Vs Controlled).

Sample - A sample of 150 Nurses each was selected randomly from Government and Private Hospitals. They were stratified on the basis of Educational Qualification in Diploma and Degree holders.

Test- Sixteen Personality Factor questionnaire by R.B Cattlle (Hindi Adaptation) by S.D Kapoor

Method - Through random sampling four hospitals were selected (two government and two private hospitals). The nurses of the selected hospitals were administered upon a structured Sixteen Personality Factor questionnaire by S.D Kapoor by the researcher. The scoring was done and the score were analysed.

Analysis and Discussion of Results - The objective was to study the influence of Types of Hospital, Educational Qualification and their interaction on **Personality Factor Q_3** (Undisciplined Vs Controlled) of Nurses. There were two Types of Hospital, namely, Government and Private. Diploma in Nursing and Graduation in Nursing were the two levels of Educational Qualification of Nurses. Thus the data were analyzed with the help of 2X2 Factorial Design ANOVA

Table 1 : Types of Hospital wise N, Mean, SD of Personality Factor Q_3 (Undisciplined Vs Controlled) of Nurses

Types of Hospital	N	Mean	SD
Government Hospital	150	6.00	1.59
Private Hospital	150	5.37	1.59

Table2 : Educational Qualification wise N, Mean, SD of Personality Factor Q_3 (Undisciplined Vs Controlled) of Nurses

Educational Qualification	N	Mean	SD
Diploma	150	5.78	1.62
Degree	150	5.45	1.63

Table 3 : Summary of 2x2 Factorial Design ANOVA of Personality Factor Q_3 (Undisciplined Vs Controlled) of Nurses

Source of Variance	df	SS	MSS	F-value
Types of Hospital (A)	1	22.19	22.19	8.72**
Educational Qualification (B)	1	5.40	5.40	2.12
A X B	1	0.10	0.10	0.04
Error	296	10490.00	2.55	
Total	299			

** Significant at 0.01 level

1a Influence of Types of Hospital on Personality Factor Q_3 (Undisciplined Vs Controlled) of Nurses

From Table 3, it can be seen that the F-value is 8.72 which is significant at 0.01 level with df= 1/296. It shows that the

*Assistant Professor (Psychology) Sainath Institution Katni, Affiliated RDVV Jabalpur (M.P.) INDIA

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Niranjan Shrotriya
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IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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Ascorbic acid and curcumin alleviate abnormal estrous cycle and morphological changes in cells induced by repeated ultraviolet B radiations in female Wistar rats

Gayatri Rai, Narendra Namdev, Payal Mahobiya✉

Department of Zoology, Dr Harisingh Gour (A Central University) Vishwavidhyalaya, Sagar (M.P.), India

ABSTRACT

Objective: To study the protective effect of ascorbic acid and curcumin against the abnormal estrous cycle and morphological changes in cells induced by repeated ultraviolet B (UVB) radiation in female Wistar rats.

Methods: Sixteen female sexually mature Wistar rats weighing 130-150 g and aged 12-16 weeks were randomly divided into four groups. The control group received normal food and water *ad libitum*. The UVB group was exposed to a dose of 280 nm of UVB radiation for 2 h daily. The UVB+curcumin group received a dose of 280 nm of UVB radiation for 2 h daily and also an oral dose of curcumin (25 mg/kg body weight) daily. The UVB+ascorbic acid group received a dose of 280 nm of UVB radiation for 2 h daily and also an oral dose of ascorbic acid (250 mg/kg body weight) daily. All the treatments last for 15 consecutive days. Body and ovary weight and gonadosomatic index were measured. The stages (proestrus, estrus, metaestrus and diestrus) of the estrous cycle were determined by the cell types observed in the vaginal smear.

Results: UVB radiation caused irregular alterations on the estrous cycle and morphological changes of the female Wistar rat as compared with the control group. Ascorbic acid and curcumin protected UVB-induced estrous phases and their cells. But curcumin showed greater protection than ascorbic acid.

Conclusions: Ascorbic acid and curcumin at low doses can alleviate abnormal estrous cycle and morphological changes in cells induced by UVB radiations in female Wistar rats.

KEYWORDS: Estrous cycle; Ultraviolet-B radiation; Vaginal smear; Ascorbic acid; Curcumin

1. Introduction

Ultraviolet (UV) rays include a band of electromagnetic radiations with a wavelength from 200 nm to 400 nm. Being present in the sunlight, UV radiations are an important source of energy and have sufficient power to penetrate the body cells; consequently, the chemical and biological effects generated by these radiations are much greater than those by simple heating effects. Radiations emitted and transmitted through different sources are absorbed by the animal body, which tends to be very high levels of environmental toxin. UV radiations bear the ability to induce both positive and negative effects, thereby altering the well-being of both animals. UV radiations are non-ionizing and are classified into three types UVC, UVB, and UVA. UVC (200-280 nm, shortwave length) is more lethal than UVB (280-320 nm, medium wavelength) and UVA (320-400 nm high wavelength)[1-3].

Mammalian germ cells are very sensitive to radiation, which can change the structure of the cell cytoplasm and nucleus[4] and affect the sensitivity of cells and tissues. The sensitivity of cells and tissues to the effects of radiation vary, with actively dividing cells (blood cells, embryonic cells and cells of gonads) being more sensitive. Cells exposed to radiation are more sensitive than the normal viable cells *i.e.* cells of the gonads (ovaries and testes), embryonic cells and blood cells. Many factors including age, stress, noise, light, temperature, nutrition, and social relationships impact the estrous cycle length[5-9]. Radiations also affect the reproductive behaviour by inducing imbalance of the production of the hormones by mammalian gonads[10].

In order to maintain healthy reproductive performance, breeding conditions (light cycle) and timing need to be properly controlled and regulated. The artificial light-dark cycle of an animal facility is

✉To whom correspondance may be addressed. E-mail: 1607payal@gmail.com

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Gayatri Rai

Signature Not Verified
Niranjan Shrotriya
24.12.2023 01:16
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Brij Kishore Tiwari
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Therapeutic Role of Mitochondria Targeted Curcumin against *Pseudomonas aeruginosa* Induced Oxidative Stress in Thyroid Gland of Female *Swiss albino* Mice

Narendra Namdev, Arun Kumar, Gayatri Rai and Payal Mahobiya*

Endocrinology Laboratory, Department of Zoology, School of Biological Sciences, Dr Harisingh Gour University, Sagar – 470003, Madhya Pradesh, India; 1607payal@gmail.com

Abstract

Bacteria are found universally and contaminate the soil, air and water. Through contaminated air, water and soil bacteria reach inside the body and causes immense harm. The problem of thyroid is that, it affects the public health worldwide. The main purpose of this investigation is to find out the toxic effects of *Pseudomonas aeruginosa* on thyroid gland and preventive role of mitochondria targeted curcumin in bacterial induced thyroid toxicity in female *Swiss albino* mice. The animals are separated in different groups. Group I served as control and Group II administered with effective dose of *Pseudomonas aeruginosa.* Group III co-treated with mitochondria targeted curcumin for the period of 14 days. With the completion of treatment period blood serum and tissue samples were collected for determining the level of thyroid hormones and oxidative stress. In this investigation shows that mice exposed to bacteria have decreased T3 and T4 concentration as compared to control and co-treated mice have some elevated level of T3 and T4 hormones as compared to bacteria treated mice. In the biochemical study it is found that the increased lactate dehydrogenate, catalase activity, superoxide dismutase and lipid peroxidation and decreased glutathione reductase points towards the induced oxidative stress in thyroid gland. It is concluded that the exposure to *Pseudomonas aeruginosa* causes thyroid problem and treatment with mitochondria targeted curcumin prevents the induced toxicity.

Keywords: Mitochondria Targeted Curcumin, *Pseudomonas aeruginosa*, Thyroid Gland, T3, T4, TSH

1. Introduction

A butterfly shaped bilobed thyroid gland is found attached to trachea at anterior neck which regulates the basal metabolism of body via secreting the two hormones T3 and T4 in blood after stimulation by anterior pituitary with the help of chemical messenger TSH. The problem in thyroid gland is considered as the generic problem nowadays and affects the many people worldwide. The gut micro-biome diversity plays an important role for health and prevents from various diseases. The altered gut micro-biome results in disease. The microbial product short chain fatty acids are used as energy source to enterocytes, enterocytes along with thyroid hormone helps in their differentiation and enhance intercellular tight junction and in case of altered gut microbiota results in increased anti-inflammatory diseases[1].Bacteria are found everywhere in nature with great diversity. The different strains of bacteria are pathogenic and some of them are commensal. The pathogenic bacteria affect the humans and other plants and animals in different ways and affect their normal physiology. The titer of

Gayatri Rai.

*Author for correspondence

Signature Not Verified
Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Brij Kishore Tiwari
24.12.2023 01:35
Principal

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ORIGINAL ARTICLE **OPEN ACCESS**

UVB induced hyperthyroidism: Alteration on ovarian weight of female Wistar rat

Gayatri Raj, Payal Mahobiya*
Department of Zoology, Dr. Harisingh Gour Vishwavidyalaya, Sagar, M.P., India
*Corresponding author: Payal Mahobiya, Email: 1607payal@gmail.com

ABSTRACT
The present study was investigated to the UVB radiation induced hyperthyroidism on female Wistar rats. In addition, we designated the preventive effect of Curcumin and Ascorbic acid against hyperthyroidism induced by UVB radiation. Twenty four adult healthy female Wistar rats weighing 130-150 grams (g) were used. It is divided into four groups, first was control group, second was UVB treated group, third was UVB+Curcumin (Cur) group and last fourth group was UVB + Ascorbic acid (AA) group, for 15 days exposure. We found that UVB radiation shown on the female Wistar rat alteration on the animal body weight, thyroid weight, ovary weight and thyroid hormones as compare to control group. It is concluded that UVB radiation shown the hyperthyroidism and their alteration of ovary weight on female Wistar rat and preventive effect of curcumin and ascorbic acid.
KEYWORDS:*Wistar rat, Ultraviolet, thyroid, ovary, curcumin and ascorbic acid.*

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INTRODUCTION

All living organisms on Earth are being continuously exposed to certain amount of radiation initiating from a variety of sources. Whole body exposure to irradiation causes damage cellular, physiological and biochemical reactions inside living cells. Ultraviolet (UV) is a non-ionizing radiation and contain a band of electromagnetic radiations with wave length from 200nm to 400nm. Being present in the sunlight, UV radiations are an important source of energy and have sufficient power to penetrate the body cells consequently, the chemical and biological effects generated by these radiations have are much greater than simple heating effects. Radiation emitted and transmitted through different sources are absorbed by the animal body tend to be a very high up environmental toxin. UVradiations have the potential to bear both positive and negative effects, there by affecting the well-being of animals and humans. UV radiations are non-ionizing and are classified into three types UVC, UVB & UVA. UVC (200-280 nm, shortwave length) is lethal than UVB (280-320nm, medium wave length) [1, 2, 3].When cells or tissues are exposed to UV radiation, the water molecules undergo dissociation (radiolysis) and produce free radicals and related species in the form of ROS. These, in turn, can act on biomolecules such as DNA, lipids and proteins, and cause oxidative damage [4, 5, 6].The ovary is a primary functional organ of the female reproductive system, and it plays physiological roles body.Triiodothyronine (T3) and thyroxine (T4) are essential for normal reproductive function. Thyroid hormones can affect the oocytes, sperm, and embryo during fertilization, implantation and placentation. However, the association between hyperthyroidism and infertility is evidenced and scarce and sometimes conflicting. Infertility may occur in hyperthyroid females, but euthyroidism can restore these abnormalities [7, 8, 9, 10]. Thyroid hormones are described to affect both reproduction and pregnancy [11]. In the present study, we also investigated the preventive effect of antioxidants (ascorbic acid and curcumin) against the hyperthyroidism induced by UVB radiation and their alterative effect of ovarian weight.

Gayatri Raj

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Niranjan Shrotriya 24.12.2023 01:16 IQAC Coordinator
Brij Kishore Tiwari 24.12.2023 01:35 Principal

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Clinical trials: To fight with COVID-19

Megha Shrivastava[#1], Devendra Kumar[#2]

#1Assistant Professor, Department of Zoology, Govt. P.G. College Guna (M. P.)

#2 Assistant Professor, Department of Zoology, University College of Science, Mohan LalSukhadiya University, Udaipur (Rajasthan)

Abstract

Recently emerged COVID-19 become a pandemic and spread rapidly all over the world. COVID-19 infection transmits human to human via droplets and caused respiratory complication. The epidemiological situation of COVID-19 indicates towards the urgent need of an effective and safe treatment. Currently used clinical treatments are symptom based, but there is no specific treatment for COVID-19. Although several antiviral drugs are being tested which have been proved active against other viral diseases like-SARS-CoV-1, MARS, AIDS etc. This article summarised some drugs which are under trial against COVID-19.

Keywords:-COVID-19, Treatment, Drugs, Virus, Medicine

INTRODUCTION

Coronavirus disease 2019 (COVID-19) now a widespread disease and cover all over the word with 36,754,395confirmed cases and 1,064,838 deaths till 09 October 2020 (WHO). In India first case of COVID 19 was reported on 30 January 2020 in Kerala, as of 20 September 2020 there are 6,979,423 cases in India, with 107,416 deaths.

COVID-19 caused by Severe Acute Respiratory Syndrome Corona Virus-2 (SARS–CoV-2), has been declared pandemic by WHO on 11 march, 2020. This virus spreaded all over the world very quickly due to high contagious property. It probably originated from bats and spread to other mammal hosts. SARS–CoV-2 belongs to single stranded RNA family which can cross spices barrier and create respiratory complications in human.

Presently, used treatments to deal with COVID-19 infection are only supportive and symptoms based. Now days, more than 200 clinical trials are on-going to explore the effective treatment against COVID-19 in different countries, some tested drugs are previously proved as effective for other viral disease like HIV, SARS-CoV-2, MARS etc., presently they

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Stress Management Among Aquatic Animals: A Review

Sushmita Shrivastava

Department of Zoology, Govt. P. G. College Guna (M.P.)

Abstract:

Our earth is a planet having lots of organisms surviving in their particular niche. Each organism has to face enormous factors which influence their normal functioning. Stressors are such factors which imposes several psychological, physiological and behavioural impacts on organisms. The impacts of such factors can be summed up in a term called stress. Stress cause severe impact not only on humans but also on animals. Even the aquatic animals are also influenced by stress. Aquatic animals also have to face several stressors which impose different changes in their physical and mental status. In the present review, an effort has been made to summarize the effect of various stressors on aquatic animals.

Keywords: Aquatic animals, impact, stress, stressors.

I. INTRODUCTION

Stress is the term which denotes tension and uneasiness. It is the condition which affects all the living organisms whether they are plant or animals or even microbe. Like terrestrial animals, aquatic animals also undergone stress conditions due to several extrinsic and intrinsic environmental factors. There are so many factors (stressors) which may cause stress to the aquatic animals like food availability, enemies, social response, physical factors like light, temperature, humidity and chemical conditions like salinity, pH, hardness, solutes, etc. Even the transportation and handling of animals like fishes may cause stress condition to them. Physiological responses towards stress can be categorized as primary, secondary and tertiary responses. Primary response include endocrine changes, secondary response included metabolism and functioning of organ- systems. While tertiary response involves overall growth of organism, immunity and behavioural responses. Generally initial stressors are bearable to the animals and they remain in stable state. But the long term exposure of stressed condition may lead to diseased or abnormal condition of animal. It is basically a long term exposure with varied behavioural and physiological conditions. Stress free environment is the prime requirement for animal welfare.

Glucocorticoides are the hormones which are secreted by adrenal cortex are considered as stress hormones among vertebrates. These hormones tend to cause gluconeogenesis, alter reproductive, digestive and other physiological mechanisms; they also impose their effects on immune response. It has been observed that animals became more stressed during handling and captive conditions as compared to free dwelling.

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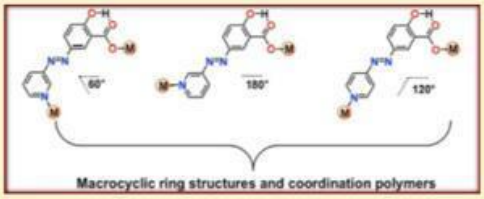
Coordination-Driven Self-Assembly of Macrocycles and 1D or 2D Coordination Polymers Using Heteroditopic Pyridyl-Carboxylate Ligands: The Case Study of 5-[(*E*)-2-(3-Pyridyl)-1-Diazenyl]-2-Hydroxybenzoate in Combination with {R_nSn} (n = 2 and 3)

Tushar S. Basu Baul,*[,†] Anurag Chaurasiya,[†] Andrew Duthie,[‡] Pedro Montes-Tolentino,[§] and Herbert Höpfl*[,§]

[†]Centre for Advanced Studies in Chemistry, North-Eastern Hill University, NEHU Permanent Campus, Umshing, Shillong 793 022, India
[‡]School of Life and Environmental Science, Deakin University, Waurn Ponds, Victoria 3217, Australia
[§]Centro de Investigaciones Químicas, Instituto de Investigación en Ciencias Básicas y Aplicadas, Universidad Autónoma del Estado de Morelos, Av. Universidad 1001, 62209 Cuernavaca, Mexico

Supporting Information

ABSTRACT: Pro-ligand 5-[(*E*)-2-(3-pyridyl)-1-diazenyl]-2-hydroxybenzoic acid, $H'HL^{meta}$, was employed for the synthesis of four organotin(IV) complexes, using suitable tri- and diorganotin (IV) precursors, $[nBu_3Sn(HL^{meta})]_n$ (**1**), $[Bz_3Sn(HL^{meta})]_n{\cdot}C_6H_5CH_3$ (**2**), $[Ph_3Sn(HL^{meta})]_4{\cdot}C_6H_5CH_3$ (**3**), and $\{[nBu_2Sn(L^{meta})]_2\}_n{\cdot}2n$DMSO (**4**). The coordination behavior of compounds **1**−**3** in solution was judged from the results of the ^{119}Sn NMR spectroscopic characterization, while the ^{119}Sn MAS NMR technique was utilized to probe **4**, owing to its low-solubility issue. The solid-state structures of **1**−**4** were determined from single-crystal X-ray diffraction data. The structural analysis revealed that by changing the Sn-R substituents, the molecular coordination geometries and supramolecular structural motifs in the resulting compounds are widely affected. However, one common feature in the crystal structures of these compounds is a strong tendency for the terminal pyridyl nitrogen to bind with the tin atom of an adjacent complex molecule, which influences the ligand bonding interactions and leads to either macrocycle or polymer formation. In compounds **1**−**3**, the triorganotin moieties are embedded in trigonal−bipyramidal coordination polyhedra arising from the ligand in the monodeprotonated salicylate form, $[HL^{meta}]^-$, by complexation through the carboxylate group, resulting in 1D coordination polymers with a zigzag-type topology for compounds **1** and **2**, and a tetranuclear 44-membered macrocyclic ring structure in the case of **3**. The different outcome is a result of the all *anti*-conformation of the $[HL^{meta}]^-$ ligands in compounds **1** and **2**, compared with alternating *syn*- and *anti*-conformation of the four ligands in **3**, and is without doubt related to the variation of the triorganotin functionality. In compound **4**, the tin atoms coordinate to the salicylate group of dianionic $[L^{meta}]^{2-}$ by chelate ring formation with both the carboxylate and phenolate groups. The combination of *syn*-conformation of the ligand and secondary building block formation through 4-membered Sn_2O_2 rings gives rise to 1D tapes containing 22-membered tetranuclear macrocycles. The case study reported herein showed that heteroditopic pyridyl-carboxylate ligands derived from salicylic acid by diazonium coupling are providing an interesting ligand family for complexation and self-assembly studies with a large number of single main group and transition ions and preformed di- or oligonuclear tectons.



INTRODUCTION

Carboxylate anions are ubiquitous, versatile, and smart metal-binding units, which due to their potential bidentate coordination mode contribute significantly to the generation of robust coordination networks.[1−3] The appropriate combinations of organotin and carboxylate-based ligands having either single- or multicarboxylate function(s), and eventually, additional donor atoms have been successfully employed for the generation of many supramolecular architectures, including polymers, macrocycles, and cages with varied nuclearity, coordination geometry, and node connectivity.[4−16] Various structural types, particularly polymeric or cyclooligomeric systems, arise because organotin centers are good Lewis acids susceptible to intermolecular C=O → Sn or other donor → Sn interactions, including solvent coordination.[17,18] For the self-assembly of such supramolecular aggregates, the structural

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Molecular aggregations of bicyclodioxazastannone produced from multicomponent reactions involving functionalized 2-hydroxybenzaldehydes, α- or β-amino acids and a dimethyltin precursor

Tushar S. Basu Baul [a, *], Anurag Chaurasiya [a], Antonin Lyčka [b], Irán Rojas-León [c], Herbert Höpfl [c, **]

[a] Centre of Advanced Studies in Chemistry, North-Eastern Hill University, NEHU Permanent Campus, Umshing, Shillong, 793 022, India
[b] University of Hradec Králové, Faculty of Science, Rokitanského 62, CZ-500 03, Hradec Králové 3, Czech Republic
[c] Centro de Investigaciones Químicas, Instituto de Investigación en Ciencias Básicas y Aplicadas, Universidad Autónoma del Estado de Morelos, Av. Universidad 1001, Cuernavaca, 62209, Mexico

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ABSTRACT

A series of novel bicyclodioxazastannone derived from ONO Schiff base ligands prepared from diazenylaryl functionalized 2-hydroxybenzaldehydes and α or β-amino acetates, viz., $[Me_2Sn(L^1)]_2$ (**1**), $[Me_2Sn(L^2)]_2$ (**2**), $[Me_2Sn(L^3)(MeOH)]_2$ (**3**), $[Me_2Sn(L^4)]_n$ (**4**), $[Me_2Sn(L^5)]_n{\cdot}nH_2O$ (**5**), $[Me_2Sn(L^6)]_2$ (**6**), $[Me_2Sn(L^7)]$ (**7A**), $[Me_2Sn(L^7)]_2{\cdot}C_6H_{14}$ (**7B**) and $[Me_2Sn(L^8)]_n$ (**8**), with variously substituted Schiff bases L^1-L^8 generated *in situ*, were synthesized and structurally characterized. The crystal structures of compounds **1**–**8** revealed different structure types with five-, six- or seven-fold coordination of the metal center. Except for **7A**, which crystallized in the form of a discrete mononuclear tin complex, intermolecular association through O→Sn interactions was observed. The resulting aggregates were molecular dimers with a central four-membered Sn_2O_2 ring (**1**, **2**, **6** and **7A**), 1D coordination polymers (**4**, **5** and **8**) and a solvent adduct linked through both O–H···O hydrogen bonds and O···Sn contacts (**3**). In the presence of hydrogen bond donors such as O–H and N–H groups in the ligands, the molecular structures are further interconnected through O/N–H···O hydrogen bonds, giving in combination with the O···Sn contacts overall 2D layer-type assemblies. In solution, contrary to the β-alanine derivative **1**, the ^{1}H and ^{13}C NMR spectra of compounds **2**–**8** displayed signals for the Me_2Sn moieties because of diastereotopic environments according to the asymmetric nature of the ligand. The ^{119}Sn NMR data of most of the compounds were acquired in DMSO-d_6 with the chemical shift displacements indicating six-coordinate tin atoms, which is in good agreement with the O→Sn adduct formation in the solid-state structures. The ^{119}Sn NMR spectrum of compound **2** measured in $CDCl_3$ indicates the presence of a mononuclear tin complex, as expected for a non-coordinating solvent.

1. Introduction

Functionally substituted Schiff bases supported by additional donor groups exemplify the most important class of heteropolydentate ligands and are capable of forming mono-, di-, and poly-nuclear complexes with transition and non-transition metals [1]. On the other hand, amino acids are among the most accessible sources of enantiomerically pure chiral (except glycine) compounds, which contain both nitrogen and oxygen donor functional groups and are excellent ligands for complexation with higher valent transition metal acceptors [2]. The coordination behavior of amino acids towards metal ions can be regulated by their molecular framework or by controlling the pH of the reaction mixture. Amino acid ligands form stable five-membered chelates with a large number of metal ions through the amine and carboxylate moieties (*N,O*-chelation) [3]. Bio-compatible amino acid derivatives with

* Corresponding author.
** Corresponding author.
E-mail addresses: [redacted] (T.S. Basu Baul), [redacted] (H. Höpfl).

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Multicomponent synthesis of 4H-pyran derivatives using KOH loaded calcium oxide as catalyst in solvent free condition

Archana Dhakar[a*], Rupendra Goyal[b], Archana Rajput[a], Manvendra Singh Kaurav[a], Vinod S. Tomar[a] and Dau D. Agarwal[a]

[a]*SOS in Chemistry, Jiwaji University, Gwalior and 474011, India*
[b]*SOS in Pharmaceutical Sciences, Jiwaji University, Gwalior and 474011, India*

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ABSTRACT

A Convenient and green synthesis of 4H-pyran derivatives via one-pot multicomponent reaction of aromatic aldehydes, malononitrile and ethyl acetoacetate using KOH loaded CaO as a catalyst under solvent free condition is reported. The morphology of the catalyst has been characterized by XRD and TEM. This protocol have numerous advantages like lesser reaction time, environment friendly, low cost, easy to separate, and provide higher yield. The synthesized compounds have been characterized and confirmed by different spectroscopic techniques like ^{1}H NMR, ^{13}C NMR, FT- IR, and LC- MS.

1. Introduction

Multicomponent reactions (MCRs) are based on three or more reactants reacting in one step to form a single product which includes portion of all reactants. Heterocyclic compounds having functionalized nitrogen and oxygen play a significant role in medicinal chemistry and have been frequently utilized as scaffolds for the development of drugs. MCRs play an important role in organic chemistry which have come out as an effective means for delivering the molecular diversity which have an important role in the combinatorial approaches for the preparation of heterocyclic compounds. MCRs, such as the Biginelli, Passerini, Ugi, and Hantzsch reactions provide a wide platform of important heterocyclic compounds[1]. The MCRs contain their extensive range of significance in selectivity, synthetic convergence, and atom-economy. MCRs possess other benefits of effortlessness and synthetic effectiveness budding as a powerful means in modern synthesis of 4H-pyran derivatives in organic chemistry[2]. 4H-pyran derivatives are widely used in organic synthesis especially for synthesizing natural products[3]. It plays a significant role in the medicinal chemistry field owing to different biological and pharmacological activities of its derived substitutes[4] like inhibiting tyrosinase[5] and acting as anti-influenza virus agents[6]. Also these derivatives can be used as pigments[7], fluorescent reagents[8], photoactive materials[9] etc. different catalysts like cetyltrimethylammonium

* Corresponding author.
E-mail address: archanadhakad95@gmail.com (A. Dhakar)

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Solvent-free oxidation of ethylbenzene over LDH-hosted Co(II) Schiff base of 2-hydroxy-1-naphthaldehyde and 4-amino benzoic acid

Savita Khare, Jagat Singh Kirar, and Swati Parashar

School of Chemical Sciences, Devi Ahilya Vishwavidyalaya, Takshashila Campus, Indore, India

ABSTRACT

Co(II) Schiff base complexes derived by condensation of 4-amino benzoic and 2-hydroxy-1-naphthaldehyde was immobilized into layered double hydroxide, {LDH-[NAPABA-Co(II)]} and characterized by various techniques namely ICP-AES, SEM, TEM, EDX, XRD, FTIR, BET surface area, EPR, TGA, and DRUV–vis. spectroscopy. The structures of the Co(II) Schiff base complex are optimized by DFT calculations. The catalytic activity of the heterogenized Co(II) Schiff base complex for the oxidation of ethylbenzene using *tert*-butylhydroperoxide is studied under a solvent-free condition. Ethylbenzene upon oxidation gave benzaldehyde, acetophenone, and benzoic acid with 67.4% conversion of ethylbenzene and 99.57% selectivity of acetophenone. The catalyst is recyclable up to six cycles without notable loss of their activity.

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Layered double hydroxide; heterogeneous catalyst; Co(II) Schiff base complex; ethylbenzene oxidation; *tert*-butylhydroperoxide

1. Introduction

Conversion of hydrocarbons to their oxygenated derivatives is one of the most important reactions in the context of industrial biology. The conversion of ethylbenzene to acetophenone through oxidation is a great industrially significant process because acetophenone acts as an intermediate in the production of many pharmaceuticals, fragrances, chewing gum, resins, alcohols, esters, aldehydes, etc.[1,2] Earlier reports demonstrate that acetophenone is conventionally synthesized by oxidation of ethylbenzene using stoichiometric amounts of inorganic oxidants (permanganate or dichromate).[3,4] The main drawback of this process is that it generates a large amount of hazardous and corrosive wastes.[5] The present industrial process of acetophenone production utilizes cobalt acetate as a homogeneous catalyst in acetic acid in the presence of oxygen. However, in this process, homogeneous transition metal catalyst is used; hence, the major disadvantage is the recovery of the catalyst for its reuse, which affects the overall economics of the process.[6] Overcoming from this problem, concepts of heterogenization of homogeneous metal complex have aroused attention. Various methods have been developed to synthesize heterogeneous catalysts for the oxidation of ethylbenzene.[7–13]

Xie et al. have synthesized alumina supported Co–Zn–Al-mixed metal oxides as heterogeneous catalysts for ethylbenzene oxidation using *tert*-butylhydroperoxide. The system gave 72.30% conversion of ethylbenzene with 69.6% selectivity of acetophenone after 12 h. Brutchey et al. have been reported oxidation of ethylbenzene over recyclable heterogeneous catalysts (4,4'-di-^{t}Bu-bipy)Co[OSi(O^tBu)$_3$]$_2$ complex immobilized onto SBA-15. The maximum 38% conversion of ethylbenzene with 82.50% selectivity of acetophenone was observed after 24 h.

The method of intercalation for the preparation of heterogeneous catalyst is very useful because it uses temperature and solvent stable entities such as layered compounds as a support.

Layered double hydroxides (LDHs) also known as hydrotalcite-like compounds are anionic clays of inorganic nature having a layered structure,[14–16] therefore, extensively investigated for their ion exchanger properties,[17,18] intercalation chemistry,[19–21] and as a precursor heterogeneous catalyst.[22,23] LDH-supported catalysts are efficient in the development of green and sustainable chemistry,[24] since the LDHs have well-defined nanometer-scaled layers for intercalation of metal complexes.[25,26] The LDH consists of brucite-like layers with positive charge and compensating anions in the interlayers, which have a general formula as $[M^{II}_{1-x}M^{III}_{x}\ (OH)_2]^{x+}.(A^{n-}_{x/n}).mH_2O$, where M(II) and M(III) are divalent and trivalent metal cations, respectively, and A^{n-} is the interlayer anion.[27,28] LDHs have a layered crystal structure with wide variations depending upon the nature of cations and M(II)/M(III) molar ratios, as well as on the type of anions. The x is the coefficient which is equal to the molar ratio $[M^{III}/(M^{II}+M^{III})]$, and m is the water molecules located in the interlayer along with the anions. Earlier, we have reported the oxidation of various alkenes and alkanes over recyclable using heterogeneous catalysts, which have been synthesized by intercalation and flexible ligand method.[29–33] In the present paper, we report the synthesis of heterogeneous catalyst, LDH-NAPABA-Co(II),

CONTACT Savita Khare kharesavita@rediffmail.com School of Chemical Sciences, Devi Ahilya Vishwavidyalaya, Takshashila Campus, Khandwa Road, Indore, MP 452001, India.
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A new pyrrolyl-pyranone based AIEgen with solution solid dual emissive property

Ajay Kumar Jha[a], Deepak Purohit[a], Chandra Prakash Sharma[a], Neeraj Mohan Gupta[a], Kundan Singh Rawat[a,b] & Atul Goel*[a,b]

[a]Fluorescent Chemistry Lab, Medicinal and Process Chemistry Division, CSIR-Central Drug Research Institute, Sector 10, Jankipuram Extension Sitapur Road, Lucknow 226 031, India

[b]Academy of Scientific and Innovative Research, Ghaziabad 201 002, India

E-mail: atul_goel@cdri.res.in

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The design and synthesis of organic molecules having aggregation induced emission (AIE) property has been a prime area of research in recent years. In this regard, we have synthesized new pyranone based AIEgens with interesting photophysical properties. The synthesized donor-acceptor based pyranones **3** and **4a-d** show multicolour emission in the range of 476-585 nm in solid state. The compound **3** also showed blue emission (485 nm) in DMSO solution and surprisingly exhibits orange emission (572 nm) with remarkable bathochromic shift in 99% water in DMSO due to AIE characteristics. The detailed study of AIE behaviour of **3** was carried out in increasing fraction of water (0-99%) in THF, the intensity of emission at 485 nm gradually increased upto 80% of water and then decreased at 90% water. Interestingly, the THF solution of **3** in 99% water showed remarkable bathochromic shift (~100 nm) of emission maximum from blue (λ_{max} 485 nm) to orange region (λ_{max} 585 nm) due to formation of nano-aggregates leading to restriction in intramolecular rotation (RIR). The time-correlated single photon counting (TCSPC) analysis of **3** in the water–THF (99:1) mixture showed an average lifetime of 4.8 ns for these nano-aggregates. The pyrrolyl-pyranone **3** having Solution-Solid Dual Emissive (SSDE) characteristics may be utilized in exploring its application in both biomedical and material research fields.

Keywords: AIEgen, luminogens, pyranones, solution-solid dual emissive (SSDE), restriction in rotation (RIR)

The discovery of Aggregation Induced Emission (AIE) phenomenon by Tang *et al.*[1] has led to the emergence of a new core area of research. The organic molecules which were sometimes considered inefficient due to their aggregation caused quenching (ACQ)[2] property found relevance in diverse areas with the advent of aggregation induced emission[3]. In the past few years, several archetypal luminogens with AIE properties have been developed[4]. These molecules exhibit AIE mainly due to the restriction of intramolecular motions (RIM) comprising of either restricted rotations (RIR) and/or restricted vibrations (RIV). Out of these, RIR have been extensively explored and several compounds such as silole (HPS), distyrylanthracene (DSA), tetraphenylethene (TPE), tetraphenyl-1,4-butadiene (TPBD), tetraphenylpyrazine (TPP), and conjugated polymers have been employed in biological and material applications[5,6].

However, limited examples of RIV-based molecules like 10,10′,11,11′-tetrahydro-5,5′-bidibenzo[*a,d*][7]-annulenylidene (THBA) and Bicyclooctatetraene (BCOT), coumarin derivative (CD7) and ʌ-shaped pyridinium salt 2,8-(6*H*,12*H*-5,11-methanodibenzo-[*b,f*]diazocineylene)-di(*p*-ethenyl-N-methyl-pyridinium) ditosylate (DMDPS) showing AIE behaviour *via* restriction in intramolecular vibration have been reported[7] in the literature (Figure 1). Moreover, there are few compounds that show emission both in solution and solid state. Such solution-solid dual emissive (SSDE) compounds are very few and the concept of solution-solid dual emission (SSDE) is now gaining much attention[8]. In search of novel solution solid dual emissive (SSDE) fluorophore, very recently we screened a small chemical library of 108 fluorescent organic compounds comprising of donor-acceptor (D-A) based pyranones and their derived aromatic and hetero-aromatic scaffolds[9]. The photophysical studies in solution and solid state was conducted using UV-Vis and fluorescence spectro-photometry. Following the SSDE characteristics, 17

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Aggregation-Induced Emission

First Dual Responsive "Turn-On" and "Ratiometric" AIEgen Probe for Selective Detection of Hydrazine Both in Solution and the Vapour Phase**

Deepak Purohit,[a] Chandra P. Sharma,[a] Ashutosh Raghuvanshi,[a] Ankita Jain,[b] Kundan S. Rawat,[a, c] Neeraj M. Gupta,[a] Jagriti Singh,[a] Monika Sachdev,[b] and Atul Goel*[a, c]

Abstract: A new dual responsive "turn-on" and "ratiometric" aggregation-induced emission luminogen (AIEgen) 3-formyl-5-(piperidin-1-yl)biphenyl-4-carbonitrile **6a** (FPBC **6a**) for selective detection of hydrazine in solution as well as in vapour phase is described. At a low concentration of 2.5 μM, the probe FPBC **6a** is non-fluorescent (turn-off) but remarkably lights up (turn-on with blue emission) in the presence of hydrazine solution (0.25–25 μM). Interestingly, at higher concentrations, the nanoaggregates of FPBC **6a** (>25 μM, 99% HEPES in DMSO) displayed ratiometric response in the presence of hydrazine with a remarkable hypsochromic shift from the green (500–550 nm) to blue regions (440–480 nm). Furthermore, a real application of FPBC **6a** was successfully demonstrated through the detection and visualization of hydrazine in live cervical cancer cells as well as using portable test strips.

Being a colourless, water-soluble and flammable liquid, hydrazine is an important reagent in the pharmaceutical as well as in the chemical industry.[1] It is a powerful reducing agent and widely used as a catalyst, corrosion inhibitor, textile dye, pharmaceutical intermediate and reagent.[2] Its flammability and detonable properties make it a high-energy propellant for rockets and spacecrafts.[3] Despite its widespread applications, it is a highly toxic chemical with mutagenic and carcinogenic properties, and could damage the lungs, liver, kidney and the central nervous system.[4] The U.S Environmental Protection Agency (EPA) has considered hydrazine as a probable human carcinogen and has set a low threshold limit value (TLV) of 10 ppb.[5]

Due to the carcinogenic nature of hydrazine and its widespread use in the chemical industry, there is indeed a need for the development of efficient and portable techniques for its detection. Analytical techniques like electrochemical analysis,[6] mass spectrometry,[7] high-performance liquid chromatography (HPLC) and gas chromatography (GC)[8] are the most commonly used tools for hydrazine detection. However, these methods are not suitable for real-time monitoring of hydrazine in biological systems.

Fluorescence imaging is an emerging and reliable technique for analyte sensing because of its high selectivity, sensitivity, biological compatibility and direct visualization ability.[9] Numerous probes (Table S1, Supporting Information) for hydrazine detection have been reported that are mostly prepared by deprotection,[10] hydrazinolysis,[11] peptide self-assembly,[12] hydrazone formation,[13] substitution-cyclization[14] and aggregation-induced emission (AIE)[15] approaches (Figure 1). The reported hydrazine probes[10–16] exhibit either turn-on response or ratiometric fluorescence signals, although it has been challenging to achieve both of these properties in a single molecular framework. Herein, we report the first single molecular luminogen, FPBC **6a**, with a dual mode of action (turn-on and ratiometric) for the selective detection of hydrazine both in solution and the vapour phase. The ratiometric detection of hydrazine was successfully demonstrated in live cervical cancer HeLa cells. The practical applicability of the probe FPBC **6a** was demonstrated by preparing the test strip that showed high sensitivity to the vapours of hydrazine, leading to bright blue emission under UV light.

The utility of hydrazone formation has been well-established in bioconjugation as well as in polymer and applied chemistry. However, there is a significant challenge to construct hydrazones under aqueous conditions at neutral pH particularly in the absence of catalyst and in cellular settings in which concentrations of reactants are low.[17] To increase the reactivity of the aldehyde functionality while keeping these limitations in mind, we designed a new series of donor–acceptor-based activated benzaldehydes by incorporation of a strong electron-withdrawing group adjacent to the aldehyde group (Figure 1). The synthetic methodology adopted for the synthesis of activated benzaldehydes is depicted in Scheme 1. The key acetophenone **1a–c** and ketene-S,S-acetal **2** were synthesized as

[a] D. Purohit, C. P. Sharma, A. Raghuvanshi, K. S. Rawat, N. M. Gupta, J. Singh, Prof. A. Goel
Fluorescent Chemistry Lab, Department of Medicinal and Process Chemistry
CSIR-Central Drug Research Institute, Lucknow 226031 (India)
E-mail: atul_goel@cdri.res.in
[b] A. Jain, Dr. M. Sachdev
Endocrinology Division, CSIR-Central Drug Research Institute
Lucknow 226031 (India)
[c] K. S. Rawat, Prof. A. Goel
Academy of Scientific and Innovative Research
Ghaziabad 201002 (India)
[**] AIEgen = aggregation-induced emission luminogen
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Synthesis of Solution-Processable Donor−Acceptor Pyranone Dyads for White Organic Light-Emitting Devices

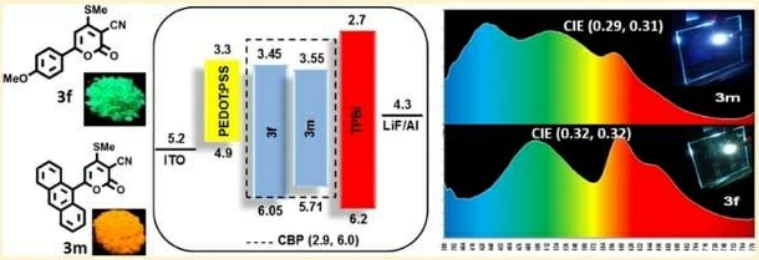
Chandra P. Sharma,[†,#] Neeraj M. Gupta,[†,#] Jagriti Singh,[†,#] Rohit Ashok Kumar Yadav,[§] Deepak Kumar Dubey,[§] Kundan S. Rawat,[†,‡] Ajay K. Jha,[†] Jwo-Huei Jou,[§] and Atul Goel*[,†,‡]

[†]Fluorescent Chemistry Lab, Medicinal and Process Chemistry Division, CSIR-Central Drug Research Institute, Lucknow 226031, India

[§]Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan 30013, Republic of China

[‡]Academy of Scientific and Innovative Research, Ghaziabad 201002, India

Supporting Information



ABSTRACT: A series of donor−acceptor pyranones (**3a−m**, **4a−h**) were synthesized using α-oxo-ketene-*S*,*S*-acetal as the synthon for their application as emissive materials for energy-saving organic light-emitting devices (OLEDs). Among them, five pyranones **3f**, **3g**, **3h**, **3m**, and **4e** exhibited highly bright fluorescence in the solid state and weak or no emission in the solution state. Photophysical analysis of these dyes revealed that only **3f** and **3m** showed aggregation-induced emission behavior in a THF/water mixture (0−99%) with varying water fractions (f_w) leading to bright fluorescence covering the entire visible region, while other derivatives **3g**, **3h**, and **4e** did not show any fluorescence signal. The computational studies of the compounds revealed that the longer wavelength absorption originates from HOMO to LUMO electronic excitation. These dyes exhibited good thermal stability with 5% weight loss temperature in the range of 218−347 °C. The potential application of the donor−acceptor pyranone dyads was demonstrated by fabrication of solution-processed OLEDs. Remarkably, OLED devices prepared using highly emissive compounds 6-(anthracen-9-yl)-4-(methylthio)-2-oxo-2*H*-pyran-3-carbonitrile (**3m**) and 6-(4-methoxyphenyl)-4-(methylthio)-2-oxo-2*H*-pyran-3-carbonitrile (**3f**) displayed pure white emission with CIE coordinates of (0.29, 0.31) and (0.32, 0.32), respectively. Additionally, the resultant devices exhibited external quantum efficiencies of 1.9 and 1.2% at 100 cd m^{-2}, respectively.

INTRODUCTION

Solid-state white organic light-emitting devices (WOLEDs) have attracted a great deal of attention owing to their potential use in day-to-day lighting systems with long lifetime, high brightness, and low energy consumption.[1−3] These energy-saving devices are now on the verge of becoming alternative sources of light to conventional incandescent and fluorescent lamps.[4]

Typically, WOLEDs can be fabricated by the mixing or stacking of three primary colors (red, green, and blue)[5−7] emitting materials or two complementary colors (yellow and blue)[8] emitters into a single or multiple-emissive layer either via a dry or solution process. However, these multilayered or multidopant device structures not only result in increased fabrication difficulty and costs but also yield numerous operational problems making them a less attractive approach for generating white light-emitting devices. Moreover, these multicomponent-based systems are associated with many other challenges such as improper phase segregation, low color rendering index, poor efficiency, and most importantly less reproducibility.[9−12]

Over the last few years, numerous approaches have been developed for fabrication of WOLEDs, and it has become a front-line research field of academia as well as industries (Table S1). WOLEDs have been fabricated by employing inorganic substances,[10,11] inorganic−organic hybrid systems,[12] polymers,[13−15] quantum dots,[16,17] rare-earth elements,[18,19] and archetypal organic phosphors.[20] Among them, single-component-based white-light organic emitters have captured

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The Politics of Pyjamas and Spaces in *The Boy in the Striped Pyjamas*

SHALINI KAUSHIK
Dr. Harisingh Gour Vishwavidyalaya, Sagar, M. P., India

ABSTRACT

The paper tries to explore the identity politics in The Boy in the Striped Pyjamas: A Fable. *It focuses on two main arguments: the superficiality of identity and its consequences and the politics of spaces in shaping up an identity. In case of superficiality, it looks at markers such as clothes and other physical appearances. In case of spaces, the paper focuses on home, family, camp as spaces which affect the identity of people associated with them. The relationships between masters and servants and of the family members with each other are crucial in determining one's identity. The above arguments are supported by instances from the writings of Anwood, Swift, Ngugi, Fanon, Charles Taylor, Fraser.*

Identity politics, be it in terms of gender, race, class, caste or religion has been an immensely sensitive topic in the field of research. *The Boy in the Striped Pyjamas: A Fable* (2006) by John Boyne, an Irish author, is a novel set in during the Second World War in Germany. It traces the growing friendship between a Christian boy, Bruno and a Jewish captive boy, Shmuel; the elders are completely unaware of it. Both the boys are of nine years and share the same birthdays, 9 April, 1934. The consequences of superficiality of identity are tragic to the extent that they lead to the killing of Bruno and Shmuel. Also, prevalent is the notion that how spaces give identity to an individual.

The title *The Boy in the Striped Pyjamas* points towards the identity politics at play in the novel. A reader's first reaction on seeing the title would be, "Who is the boy in the striped

REFERENCES

Atwood, M. 2014. The animals in that country. In Ajanta Dutt (Ed.), *Neruda, Walcott and Atwood: Poets of the Americas* (pp. 261-262). Delhi: Worldview Publications.

Boyne, J. 2012. *The Boy in the Striped Pyjamas*. London: Vintage Random House.

Fanon, F. 2012. On colour prejudice: The Negro and language. *Background Prose Reading: English Hons. Final Year* (pp. 149-168). Delhi: Worldview Publications.

Fraser, N. 2011. Social justice in the age of identity politics: Redistribution, recognition, and participation.

Hyndman, J. 2005. Genocide and ethnic cleansing. In Philomena Essed, David Theo Goldberg & Audrey Kobayashi (Eds.), *A Companion to Gender Studies* (pp. 202-211). Cornwall: Blackwell Publishing.

Swift, J. 2008. *A Tale of a Tub*. New York: Oxford University Press.

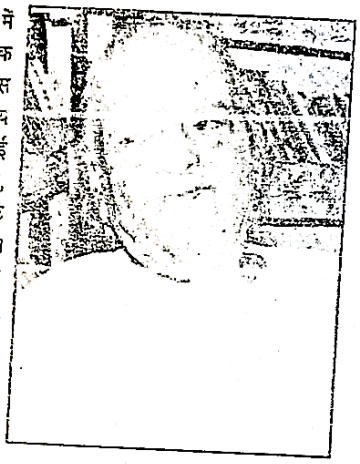
Taylor, C. 1994. The politics of recognition. In Amy Gutmann (Ed.), *Multiculturalism Examining the Politics of Recognition* (pp. 25-73). Princeton: Princeton University Press.

Thiong'o, N. 2012. The language of African literature. *Background Prose Reading: English Hons. Final Year* (pp. 169-180). Delhi: Worldview Publications.

SHALINI KAUSHIK
PHD SCHOLAR,
DEPARTMENT OF ENGLISH AND OTHER EUROPEAN LANGUAGES,
DR. HARISINGH GOUR VISHWAVIDYALAYA
(A CENTRAL UNIVERSITY), SAGAR, M.P.
E_MAIL: <SHALINKAUSHIK93@YAHOO.COM>
MO: 09516360952

आत्मानुभूति बनी अभिव्यक्ति अमरकांत की कहानियाँ

• कुसुम सिंह, शकुन्तला प्रजापति



> नई कहानी के सशक्त कहानीकार अमरकांत का कथा साहित्य अपने समय और समाज का यथार्थ दस्तावेज है। अमरकांत ने स्वतंत्रता के पश्चात् के समय और समाज को देखा और जिया है यही कारण है कि उनकी कृतियों में उनके समय और समाज में जीवन की विसंगतियों एवं विषमताओं से उत्पन्न गंभीर परिस्थितियों का सहज रेखांकन मिलता है। वे देशकाल के प्रति सदैव संवेदनशील और चिंतनशील रचनाकार रहे।

स्वतंत्रता की स्थापना के बाद भारत में सामाजिक-सांस्कृतिक, राजनीतिक-आर्थिक एवं राष्ट्रीय स्तर पर तेजी से बदलाव आया। इस बदलाव का प्रभाव बौद्धिक चिंतन एवं साहित्य लेखन पर भी पड़ा। परिणामतः नई कविता, नई कहानी, नवगीत जैसे आन्दोलन विषयगत, प्रवृत्तिगत, भावगत एवं शैली-शिल्पगत नवीनता के साथ हिन्दी साहित्य में आकार ग्रहण करने लगे। ऐसा माना जाता है कि हिन्दी साहित्य में नई कहानी का प्रादुर्भाव सन् १९५० के बाद हुआ। तत्पश्चात् इसका विकास तीव्रगति से हुआ और एक दशक के अन्दर ही यह अपनी चरमसीमा पर पहुंच गया। नयी कहानी में वह सब कुछ है जो कहानी को रोचकता, प्रभावशालता, शिल्पगत वैशिष्ट्य और नवीनता प्रदान करता है, जिसमें सामाजिक संदर्भ और सरोकार भी हैं। इन्हीं प्रवृत्तियों, विषमताओं और यथार्थवादिता की वजह से नई कहानी का फलक अत्यन्त विस्तृत हुआ। नई कहानी आन्दोलन में राजेन्द्र यादव, मोहन राकेश एवं कमलेश्वर मूल स्तंभ हैं। रांगेय राघव, अमरकांत, मार्कण्डेय, शेखर जोशी, फणीश्वरनाथ रेणु, शिवप्रसाद सिंह, मन्नू भण्डारी आदि ने नई कहानी आन्दोलन को समृद्धि और मजबूती प्रदान की।

नई कहानी के सशक्त कहानीकार अमरकांत का कथा साहित्य अपने समय और समाज का यथार्थ दस्तावेज है। अमरकांत ने स्वतंत्रता के पश्चात् के समय और समाज को देखा और जिया है यही कारण है कि उनकी कृतियों में उनके समय और समाज में जीवन की विसंगतियों एवं विषमताओं से उत्पन्न गंभीर परिस्थितियों का सहज रेखांकन मिलता है। वे देशकाल के प्रति सदैव संवेदनशील और चिंतनशील रचनाकार रहे। उनकी समय, समाज एवं परिवेश पर गहरी दृष्टि थी इसी कारण उनके अंदर एक गहरी सामाजिक दृष्टि का विकास हुआ। उनके ईमानदार व्यक्तित्व ने उन्हें तटस्थ रहकर साहित्य सृजन को प्रेरित किया जो उन्हें सर्वमान्य बनाता है।

उन्होंने जो लिखा वह देशकाल के साथ अपनी अस्मिता खोने वाली नहीं है बल्कि वे तो बदलते समय और समाज में भी जनमानस के लिए प्रेरणादायी और कालजयी हैं, क्योंकि उनकी विषयवस्तु एवं भावभूमि यथार्थ के धरातल पर है। जो उनके सामाजिक दृष्टिकोण और प्रगतिशील विचारधारा को प्रगट करती है। उन्होंने जीवन के अमूल्य क्षणों एवं कटु अनुभव को शब्दों में बांधकर मूर्त रूप प्रदान किया है। महेश चन्द्र पुनेठा ने सृजनधर्मिता के लिए आत्मानुभूति को अधिक महत्व देते हुए लिखा है "जीवन किसी भी दायरे में बंध नहीं सकता। जहाँ-जहाँ जीवन के प्रति सच्चाई प्रकट की गयी है, वहाँ-वहाँ कला अपने सम्पूर्ण सौन्दर्य के साथ प्रकट हुई है।" इस प्रकार अमरकांत जीवन की गहराई से आत्मसात करते हुए जीवन पर्यन्त संघर्षरत रहे, यही संघर्ष एवं आत्मानुभूति उनकी कहानियों में अभिव्यक्त होती है। किशोरावस्था में उन्हें शिक्षक ने तथा युवावस्था में अनेक साहित्यकारों ने साहित्य के प्रति उनकी दृष्टि को पुष्ट किया, परन्तु जीवन की यथार्थ घटनाओं की संवेदना ने उनकी कृतियों को पूर्णता प्रदान की।

एक इन्टरव्यू की घटना को डायरी में लिखने के पश्चात उसे एक कहानी के रूप में गढ़ना साहित्य जगत में उनका पहला कदम था। अमरकांत ने साक्षात्कार में बताया कि-"मुझे डायरी लिखने की बहुत आदत थी। दिन भर की घटनाओं को मैं लिखता था। उसके पूरे नोट्स हमारे पास थे। बस उसी को मैंने उठाया और मैंने अपनी 'इंटरव्यू' कहानी लिख दी और मीटिंग में ले गया।" इसी

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Niranjan Shrotriya
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Brij Kishore Tiwari
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Principal

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Cross Correlation Analysis of Ionospheric foF2 Parameter during the Seismic Activities in Japan Region

[1*]Monu Raghuwanshi, [2]Dr. Shailesh Raghuwanshi, [1]Dr. Rahul Shrivastava, [3]Dr. S.K. Jain and [4]Prof. A.K. Gwal

[1]Department of Physics and Electronics, Barkatullah University, Bhopal, India
[2]Department of Physics, Bhabha University, Bhopal, India
[3]Department of Physics, Institute for Excellence in Higher Education, Bhopal, India,
[4]Rabindranath Tagore University, Bhopal, India.

Abstract : Anomalous variations in ionospheric parameters associated with large ($M \geq 6$) earthquakes can be considered as short term earthquake precursors. The main concern of this study is to analyze the foF2 datasets by using the cross correlation method to find a reliable precursor for the seismic activities in Japan region. Further we also filtered our data by using wavelet transform based matching pursuit MATLAB technique to denoise data and find out approximation value. These seismic activities took place on 14-03-2012 and 07-12-2012 and we analyzed the datasets of foF2 for a certain time lapse. The results show that the pre-earthquake ionospheric anomalies appear during 5 to 8 days prior to main shock and they are showing strong agreement with seismic activity in the absence of any geomagnetic activity. The changes in the F layer density may be interpreted as a result of associated seismic electric field generated by internal gravity waves and also the radon gas plays the major role.

Index Terms – Earthquakes, Seismic Activities, Ionosphere, Critical Frequency, Cross Correlation Analysis.

I. Introduction

Recently pre-seismic ionospheric anomalies have drawn intensive attention and it is considered that seismo-ionospheric coupling phenomena is a local event i.e. only a certain area over the ground is affected by the earthquake and its size is a function of the magnitude of the event. When Earth's lithosphere relate with the atmosphere before strong seismic event which generate an anomalous electric field and that affects the electron content of the ionosphere. Due to complex and non linear nature of ionosphere, in addition to the fact that there are large numbers of parameters contributing to its variability due to which many type of harmonic noises are generated in geophysical process. The interference of harmonic noise in geophysical data has long been a nuisance problem for geophysicists. Therefore the real problem is distinguishing the variations caused by earthquake activity from those stimulated by other sources.

By using Ionosonde we studied the variability of ionosphere with the help of electron density of ionospheric plasma or the integral of the electron density known as Ionospheric Total Electron Content (ITEC). Ground based ionosonde measure the most interesting parameter is the critical frequency of the F2-layer (foF2). This parameter shows the chaotic and nonlinear behavior of the ionosphere. It is very difficult to distinguish between the seismic-generated foF2 fluctuations and the fluctuations attributed to various noises. This problem becomes even more complicated when other smaller magnitude disturbances of undefined origin appear in the foF2 signal, which are known as geophysical or ionospheric noise (Davies, 1990 and Ismaguilov et al., 2001). To find a signal in a noisy environment creates a classic problem in signal processing. The goal of any signal denoising method is to effectively reduce noise level in order for retrieve a useful signal to emerge, while minimizing the information loss (Kopytenko et al., 2006).

There are two principle approaches in short-term earthquake prediction and can be separated. First one the deterministic approach which studies the temporal and spatial distribution behavior of some precursor, for example, the radon emanation (King et al., 1993). Other one is the statistical patterns processing on the purpose to find some regularity in the behavior of statistical characteristics of the given parameter. At present self organized criticality is one of the main streams of statistical earthquake prediction. It was established recently that seismic activity is one of the sources of the day-to-day ionospheric variability (Pulinets et al., 1998; Pulinets and Boyarchuk, 2004; Pulinets et al., 2004; Liu et al., 2004).

The coupling phenomenon of the ground, the surface and the ionosphere is due to the generation of irregular electric field in the earthquake preparation area (Pulinets et al., 2000). This preparation area of an earthquake event was introduced by Dobrovolsky et al. (1979) by using the elastic deformation calculations. The size of the earthquake preparation zone depends on the earthquake magnitude. The same (or very similar) dependencies were obtained not only in the case of the elastic deformations, but also in that of the spatial distribution of different types of precursors in the seismic activation zone (Bowman et al., 1998; Kostoglodov et al., 2003) including geochemical ones and local seismicity. These penetrations in the ionosphere generate anomalous electric field which causes the ion drift and that results in the formation of electron density irregularities (Kim and Hegai, 1997). These anomalies that appear in the ionosphere before the main seismic shock can be considered as ionospheric precursors (Pulinets et al., 2005).

The subsistence of the ionospheric anomalies or ionospheric precursors is well established not only by physical modeling but statistically as well (Pulinets et al., 2002; Chen et al., 2004; Liu et al., 2006). For the ionospheric precursors of earthquakes, mainly two approaches are used. First is to trace the specific ionospheric parameters and try to detect the anomalies by the measurements of recently revealed main features of the ionospheric precursor (Pulinets et al., 2003). The other way is to use the

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Wavelet Based Analysis of Ionospheric Critical Frequency during the Large Earthquakes in Italy

[1*]Monu Raghuwanshi, [2]Dr. Shailesh Raghuwanshi, [1]Dr. Rahul Shrivastava, [3]Dr. S.K. Jain and [4]Prof. A.K. Gwal

[1]Department of Physics and Electronics, Barkatullah University, Bhopal, India
[2]Department of Physics, Bhabha University, Bhopal, India
[3]Department of Physics, Institute for Excellency in Higher Education, Bhopal, India
[4]Rabindranath Tagore University, Bhopal, India

Abstract: This study deals with the wavelet based analysis of ionospheric foF2 data during the time lapse of two large ($M \geq 6$) earthquakes. These seismic activities took place in Italy region on 06-04-2009 and 20-05-2012 and we analyzed the datasets of foF2 for 41 days (30 days before and 10 days after). We adapted the wavelet based decomposition method for the better filtration of these ionospheric datasets. Results show that the pre-earthquake ionospheric anomalies appear during 1 to 3 days prior to main shock and they are showing strong agreement with seismic activity because there were not any presence of geomagnetic activity. The equality of these effects morphology regardless they observed over land or over sea imply one possible explanation that these anomalies are initiated by gaseous emanations from the Earth's crust, and radon gas plays the major role.

Index Terms **– Earthquakes, Seismic Activities, Ionosphere, Critical Frequency, Wavelet Analysis.**

I. Introduction

Earthquake is a strange phenomenon and there is no method that successfully predicted or forecast the earthquake phenomena. Scientists are trying to discover more reliable earthquake precursors so that earthquake prediction may be possible in future. Form last few decades the methods for earthquake predictions mainly focuses on searching abnormal variation in various geophysical quantities produced during earthquake preparation process. More than 100 years ago, the relationship between geomagnetic abnormal variation and earthquakes was noticed. At the end of 1950's, because the proton precession Magnetometer with high precision and good stability was invented and widely used, the observation technique for geomagnetic field was greatly improved and some earthquakes were convincingly predicted. Lithosphere-atmosphere-ionosphere coupling (LAIC) model explain that the geochemical, atmospheric and ionospheric parameters are united by a common physical mechanism (Pulinets, 2009). Using DEMETER satellite and GPS data analysis Akhmamedov (1993) demonstrated electron and ion density fluctuations in the ionosphere occurred over locations aforementioned to strong earthquakes. Hao et al., (2000) reported the variations in ionospheric slab thickness of F-region for some days before the main earthquake event. They concluded that it may be due to the seismogenic electric field developed above the surface of the earth. Recent investigation shows that the major earthquakes with the magnitude of more than $M = 6$ on Richter scale occurrence often within 48 hours is expected when geomagnetic conditions and Kp index attains its minimum value (Molchanov et al., 2005).

Scientists keep searching new methods for detecting the geomagnetic precursors before earthquakes for many years and some of them have been put into use for earthquake prediction in China. Among them, both the methods "Geomagnetic Transfer Function" and "Abnormal Daily Variation" are proved to be successful in earthquake prediction. However, "Geomagnetic Transfer Function" can only be used to middle and long term earthquake prediction and "Abnormal Daily Variation" can predict the possible date of an earthquake, but not the exact location. No satisfying methods are found until now, and it is important to apply new methods to detect the earthquake precursors. This is due to the fact that most of the earthquake prediction is based on traditional Fourier Transform (FT) method or the statistical methods. But it is well established that the numbers of data in geophysical domain consists of short duration transients and are highly non-linear and non-stationary in nature. Therefore performance of FT and statistical methods are diminished. To overcome these difficulties or limitations Wavelet Transform based methods are generally used now a day. The wavelet analysis is a mathematical technique which is very useful for numerical analysis of time series data in geophysics. Therefore the use of wavelet techniques in geophysical data analysis has grown since it represents a synthesis of old techniques associated with robust mathematical results and efficient computational algorithms under the interest of a broad community (Daubechies, 1992). It is a rapidly developing field. Overviews of papers are particularly very useful for the understanding of this method and several good ones concerning wavelets are already available (Chui 1992 a & b). In geophysical domain the main characteristic of the wavelet based methods is the interpretation of the time-frequency decomposition. For the better understanding of such feature, let us consider an example of musical structure where it has been interpreted as events localized in time. While it belongs to a more difficult structure where a piece of music may be understood by a set of musical nodes described by four parameters: frequency, occurrence time, intensity and duration (Daubechies, 1992; Lau and Weng, 1995).

In the previous years, the wavelet based techniques have been extensively used in atmospheric sciences (Gokhberg et al., 1995; Kotsarenko et al., 2005). In last decade numerous attempts were made to compare TEC values obtained from different ground and space based observations (Bilitza 2001; Oreskes, 2003; Namgaladze et al., 2009). The GPS satellites continuously provide TEC data (since 1994) through the world-wide network of GPS ground receivers. Earlier than GPS the VLBI technique has provided TEC data for more than 20 years (since 1984), collected at IVS (Huang, 2005). In this work, the Haar Wavelet Transform at level 2 is used to determine the wavelet time frequency spectra of foF2 data above the earthquake region of Italy for the time period of 41 days for different earthquakes.

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Synthesis and characterization of magnesium ion conductivity in PVDF based nanocomposite polymer electrolytes disperse with MgO

Nidhi, Sandhya Patel*, Ranveer Kumar

Department of Physics, Dr. Hari Singh Gour University, Sagar, M.P. 470003, India

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ABSTRACT

Magnesium ion conducting nanocomposite polymer electrolytes with different wt% of MgO nano-filler in optimum conducting composition of solid polymer electrolyte have been prepared by solution cast technique and characterized by various electrical and thermal techniques. The thermal stability in polymer electrolyte films was confirmed by Thermogravimetric analysis (TGA), reduction in melting temperature was confirmed by Differential scanning calorimetry (DSC) and decrease in degree of crystallnity was confirmed by X-Ray Diffraction (XRD). It was found that dispersion of nano-filer enhances ionic conductivity and dielectric constant, confirmed by complex impedance spectroscopy (CIS). The impedance spectroscopy technique performed in the frequency range between 42 Hz and 5 MHz at different temperatures and obtain highest conductivity 1.04×10^{-4} S/cm for optimum conducting composition (OCC) i.e. 70 PVDF:30 $Mg(NO_3)_2$:3MgO of NCPE thin film. The magnesium ion conduction in NCPE was confirmed by transference number measurement.

1. Introduction

Over the past few decades, solid polymer electrolytes have received considerable attention due to their potential applications in solid state electrochemical devices like rechargeable batteries, super capacitors, fuel cells and chemical sensors etc [1–4]. Solid polymer electrolytes (SPEs) have many advantages over liquid electrolytes. The advantages are the avoidance of electrolyte leakage, safe handling, wide temperature range of operation and increase in shelf-life of device [5–7]. Polymer electrolyte thin film having properties such as flexibility, mouldability, mechanical, thermal and electrochemical stability, which facilitates the desirable shape of device fabrication. These Polymer electrolytes are synthesized dissolving the alkali or alkaline metal salt in host polymer [8–13]. There are many host polymers like poly(ethylene oxide) (PEO), poly(vinyl alcohol) (PVA) and poly(vinylidene-fluoride) (PVDF) etc., but PVDF is most studied among all polymer, Because it consists crystalline vinly group($-CH_2-CF_2-$) having capacity to attract ions of ionic salts and have high value of dielectric constant which is useful for giving high conductivity value(ε is directly proportional to σ) of polymer electrolyte [14,15]. In present work ionic salt $Mg(NO_3)_2$ used as source of magnesium ion, low in cost and easily available in market, easy in handling in open environment and has zero rating of health hazards [3]. However, SPEs often exhibit low ionic conductivity at room temperature, In order to solve this problem various researchers have studied about Nanocomposite solid polymer electrolytes (NCPEs) [16–25].

Generally, Composite polymer electrolytes are two phase composite material having I^{st} –phase i.e. Solid Polymer Electrolyte and II^{nd}-phase i.e. inert filler material such as MgO, CeO_2, Al_2O_3, SiO_2, ZrO_2 and TiO_2 etc. [26–31]. In this paper we discuss about addition of MgO nano-filler because dispersion of filler in polymer electrolyte enhances the ionic conductivity, mechanical stability, thermal stability and biodegradability of polymer electrolyte. The enhancement in ionic conductivity of polymer electrolyte is due to the increase of amorphous nature, which support fast ion transport and promotes dissociation of ion pair, and segmental movement of polymer chain [32]. SPE/NCPE films are usually casted by solution casting technique [33–36]. This technique is inexpensive and easy in handling.

Electrochemical devices based on alkali and alkaline earth metals like Li, H, Mg, Zn and Ag are currently investigated [37–41]. Lithium-ion solid state batteries have the highest energy & power density, good capacity of retention, longer self discharge and low environment pollution etc. But working with Li system in an open environment is difficult because of its highly reactive nature and its

* Corresponding author.
E-mail address: sandhyaparipalak@gmail.com (S. Patel).

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PAPER

Light incoupling and SPR tailoring of graphene coated silver-aluminum alloys' dimer in mimicked humid ambient

Shivani Bhardwaj[1], Piyush K Parashar[2], R Uma[1] and R P Sharma[1]

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Abstract

This work demonstrates the optical responses of the graphene coated silver-aluminum (Ag–Al) alloys' dimer in the presence of humid ambient using Discrete Dipole Approximation (DDA) as a numerical technique. The non-equivalent spherical shape of graphene coated Ag–Al alloy dimer has been considered for this study, where the plasmonic coupling supports both the bonding and anti-bonding modes which lies in higher and lower wavelength region, respectively. The combined effect of these modes provide a broad resonant spectrum, which mainly influenced by the inter-particle separation between graphene coated alloy dimer. As the interparticle separation decreases, the resonance wavelength shows a red spectral shift with increase in the magnitude of local electric field. The results of proposed geometry provide a good support for the various applications in photovoltaics and photonics.

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Sputter deposited sub-stochiometric MoO_x thin film as hole-selective contact layer for silicon based heterojunction devices

Piyush K. Parashar[a,b], Vamsi K. Komarala[a,*]

[a] Centre for Energy Studies, Indian Institute of Technology Delhi, New Delhi 110016, India
[b] Sri Venkateswara College, Delhi University, New Delhi 110021, India

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ABSTRACT

We investigated the electronic properties of sputtered sub-stoichiometric molybdenum oxide (MoO_x) thin films on crystalline silicon (c-Si) wafer. Structural analysis of the MoO_x films growth indicated that the deposition temperature plays a crucial role. The MoO_x film growth at ~250 °C showed relatively large work function in comparison to growth at ~22 °C by the Kelvin probe force microscopy analysis. The large work function of the MoO_x film led to an inversion layer formation at the c-Si/MoO_x interface with the sufficient electronic band banding in the c-Si, which verified by conducting atomic force microscopy analysis. Recombination channels at the c-Si/MoO_x interface suppressed by a chemically-grown SiO_x buffer layer on the c-Si surface prior to the MoO_x film deposition, which enhanced the minority carrier lifetime of c-Si from ~12 μs to ~32 μs. The non-ideal diode behavior observed from the c-Si/MoO_x structure due to the trap-assisted carrier recombination at the interface in forward voltage bias condition. Impedance analysis also carrier out to understand the charge carrier recombination and resistance during transport at the c-Si/MoO_x interface with and without SiO_x buffer layer. The carrier-selective contact c-Si/MoO_x cell power conversion efficiency enhanced from ~3.0% to ~4.3% after the SiO_x passivation layer inclusion between the c-Si and MoO_x.

1. Introduction

The transition metal oxides (TMOs) recently got an attention as a hole- and an electron-selective materials for doping-free silicon heterojunction (SHJ) solar cells application, due to their preferential conductivity for one kind of charge carriers [1,2]. The sub-stoichiometric molybdenum oxide (MoO_x) is demonstrated as a hole-selective contact layer as an alternative to the a-Si:H(p^+) layer for the SHJ solar cells [3–5]. Some advantages of the MoO_x thin films are; it possesses a wide band gap and low parasitic absorption in comparison to the doped thin amorphous silicon (a-Si) films [5,6]. Besides the MoO_x, other TMOs such as; the V_2O_x and WO_x are also investigated for SHJ cells [7–10]. However, the key advantages of the MoO_x over vanadium oxide (V_2O_x) and tungsten oxide (WO_x) materials are; the lower melting point and high oxidation state [3,4,11]. Bullock et al. initially demonstrated the sub-stoichiometric MoO_x ($x < 3$) film as a versatile hole-selective contact with n- and p-type silicon solar cells as an inversion and accumulation layers, respectively [3]. Later on, Geissbuhler et al. reported power conversion efficiency of 22.5% from the SHJ solar cell comprised of TCO/MoO_x/a-Si:H(i)/n-Si/a-Si:H(i)/a-Si:H (n^+)/TCO structure [5].

Thermal evaporation technique is very common for the MoO_x thin films deposition [1,3–5,7]. However, another conventional thin film deposition technique under physical vapor deposition methods is the sputtering, which has more industrial relevance than the thermal evaporation due to large area uniform deposition capability on a large area Si wafer. The sputtering technique also provides flexibility in deposition condition due to tunability in various deposition parameters [12]. Recently, a few reports are appeared on the reactive sputtered MoO_x thin films from the Mo target as a hole-selective contact for the SHJ; Boccard et al. observed barrier for hole extraction due to the stoichiometric issues [13], Bivour et al. demonstrated suitability of sputtered MoO_x thin film as a carrier-selective contact for the n-Si wafer, and highlighted the importance of higher work function MoO_x film to improve the hole-selectivity with optimum c-Si electronic band bending at the n-Si/MoO_x interface [12].

In this work, we made an attempt to explore the MoO_x thin film deposition by the simple sputtering using stoichiometric molybdenum oxide (MoO_3) target directly, instead of the reactive sputtering from the Mo target with the O_2 concentration variation during film deposition. We have investigated the MoO_x thin film deposition at various substrate temperatures, and further films' structural properties by the X-ray diffraction and Raman techniques. The MoO_x films' work function analysis

* Corresponding author.
E-mail address: vamsi@ces.iitd.ac.in (V.K. Komarala).

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Thermal atomic layer deposition of AlO_xN_y thin films for surface passivation of nano-textured flexible silicon

Piyush K. Parashar[a], S.A. Kinnunen[b], T. Sajavaara[b], J. Jussi Toppari[b,c], Vamsi K. Komarala[a,*]

[a] Centre for Energy Studies, Indian Institute of Technology Delhi, New Delhi 110016, India
[b] Department of Physics, University of Jyväskylä, P.O. Box 35, 40014, Finland
[c] Department of Physics and Nanoscience Center, University of Jyväskylä, P.O. Box 35, 40014, Finland

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ABSTRACT

Aluminum oxynitride (AlO_xN_y) films with different nitrogen concentration are prepared by thermal atomic layer deposition (ALD) for flexible nano-textured silicon (NT-Si) surface passivation. The AlO_xN_y films are shown to exhibit a homogeneous nitrogen-doping profile and the presence of an adequate amount of hydrogen, which is investigated by Time-of-Fight Elastic Recoil Detection Analysis (ToF-ERDA). The effective minority carrier lifetimes are measured after the NT-Si surface passivation; the minimum surface recombination velocity (SRV) of 5 cm-s^{-1} is achieved with the AlO_xN_y film in comparison to the Al_2O_3 and AlN films (SRV of 7–9 cm-s^{-1}). The better SRV with AlO_xN_y film is due to the collective effect of field-effect passivation by the presence of fixed negative charges, and chemical passivation by the presence of hydrogen within the film. The capacitance-voltage, and conductance measurements also are carried out using metal-oxide-semiconductor structure to determine the fixed negative charge density ($N_{i,ox}$), and defect density of states (D_{it}) in the AlO_xN_y films. The better surface passivation is attributed to unusually large $N_{i,ox}$ of ~6.07×10^{12} cm^{-2}, and minimal D_{it} of ~1.01×10^{11} cm^{-2}-eV^{-1} owing to the saturation of Si dangling bonds by the hydrogen within the AlO_xN_y film matrix after the annealing step.

1. Introduction

Reducing the Si wafer thickness to ~50 μm or less has a cost advantage, and also provides an opportunity for Si-based flexible optoelectronic applications [1–3]. In case of solar cells applications, thin wafers exhibit high open-circuit voltage (V_{oc}) owing to the lower bulk recombination and effective carrier extraction besides the cost reduction [4], but the light trapping within a thin Si wafer will be a great challenge due to the small absorption coefficient [5]. Nano-Textured Silicon (NT-Si) surface can be a way forward to improve the optical gain [6,7]. However, the NT-Si surface needs effective passivation owing to; (a) nanoscale surface irregularities caused by process damage, and (b) severe charge carriers' surface recombination velocity (SRV) due to the surface defects [7]. To overcome some of the NT-Si surface adverse effects; thin dielectric films (SiO_2, SiN_x, HfO_2, Al_2O_3, and AlN) are very much essential for the surface passivation. They decrease interfacial/surface defect state density (by the chemical passivation) or/and reduce minority carrier concentration near the interface (by the field effect passivation), which can improve the device performance drastically [8–10].

For NT-Si surface passivation, the atomic layer deposition (ALD) of dielectric thin films is one of the best options for the conformal growth with excellent step coverage and atomic level control owing to its self-limiting feature [11]. For the Czolarski (p-type) and float zone (n-type) black-Si wafers of 330–400 μm thickness, the surface recombination velocity (SRV) of 22 cm-s^{-1} and 5–7 cm-s^{-1} are achieved by the ALD-deposited Al_2O_3 films, respectively [7,10]. Alongside, ALD-fabricated AlN films are also explored for the Si surface passivation due to higher fixed negative charge in the films than the Al_2O_3 films [9]. Due to the requirement of high-temperature for the AlN film growth process, the plasma enhanced-ALD (PE-ALD) process is preferred [8]. Recently, aluminum oxynitride (AlO_xN_y) films have received attention as a surface passivation, and as a high-k dielectric material [12–15]. The AlO_xN_y films also have the better antireflection properties than the oxide films because of the optimum index of refraction than the Al_2O_3. [13]. The interface charge of AlO_xN_y films can also be engineered with nitridation process by increasing the negative fixed charges [12]. Chen et al., proposed the one-step growth of AlO_xN_y films using ammonia and oxygen PE-ALD [13]. The AlO_xN_y films are prepared by incorporating nitrogen into the Al_2O_3 films using PE-ALD [14]. Some attempts also

* Corresponding author.
E-mail address: vamsi@ces.iitd.ac.in (V.K. Komarala).

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Photoluminescence in Tellurite Base Glasses – A Review

Praveen Tiwari[1]* Ghizal F. Ansari[2]

Abstract *– This research presents a few reports identified with metal-dielectric nanocomposites based on tellurite glasses for photonic applications. Their arising application in the field of plasmonics has shown the opportunities for the improvement of shading shows, optical intensifiers, and sensors and biosensors based on the upgrade of the spectroscopic properties of rare-earth particles within the sight of metallic NPs. Tellurite glasses have likewise exhibited to be expected material for laser applications. Consequently in this research, we likewise concentrate to this significant use of Nd3+-doped TeO2-ZnO Rare-earth-doped glasses can be taken advantage of to control the sun powered range to improve the sun based cell effectiveness. Transparent rare-earth-doped materials as glasses can ingest light at more limited frequency and transmit light at longer frequencies, by the notable down change measure; other than they enjoy the benefit of simple readiness and high doping convergence of rare-earth particles. In this setting tellurite glasses show up as potential up-and-comers as well. Barely any glassy hosts have been explored to be utilized as cover slip to improve the presentation of traditional sun based cell; so the absence of studies utilizing rare-earth-doped glasses on the highest point of standard sun powered cells has persuaded the new reports that are assessed in this research.*

Keywords *– Photoluminescence, Tellurite, Base, Glasses*

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INTRODUCTION

Properties of Tellurite Glasses for Laser Applications

Countless investigations have been completed on tellurite-based glasses for as far back as decade, because of their possible applications in planning materials for optical communication frameworks, lasers, nonlinear optical, and opto electronic gadgets. These applications of the tellurite glasses are credited to their wide straightforwardness window (0.4–6μm), high direct and nonlinear refractive lists, low softening temperature, high warm and synthetic soundness, high devitrification obstruction, and low phonon energy . Low phonon energy empowers the tellurite have glasses to accomplish high quantum efficiency for the rare-earth particle doping. Further, tellurite glasses are not hygroscopic, which restricts a few applications of the phosphate glasses. Tellurite glasses have been shown expanded transmission in the infrared locale. Because of its effectiveness in the fiber drawing at low temperatures and its high dissolvability of rare-earth ions, tellurite glasses have been utilized in optical parts for sensors, telecommunications, and clinical applications. It is notable that the outrageous polarizability of the tellurium electron solitary pair is answerable for the higher nonlinear optical defenselessness upsides of tellurite-based glasses. There is a shot at happening of neighborhood rearrangement of the electronic charge thickness, when most of glasses are presented to high-extreme laser heartbeat, and it influences the nano structural modification in the glass grid. Such kind of effect expects an essential part during the course of nonlinear optical retention, and this assimilation in the end modifies the refractive list of the glass material. Primary, warm, and optical properties of glasses can be constrained by fluctuating the organization of the glass.

These days investigations on rare-earth particle doped strong materials have been expanding because of their expected applications in different fields. Specifically rare-earth-doped glasses have been considered as prime contender for the fundamental optical applications, for example, shading shows, optical amplifiers, sensors, optical information stockpiling gadgets, lasers, and optoelectronic gadgets. Rare-earth (RE) ions display 4f–4f or 5d–4f discharge transitions and go about as incredible activators in producing sharp iridescence at various groups from UV to infrared district. Among the trivalent lanthanide ions, dysprosium (Dy^{3+}) is one of the promising ions for business show applications and for laser gadgets as it displays a few intriguing optical properties

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Reviewed Study on the Propagation of Ultrasound Waves for Liquids and Glasses Materials

Puja Birthare[1]* Dr. B. V. Tiwari[2]

[1] Research Scholar, Swami Vivekanand University, Sagar, MP

[2] Professor and Head, Department of Physics, Swami Vivekanand University, Sagar, MP

Abstract – Accordingly, ultrasonic measurements have been used by several authors to monitor the evolution of the viscoelastic moduli of polymers as a function of time or temperature and, recently, become a characterization technique of its own right, generally known as ultrasonic dynamic mechanical analysis (UDMA). Often the technique is used in conjunction with rheological methods as a means of providing a better insight into the viscoelastic behavior of polymer systems. As yet UDMA is underutilized primarily because of the low operating temperatures (usually below 100°C) of commercially available ultrasonic transducers, and also due to the requirement of a coupling medium to ensure an efficient energy transfer mechanism between the transducer and the test material. Despite these limitations, this paper shows that the use of ultrasonics is potentially a powerful method for the characterization of polymers, particularly as a tool for online monitoring of events occurring during polymer processing and in the manufacture of polymer matrix composites. The aim of this paper is to review the progress made in recent years, highlighting the potential and reliability of UDMA for monitoring physical transitions in polymers such as glass transition, melting, crystallization, as well as physical changes taking place during curing of thermosetting resins.

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INTRODUCTION

Notwithstanding the way that the material science behind ultrasound age, propagation, ID, and change into practical information is decently marvelous, its clinical application is much less intricate. Since ultrasound imaging has improved gigantically all through the latest decade, it can give anaesthesiologists opportunity to honestly picture target nerve and appropriate anatomical structures. A ultrasound-guided nerve square is a fundamental improvement district for new employments of ultrasound advancement and has become an essential bit of nearby sedation. Understanding the fundamental ultrasound material science presented here will be helpful for anaesthesiologists to appropriately pick the transducer, set the ultrasound structure, and a short time later get satisfactory imaging.

Ultrasonic Studies

Term ultrasonic got from the Latin words "ultra" implies past, and "sonic" connotes sound. Ultrasonic is the piece of material science stressed over ultrasonic waves; it is portrayed as the vibrations of frequencies more important than the uttermost spans of the discernible range for individuals that are, more critical than around 20 KHz. Ultrasonics is the mix of science and development that is investigation of acoustics and the advancement of sound. Sonic term is applied to those ultrasound waves which are ranges between high frequencies.

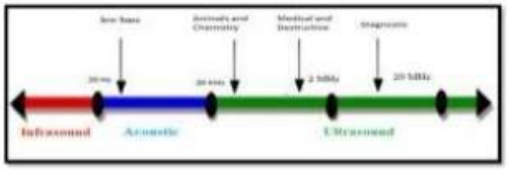

Figure 1: Ultrasonic Frequency Spectrum

As indicated by recurrence, sonic range is partitioned into primary three districts:

(a) low repeat, high power ultrasound

(b) high repeat, medium power ultrasound

(c) high repeat, low power ultrasound

Low repeat sonic waves ranges between 2 KHz to 100 KHz, high repeat yet medium power ultrasound ranges between 100 KHz to 1 MHz and high repeat

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अपशिष्ट (कचरा) प्रबंधन : भविष्य की चुनौतियाँ एवं संभावनाएं

डॉ० प्रभात चौधरी
प्राध्यापक, राजनीति विज्ञान, शासकीय स्नातकोत्तर महाविद्यालय, **गुना, म०प्र०**
डॉ० रंजना चौहान
अतिथि विद्वान, शासकीय स्नातकोत्तर महाविद्यालय, **गुना, म०प्र०**
डॉ० चन्द्रलेखा साकला
अतिथि विद्वान, शासकीय स्नातकोत्तर महाविद्यालय, **गुना, म०प्र०**

(प्राप्त : २२ मार्च २०१९)

Abstract

भारतीय शहरों में सामान्यतः खुले क्षेत्रों में कचरा फेंका जाता रहा हैं, लेकिन इसमें अब समस्यायें आ रही हैं। बढ़ते जन दबाव व फैलती बस्तियों के कारण शहर के भीतर व बाहर ऐसे खुले क्षेत्र नहीं रह गये हैं। दूसरे, खुले में रखे कचरे से दुर्गन्धयुक्त वातावरण बनता है और संक्रामक बीमारी फैलाने वाले कीटाणुओं को फलने–फूलने का अवसर मिलता है। कचरे में ५०–६० प्रतिशत तक मीथेन गैस रहती है, इसलिए इसमें वैश्विक तापवृद्धि को बढ़ावा मिल रहा है। प्लास्टिक की थैलियों में बंद यह कूड़ा या तो सड़कों पर सड़ता है या फिर गली मोहल्लों में घूमने वाले आवारा जानवर इसका उपभोग करते हैं। कमोबेश देश के हर महानगर व शहर की स्थिति एक जैसी हैं।

Figure : 00 References : 02 Table : 00
Key Words : कचरा प्रबंधन, कचरा का मानव जीवन पर प्रभाव, कचरा नियंत्रण के उपाय

हर तरफ कचरा .....कचरा, यह किसी गीत मुखड़ा नहीं बल्कि वो कड़वी हकीकत है, जिसका सामना हमें और आपको आने वाले समय में करना होगा। कल्पना कीजिये जब हमारें चारो ओर पॉलीथीन की थैलियां, प्लास्टिक के गिलास, चम्मच,पुराने टायर, पानी–जूस व कोल्ड ड्रिंक की खाली बोतलें, पुराने कम्प्यूटर, लैपटॉप, मोबाइल, टी.वी., बल्ब, सीएफएल, सब्जी–फल के छिलके व गंदगी दिखाई देगी। तब कचरें के ऊंचे–ऊंचे पहाड़ चारों ओर होंगे। हमारे आने वाले कल की काली भयानक व बदबूदार हकीकत यही है। अगर कचरा पैदा करने की हमारी वर्तमान रफ्तार बदस्तूर जारी रही तो जल्द ही धरती कचरे से ढँक जायेगी। हकीकत यह है कि पर्यटन व धार्मिक स्थलों, पहाड़ों नदियों व पार्को में आपको कचरा ही कचरा दिखाई देगा।

अभी हाल ही में प्रकाशित रिपोर्ट के अनुसार माउंट एवरेस्ट पर टनों कचरा निकाला गया। प्रतिवर्ष विभिन्न पर्वतारोहण अभियानों के तहत सैकड़ों पर्वतारोही अपने साथ पानी व जूस की बोतलें, ऑक्सीजन के सिलेण्डर, खाने पीने की सामग्री व अन्य जरूरत के सामान लेकर जाते हैं और वापसी में सारा कचरा पहाड़ों पर इधर–उधर फेंक दिया जाता है। जब ऊंची चोटियां व पहाड़ों पर टनों कचरो हर साल एकत्र हो रहा है तो जमीनी इलाकों में क्या हालत होगी, इसका सहज ही अंदाजा लगाया जा सकता है। उत्तराखण्ड प्रदेश में चार धाम की यात्रा के दौरान हर वर्ष लाखों यात्री केदारनाथ, बद्रीनाथ,

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Biofuel Production by Animal Wastes- A Review

Sushmita Shrivastava[1] and R. S. Tomar[2]
Amity Institute of Biotechnology[1,2], Amity University Madhya Pradesh[1,2]
Email: rssush@gmail.com[1], rstomar@amity.edu[2]

Abstract: Energy is the basic requirement of our daily life for running various activities. Since long time, we have been dependant on conventional sources of energy which majorly include fossil fuels like coal, petroleum, diesel etc. Fossil fuels are non- renewable and exhaustible sources which will get diminish due to enormous consumption. Even they are responsible for causing large amount of pollution in the surroundings. So there is need of such an efficient source of energy which is renewable, inexhaustible and environmental friendly. Although there are some other sources of energy like solar energy, hydro energy, tidal energy but their consumption and utilization is conditional. Biofuels emerge as a novel source of fuel. They are significant, sustainable and eco-friendly source of energy. Biogas, biodiesel, bio-ethanol, etc. are some popular examples of bio-fuels. Both plant and animals are capable to produce such fuels. But in the present article, emphasis has been given to fuel production by animal wastes. Animal wastes like faecal matter, unused fat etc. which are generally thrown off due to their non- utility, have proven their importance in the production of energy. These are economically beneficial, pollution less and capable to fulfil our demands of energy requirement.

Keywords- Bio-fuel, animal wastes, energy, conservation, environment.

1. INTRODUCTION

Animals are the significant part of our environment. They not only stabilizes ecosystem, used as food substitutes, produce economically important products like honey, wax, lac, fibres, but also plays a magnificent role in production of energy. Energy production and conservation are the key aspects of today's world. As far as energy production is concerned there are so many sources, but still there is crisis of energy. Some sources are less in amount, some are responsible for causing pollution. Most of the efficient sources like solar energy, fossil fuels are non renewable and needs to be conserved. So there is need for some worthy sources which are sufficient in quantity, renewable and pollution free means there is requirement of biofuel. Animal waste is one of the best substitutes of biofuel production. Biofuels are mainly the fuels having biological origin. They can be categorized as primary fuels and secondary fuels. Primary fuels are conventional fuels obtained by burning of wood or dry animal wastes, while secondary fuels are modern fuels obtained indirectly by plant and animals. Secondary fuels can be further sub-categorized as first generation fuel, obtained by food sources like ethanol from starch or biodiesel from waste animal fat; second generation fuels obtained by non- food cellulosic mass or by oil sources; third generation fuels obtained by microbes. [1]

In agricultural based developing countries like India dry animal dung has been the major source of fuel from several years due to its low cost but it produces large amount of pollutants like carbon monoxide, particulate matters, etc. and they impose enormous health issues related to respiratory problems.

2. METHODOLOGY

Conversion of animal waste into energy is basically an anaerobic phenomenon which include conversion of organic waste into biogas or biofuel (methane), which can be further utilized as source of energy.

Benefits Of Using Animal Wastes As Fuel

1. It is highly economic, saves money.
2. It helps in production of large amount of biofuel in the form of gas which can be used as electricity source or as fuel.
3. The slurry produced in the process can be used as compost or bedding for crop production.
4. The liquid part formed can be used in the form of fertilizer.
5. Using evolved gas like methane as fuel prevents its release in atmosphere and thus reduces global warming and green house effect.

3. PRODUCTION OF BIOFUEL

These are the energy sources obtained either by plant or animal. Plants are the efficient sources of biofuel in the form of bioethanol, bio- oil etc. In the present article, an effort is made to traced out fuels which are produced by animal wastes. Dumping and proper disposal of animal waste is one of the major problem of our society. Using of dry cattle dung as fuel is one of the traditional and main fuel among rural people. But it produces large amount of pollution and the smoke produced by this method can harm to its users. In the present text, various animal wastes used as source of biofuel are mentioned.

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Ethnobiological Non- Herbal Therapeutics Used For Cattle In Gwalior, M.P.

Sushmita Shrivastava, R.S. Tomar

Abstract: Nature consists of plants, animals, human beings, minerals and several other physical and chemical factors, which all interact with each other and constitute an environment. This interaction was also reported by our ancestors and aboriginals and expressed in the form of a bunch of information called Ethnobiology. This bunch has various therapeutical and non- therapeutical approaches based on believes, culture and surroundings. Among therapeutical approach there is large description about use of plant recipes, but there are certain plant by- products, animal parts and minerals also which are used singly or in combination with plant products or some additives by the villagers of Gwalior region to treat their cattle. In the present paper, an effort is made to document such non- herbal ethnobiological formulations which can be used as curative purpose for cattle. They are as useful as herbal recipes and plays important role in traditional system of treatment.

Key Words: Cattle, ethnobiology, minerals, non- herbal, therapeutic.

1 INTRODUCTION

Traditional knowledge has always been a great source of information since a very long time. Our history revealed about several effective information for curative purposes also. Ethnobiology is the science which deals with this traditional knowledge regarding people's belief, faith and experiences with their surroundings. It deals with the use of plants, animals, minerals or other materials which are available in the nature for the welfare of man and environment. As animals specifically cattle are important members of our society, their good health is very necessary for the economy of our country. Although allopathic medicines are available but they are very costly and also imposes side effects to the animal. While on the other hand traditional medicines are cheaper, easily available and have no side effects. The most important thing is that people have full faith on them. There are lots of literature and information which comprises use of herbal recipes for the treatment of animals. But there are certain minerals, plant by-products and animal parts also which are found to be used by our aboriginals and keep equal importance in the field of ethnobiology. In the present paper, an effort has been made to document some non herbal formulations which are utilized by villagers and folk people of Gwalior region for the treatment of their cattle. These formulations are either used singly or with some additives like oil or any plant product. They are found to be equally important like other plant formulations. They play a crucial role in traditional medicinal system. With the use of age old herbal formulations, use of several non- herbal, minerals and animal parts were reported in various regions of India and abroad. In place of plants as medicines, zootherapeutical uses were also emphasized in semiarid regions of Northeastern Brazil [1]. A study took place in Ngamiland district of Botswana revealed about the use of thin wire for the treatment of backleg in calves. Similarily the people of the area also used 'tshega', a specific garment formed by goat skin for the cure of aphosphorisis [2]. In the same way, millipedes were found to be used to treat pink eye disease among cattle, tortoise shells were used in wound healing for cattle and poultry [3]. Use of non- herbal ethnoveterinary formulations were also mentioned among Sardinian shepherds for the cure of small ruminants [4]. A study carried out in Shervaroy Hills of Eastern Ghats and revealed about the use of rock salt instead of common salt in several ethnoveterinary formulations [5].

2 MATERIALS & METHODS

The study had been taken place in Gwalior region of Madhya Pradesh. The study basically included interaction and interview with the villagers, aboriginals and expert dairy persons of about 30 villages through a set questionnaire. The questionnaire was prepared to get information regarding diseases of cattle, their treatment strategies about use of herbal and non- herbal recipes and mode of administration. Diseased cattle were keenly observed for symptoms of the disease and recovery phase. Each owner of the diseased cattle was asked for causatives of disease, general condition of cattle and their behavioural changes.

- *Dr. Sushmita Shrivastava, Assistant Professor, Amity Institute of Biotechnology, Amity University Madhya Prades, Gwalior (M.P.), 474005, India, email: rssush@gmail.com*
- *Prof. (Dr.) R. S. Tomar, Assistant Professor, Amity Institute of Biotechnology, Amity University Madhya Pradesh*

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ETHNOMEDICINAL STUDIES FOR THE TREATMENT OF TYMPANITES AMONG CATTLE IN GWALIOR REGION OF MADHYA PRADESH

Sushmita Shrivastava*, Rajesh Singh Tomar
Amity Institute of Biotechnology, Amity University Madhya Pradesh, India
*rssush@gmail.com

ABSTRACT: Ethnomedicines are the traditional medicines which are effectively being used for the treatment of humans as well as cattle since the ancient times. This means of treatment is quite beneficial, cheap and easily accessible to people below poverty line. Since, the knowledge of such medicines is restricted among few people, it needs to be popularized and systematized. Cattle being an important part of our society gets affected by various types of diseases. Tympanites is one of the common ailments among cattle in Gwalior region of M. P. The present study aims to collect the information regarding treatment of tympanites among cattle by the effective herbal medicines available in the region and also to document this for the benefit of society. The study involves keen survey of area and interviewing people to get information. *Achyranthus aspera*, *Balanites aegyptiaca*, *Zingiber officinale*, *Citrus limona*, *Trachyspermum ammi* are found to be valuable plants capable of effectively curing bloat in the cattle. By the study and frequent observations, it has been found that traditional medicines are very effective in the treatment of bloat among cattle.

KEYWORDS: Tympanites, cattle, treatment, ethnomedicines, diseases.

INTRODUCTION

Ethnomedicines are basically traditional medicines used by the rural or aboriginals of our society from the long period of time. These are highly effective, cheap and easily available recipes which are generally found in our vicinity. People have full faith over them. These medicines are found to be widely applied by rural people for curing themselves as well as their animals. The knowledge about these formulations and recipes are transferred from generations to generations by word of mouth. The knowledge of these traditional medicines is not only beneficial for the conservation of biodiversity but also aids in upliftment of community health[1]. They are better choice against modern synthetic medicines, because allopathic drugs enter into living system of livestock and the presence of these drugs in milk and meat produces toxicity in the consumers. Livestock or cattle are the very commonly domesticated animals by rural areas. They are responsible for economic growth of our country. Hence their health has kept utmost importance. A variety of ailments and diseases effect the health of domesticated cattle but the diseases related to alimentary canal and integument are most common. The owners of cattle, folk practioners, milkmen and farmers of our society treat diseased cattle with the help of local herbs and traditionally known plants.

A worth notable work in this field had already been done by various efficient

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THERAPEUTIC USE OF ETHNO- ZOOLOGY IN THE WELL- BEING OF HUMAN: A REVIEW

Sushmita Shrivastava* and Rajesh Singh Tomar

Amity Institute of Biorechnology, Amity University Madhya Pradesh

Abstract:

Plants and animals are the basic biotic components of nature. Both are important and keep equal balance in the environment. Well being of all the components is must for the sustainability of nature and medicines play crucial role in the treatment of various diseases and make them compatible with environment. Plants from the long time had been widely utilized by the people for medicines. Like them, animals also keep unique place in the therapeutic world. They had been used by our tribal and aboriginals not only as food but also for medicinal purposes to treat several ailments and disorders. This knowledge regarding use of animals for curative purposes had been found to limited among few individuals of society, which needs to scattered and flourished. Documentation and systematization of such information is must for its survival and future existence. Ethnozoology is a branch of ethnobiology which deals with relationship among animals and humans. The present review is an effort to provide knowledge about traditional use of animals in the form of curatives for the benefit of mankind.

Keywords: Animals, ethnozoology, therapeutic, traditional, mankind.

Introduction:

Ethnobiology is the science of relationship among plants, animals and human beings. It is an ancient branch deals with traditional knowledge. Ethnobotany and Ethnozoology are the sub branches of ethnobiology, which particularly deals with people's belief, faith and knowledge. Ethnozoology is mainly related to interrelationship among animals and human beings. It involves people's believes, faith, emotions and interactions with animals and their environment. It can be further categorized on the basis of type of fauna into ethnoherpetology, ethnoentemology, ethnoornithology, ethnoichthyology, ethnoecology, etc. It is a traditional knowledge used by aboriginals and villagers for their livelihood. This knowledge is very meagre and transferred generation to generation only by means of mouth.

The relationship of animals with humans had a long history, which had been depicted by several paintings and sculptures of past. Initially the early man was hunter, used to kill animals for his food requirements. Further, he had started domestication of animals for fulfilment of his needs. From that prehistoric time to till now, man is continuously in association with animals. Although this relationship has both negative and positive perspectives according to mental status of person. Some people had misused their

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Solvent and intermolecular nitrogen coordination dictated formation of self-assembled organostannane-macrocycles based on monomers and coordination polymers with unsymmetrical 5-[(*E*)-2-(4-pyridyl)-1-diazenyl]-2-hydroxybenzoate ligand: Structural topologies and dimensionality

Tushar S. Basu Baul [a, *], Anurag Chaurasiya [a], Andrew Duthie [b], Maria G. Vasquez-Ríos [c], Herbert Höpfl [c, **]

[a] Centre for Advanced Studies in Chemistry, North-Eastern Hill University, NEHU Permanent Campus, Umshing, Shillong, 793 022, India
[b] School of Life & Environmental Science, Deakin University, Geelong, Victoria, 3217, Australia
[c] Centro de Investigaciones Químicas, Instituto de Investigación en Ciencias Básicas y Aplicadas, Universidad Autónoma del Estado de Morelos, Av. Universidad 1001, 62209, Cuernavaca, Mexico

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ABSTRACT

A series of six new organotin(IV) compounds, namely, [nPr$_3$Sn(HL)(MeOH)] **1**, [nBu$_2$Sn(HL)]$_n$ **2**, [Bz$_2$Sn(HL)]$_n$ **3**, [Ph$_2$Sn(HL)]$_n$·nC$_6$H$_6$ **4**, [Ph$_2$Sn(HL)(EtOH)] **5** and [nBu$_2$Sn(L)]$_n$ **6** were synthesized by reacting appropriate tri- and di-organotin(IV) precursors with the flexible pro-ligand 5-[(*E*)-2-(4-pyridyl)-1-diazenyl]-2-hydroxybenzoic acid. Their solid-state structures were deduced from single crystal X-ray diffraction data and, in the case of compound **6**, also by solid-state ^{13}C and ^{119}Sn NMR spectroscopy. Compounds **1** and **5** are mononuclear as a consequence of methanol/ethanol coordination preventing the propagation of the polymers. The monodentate oxygen atom from the carboxylate group of HL$^-$ and the tin-coordinated oxygen atom of alcohol are situated at the axial positions, while Sn-R substituents are at the equatorial sites, defining the distorted trigonal-bipyramidal coordination polyhedron. Both **1** and **5** form one-dimensional (1D) chains created by virtue of O–H$_{solv}$···N$_{py}$ hydrogen bonding interactions, and antiparallel running chains in **1** furnish 34-membered dinuclear macrocyclic rings occupied by SnPr$_3$ groups. Compounds **2**–**4** feature a one-dimensional coordination polymer facilitated by intermolecular N→Sn bond formation with the pyridyl substituent of LH$^-$. The axially located O$_{COO}$ and N$_{py}$ donor atoms and equatorial Sn-R groups give rise to a trigonal-bipyramidal geometry. While similar coordination geometries are observed for **2**–**4**, the tri-n-butyl derivative **2** generates 60-membered macrocyclic rings where four n-butyl groups from two neighboring molecules occupy the cavities. The triphenyltin analogue **4** forms two-dimensional layers with voids filled by benzene solvate molecules, and the sterically demanding tribenzyltin groups in compound **3** result in only relatively weak C–H···π, C–H···N and van der Waals contacts. On the other hand, compound **6** is a two-dimensional (2D) coordination polymer displaying a distorted pentagonal-bipyramidal geometry around the tin atom where four oxygen atoms of two ligand molecules and the nitrogen atom of a ligand constitute the equatorial plane, while the carbon atoms of the n-butyl groups complete the axial positions. The molecules of **6** self assembled to an interesting dimeric tecton based on a four-membered Sn$_2$O$_2$ ring, generating large 48-membered hexanuclear macrocycles, where the cavities are filled by four di-n-butyl groups from two neighboring molecules. The solution behaviors of compounds **1**–**5** were judged from the results of the ^{119}Sn NMR spectroscopic characterization.

* Corresponding author.
** Corresponding author.
E-mail addresses: [redacted] (T.S. Basu Baul), [redacted] (H. Höpfl).

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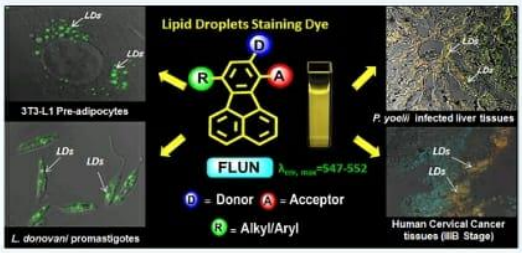
Imaging and Quantitative Detection of Lipid Droplets by Yellow Fluorescent Probes in Liver Sections of *Plasmodium* Infected Mice and Third Stage Human Cervical Cancer Tissues

Ashutosh Sharma,[†] Ajay K. Jha,[†] Shachi Mishra,[†] Ankita Jain,[‡] Bhavana S. Chauhan,[§] Manoj Kathuria,[∥] Kundan S. Rawat,[†,#] Neeraj M. Gupta,[†] Renu Tripathi,[§] Kalyan Mitra,[∥] Monika Sachdev,[‡] Madan L. B. Bhatt,[⊥] and Atul Goel*[,†,#]

[†]Fluorescent Chemistry Lab, Medicinal and Process Chemistry Division, CSIR-Central Drug Research Institute, Lucknow 226031, India
[‡]Endocrinology Division, CSIR-Central Drug Research Institute, Lucknow 226031, India
[§]Parasitology Division, CSIR-Central Drug Research Institute, Lucknow 226031, India
[∥]Electron Microscopy Unit, CSIR-Central Drug Research Institute, Lucknow 226031, India
[⊥]Department of Radiotherapy, King George's Medical University, Lucknow 226003, India
[#]Academy of Scientific and Innovative Research, Ghaziabad 201 002, India

Supporting Information

ABSTRACT: The diagnosis and prognosis of the disease associated with lipid irregularity are areas of extreme significance. In this direction, fluoranthene based yellow fluorescent probes (**FLUN-550**, **FLUN-552**, **FLUN-547**) were designed and synthesized by conjugating the ethanolamine headgroup of the phospholipid phosphatidyl-ethanolamine present in biological membranes. Owing to unique photophysical properties and aqueous compatibility, these probes were successfully employed for staining lipid droplets (LDs) in preadipocytes and *Leishmania donovani* promastigotes. Furthermore, using the fluorescent probes **FLUN-550** and **FLUN-552** we successfully imaged and quantitatively detected the excess accumulation of lipids in a liver section of *Plasmodium yoelii* MDR infected mice (3- to 4-fold) and the tissue sections of third stage human cervical cancer patients (1.5- to 2-fold) compared to normal tissues. To the best of our knowledge, this is the first report of yellow fluorescent probes for imaging and quantitative detection of LDs in human cervical cancer tissues. These new yellow fluorescent lipid probes (**FLUN-550** and **FLUN-552**) showed great potential for diagnosis of cervical cancer patients.



INTRODUCTION

Lipid droplets (LDs) are dynamic organelles in the cells which are considered as a place for energy storage and are significantly involved in the lipid metabolic events.[1,2] The abnormalities in the function of LDs have significant effects on the pathogenesis of diabetes, obesity, and cardiovascular diseases. Liver is the main organ of the human body that controls the lipid metabolism.[3,4] Literature reports revealed that LDs play a key role in the production and assembly of hepatitis C virus, a causative agent of chronic liver diseases.[2,5] The methods generally used to access the LDs level are ultrasound and computerized tomography scanning, but these analyses are not precise and can detect only ~25% of the fat content in the liver.[6] Transhepatic biopsy is the only method to diagnose early stage liver disease with high sensitivity. Hence, the direct monitoring and localizing of the accumulation of an abnormal level of LDs in the liver tissue is a driving area of research. Further cancerous tissues have been recognized to exhibit specific alterations in their metabolic activity which is thought to facilitate the rapid proliferation of transformed cells. Earlier reports suggest increased rate of lipid biosynthesis in cancerous tissues that are comparable to liver tissues, which have a high rate of fatty acid biosynthesis.[7,8] Despite the growing evidence demonstrating deregulated lipid biosynthesis as a feature of cancer, the mechanism of these metabolic alterations in the development of the disease is not fully understood. Therefore, diagnostic tools for detection, imaging, and quantification of lipid droplets in infected/cancerous and normal tissues are highly desirable for

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अमरकान्त के कृतियों में राष्ट्रीय चेतना

1. शाकुन्तला प्रजापति 2. कुसुम सिंह
1. शोध अध्येत्री, हिन्दी विभाग, महात्मा गाँधी चित्रकूट ग्रामोदय विश्वविद्यालय, चित्रकूट, सतना (म.प्र.), भारत
2. एसो प्रोफेसर, हिन्दी विभाग, महात्मा गाँधी चित्रकूट ग्रामोदय विश्वविद्यालय, चित्रकूट, सतना (म.प्र.), भारत

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सारांश : *भारतवर्ष प्राचीनकाल से एक महान राष्ट्र रहा है। भारत की संस्कृति परम्परा, समृद्धि, साहित्य, राष्ट्रीय एकता और लोकभावना सदियों से अक्षुण्ण रही है। भारत में राष्ट्रवाद की जड़ें भारत के प्राचीनतम साहित्य में भी विद्यमान रही है। हिन्दी साहित्य के विकास की पहली सीढ़ी से लेकर आज तक की रचनाओं में राष्ट्रीय चेतना न केवल प्रमुख घटक के रूप में रहा है। वरन् कुछ कृतियों का मूल ही राष्ट्रीयता से प्रेरित रहा है। इतिहास इस बात का साक्ष्य है कि समय–समय पर विदेशी आक्रमणकारियों लुटेरों से आक्रांत भारत के नागरिकों में राष्ट्रीय भावना की तरंगे हिलोरे लेती रहीं हैं।*

मुख्य शब्द – संस्कृति, समृद्धि परम्परा, साहित्य, लोकभावना, आक्रमणकारी, अक्षुण्ण, राष्ट्रीय चेतना, आक्रांत।

इस सन्दर्भ में देखें तो हिन्दी की अनेक रचनाएँ राष्ट्रीय भावना के ध्येय से रची गयीं हैं–"भारत अतीत से ही एक राष्ट्र था। उनके सम्पूर्ण साहित्य, दर्शन और कलाओं में जीवन्त राष्ट्रीय भावना की गहरी तथा व्यापक तरंग विद्यमान रही है..... भारत में राष्ट्रीयता की भावना का उदय ब्रिटिश शासन का परिणाम है।" वस्तुतः यह कहा जा सकता है, कि राष्ट्रीयता ब्रिटिश शासन के अत्याचारों से उत्पन्न हुई है। भारतीय साहित्य में राष्ट्रीय चेतना आधुनिक काल के प्रारम्भ से पूर्व से ही सन्निहित रही हैं, परन्तु आधुनिक काल में राष्ट्रीय स्वर अत्यधिक मुखरित हुआ। इस युग के रचनाकारों में ब्रिटिश शासन के खिलाफ आवाज उठाई फलतः देशभक्ति से ओत–प्रोत कविताएँ एवं रचनाएँ लिखी गई। इस काल के अनेक साहित्यकार जैसे–'भारतेन्दु हरिश्चन्द्र', 'मैथलीशरण गुप्त', 'प्रेमचन्द', 'जयशंकर प्रसाद', 'माखलनलाल चतुर्वेदी', 'सुभद्राकुमारी चौहान', 'रामधारी दिनकर' आदि ने भारतवासियों को चिरनिद्रा से जगाया। धर्म, जाति और सम्प्रदाय से परे मातृभूमि की महिमा का बखान किया। साथ ही जनमानस में देश के प्रति नवीन स्फूर्ति का संचार करने में सफल हुए। इस प्रकार समय–समय पर विभिन्न ग्रंथों ने राष्ट्रीय चेतना की भावना जागृत करने में अपना महत्वपूर्ण स्थान बनाया, जिसका मूल उद्देश्य सम्पूर्ण राष्ट्र को एक सूत्र में बांधे रखना।

अमरकान्त नई कहानी आन्दोलन के प्रतिभाशाली कथाकार हैं। उनकी स्वतन्त्रता आंदोलन में सक्रिय भागीदारी रही है। किशोरावस्था में ही उनके अन्दर राष्ट्रीयता के अंकुर प्रस्फुटित हो गये थे। इसी समय उन्होंने स्वामी शिवानन्द की 'ब्रह्मचर्य ही जीवन है' से लेकर क्रांतिकारी की पुस्तकों विशेष रूप से मन्मथनाथ की 'भारत में सशस्त्र क्रान्ति की चेष्टा' का गहन अध्ययन किया, जिससे उनमें राष्ट्र के प्रति जिज्ञासा बढ़ी। इसी जिज्ञासा से अभिभूत होकर अनेक पुस्तकें एवं पत्र–पत्रिकाएँ पढ़ने को प्रेरित हुए। यह ऐसा समय था कि जब उन्होंने लेखनकार्य प्रारम्भ ही किया था। अतः उनकी रचनाओं में राष्ट्रीय चेतना का संचार स्वाभाविक हैं।

अमरकान्त स्वतंत्रता के समय राजनीति में आने के इच्छुक थे। परन्तु आजादी के उपरान्त व्यवस्था के प्रति जनमानस में मोह–भंग हो गया और उन्होंने लेखनीय के माध्यम से राष्ट्र सेवा का निर्णय लिया तथा अपने साहित्य के द्वारा देशवासियों को राष्ट्र के प्रति सजग करते हुये ऐसे कथा साहित्य का सृजन किया, जो वास्तुविक अर्थों में राष्ट्रीय चेतन का द्योतक है। स्वतंत्रता प्राप्ति के बाद विभाजन के दौरान उन्होंने जो देखा एवं महसूस किया, उसे उपन्यास 'विदा की रात' में उद्घाटित किया 'इस उपन्यास एक सशक्त स्त्री पात्र सुल्ताना बेगम के द्वारा मुस्लिम समाज में स्त्रियों की दयनीय दशा एवं उनके द्वारा निभाई गयी ममत्वपूर्ण जिम्मेदारी, त्याग और मानवता का अनूठा उदाहरण प्रस्तुत किया है, जो राष्ट्रीय चेतना की प्रारम्भिक पहल व उदाहरण है। आजादी के बाद साम्प्रदायिक दंगे के दौरान एक हिन्दू परिवार के सभी सदस्यों की मृत्यु हो जाती है सिर्फ परिवार का एक छोटा बालक ही जीवित रहता है, जिसे एक गुरिल्ला स्त्री सुल्तान बेगम उसका लालन–पालन मुस्लिम रीति–रिवाज के अनुसार करती है। जब वह बालक बड़ा हो जाता हैं। तो मुस्लिम लड़की से निकाह का प्रस्ताव माँ के समक्ष रखता है, परन्तु माँ उसे नकार देती है और बेटे के द्वारा शहर में हो रहे दंगे के विषय पर बात करने तथा गुस्सा दिखाने पर उसे फटकारते हुए सुल्ताना बेगम कहती है कि–"यह तो पूरे मुल्क और दुनिया जहाँ की आदत बन गई है, शौक बन गया है, इन सब बातों में मजा आता जा रहा है। तो क्या आप भी वही

अनुरूपी लेखक

15.07.22

Niranjan Shrotriya
24.12.2023 01:16
IQAC Coordinator

Signature Not Verified
Brij Kishore Tiwari
24.12.2023 01:35
Principal

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An Overview on Applicability of Propagation of Ultrasound Waves

Puja Birthare[1]* Dr. B. V. Tiwari[2]

[1] Research Scholar, Swami Vivekanand University, Sagar, MP

[2] Professor and Head, Department of Physics, Swami Vivekanand University, Sagar, MP

Abstract – *The propagation of low-intensity ultrasound in polymers, acting as a high-frequency dynamic mechanical deformation, can be successfully used to monitor changes in the modulus of polymers associated with glass transition, crystallization, cross-linking, and other chemical and physical phenomena related to changes in the viscoelastic behavior, such as gelation phenomena. The velocity of sound is related to the polymer storage modulus and density, whereas the absorption of ultrasonic waves is related to the energy dissipation in the material and, therefore, to the loss modulus. Accordingly, ultrasonic measurements have been used by several authors to monitor the evolution of the viscoelastic moduli of polymers as a function of time or temperature and, recently, become a characterization technique of its own right, generally known as ultrasonic dynamic mechanical analysis (UDMA). Often the technique is used in conjunction with rheological methods as a means of providing a better insight into the viscoelastic behavior of polymer systems. As yet UDMA is underutilized primarily because of the low operating temperatures (usually below 100°C) of commercially available ultrasonic transducers, and also due to the requirement of a coupling medium to ensure an efficient energy transfer mechanism between the transducer and the test material. Despite these limitations, this paper shows that the use of ultrasonics is potentially a powerful method for the characterization of polymers, particularly as a tool for online monitoring of events occurring during polymer processing and in the manufacture of polymer matrix composites. The aim of this paper is to review the progress made in recent years, highlighting the potential and reliability of UDMA for monitoring physical transitions in polymers such as glass transition, melting, crystallization, as well as physical changes taking place during curing of thermosetting resins.*

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1.1 INTRODUCTION

Ultrasound application considers non-meddlesome view of tissue structures. Steady ultrasound pictures are consolidated pictures coming about in view of impression of organ surfaces and scattering inside heterogeneous tissues. Ultrasound checking is an insightful procedure including the executive, patient, and ultrasound instruments. Notwithstanding the way that the material science behind ultrasound age, propagation, ID, and change into practical information is decently marvelous, its clinical application is much less intricate. Since ultrasound imaging has improved gigantically all through the latest decade, it can give anaesthesiologists opportunity to honestly picture target nerve and appropriate anatomical structures. A ultrasound-guided nerve square is a fundamental improvement district for new employments of ultrasound advancement and has become an essential bit of nearby sedation. Understanding the fundamental ultrasound material science presented here will be helpful for anaesthesiologists to appropriately pick the transducer, set the ultrasound structure, and a short time later get satisfactory imaging.

1.2 HISTORY OF ULTRASOUND

In 1880, French physicists Pierre Curie and his senior kin, Paul-Jacques Curie, found the piezoelectric effect in explicit valuable stones. Paul Langevin, an understudy of Pierre Curie, made piezoelectric materials, which can deliver and get mechanical vibrations with high repeat (thusly ultrasound). During World War I, ultrasound was introduced in the maritime power as an approach to perceive foe submarines. In the clinical field, in any case, ultrasound was from the outset used for helpful rather than suggestive purposes. In the late 1920s, Paul Langevin found that ground-breaking ultrasound could deliver heat in bone and upset animal tissues. Hence, all through the mid 1950s ultrasound was used to treat patients with Ménière ailment, Parkinson disease, and rheumatic joint agony. Decisive uses of ultrasound began through the joint exertion of specialists and [illegible] course running) engineers. In 1942, Karl [illegible]