2024-25

3.3.2

Number of research papers per teachers in the Journals notified on UGC website during the year

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Rayat Shikshan Sanstha's

RAJARSHI CHHATRAPATI SHAHU COLLEGE, KOLHAPUR

PAPERS PUBLISHED IN UGC CARE LIST JOURNALS

(2024-25)

Total no. of Papers published in UGC care list : 38

Sr. No.	Title of the paper	Name of Author/s	Department of the teacher	Name of the Journal	Year of Publication	ISSN No.
1	Navigating Fear and Duty: Cultural Subtext in The Fiction of Alistair Maclean	Mr. Georgin M T , Ms. Dr. Sabiha A Faras	English	Sanashodhak	2024	2394-5990
2	The Significance of English for Specific Purposes in Professional Development	Shamal Dattatray Murkar	English	Sanashodhak	2024	2394-5990
3	*Goa Muktisangramache akherche parva operation vijaya*	Dr. Nilesh Bhauso Valkunje	History	History Research Journal	2024	0976-5425
4	Corporate Social Responsibility And Ethical Business Practices	Dr. Sampada S. Lavekar	Commerce	International Journal Of Cultural Studies and Social Sciences	2024	2347-4777
5	Natural Catalyzed Synthesis of Chalcone by Using Grindstone Chemistry under Solvent Free Conditions	Pravina Piste, Samarth Patil, Umesh Shelke	Chemistry	African Journal of Biological Sciences	2024	2663-2187

RAJARSHI CHHATRAPATI SHAHU COLLEGE KOLHAPUR

6	Evaluation of Antimicrobial Activity and Efficient Synthesis of 3, 4-Dihydropyrimidin-2-(1H)-One by Using Cobalt Chloride Doped Polyaniline Composite (PANI-Co) As Catalyst	**Umesh S. Shelke, Shakil D. Shaikh, Pravina B. Piste**	Chemistry	African Journal of Biological Sciences	2024	2663-2187
7	Efficient Synthesis and Antimicrobial Potential of N-Mannich Bases of 3, 4-Dihydropyrimidin-2-(1H)-ones Catalyzed by Cobalt Chloride Doped Polyaniline Composite"	**Umesh S. Shelke**, Deepak M. Nagrik, Ramdas S. Suralkar, **Pravina B. Piste**	Chemistry	Journal Of Technology	2024	1012-3407
8	Mineral Analysis Of Medicinally Important FERN: Adiantum Philippense I.	**Shakil D. Shaikh ,Anisa S. Shaikh,** Bharat Jadhav and **Umesh Shelke**	Botany/Chemistry	Journal Of Technology	2024	1012-3407
9	Crosslinked Chitosan-Polyvinyl Alcohol Blend Beads For Removal And Recovery Of Cr (II) From Wastewater	**Umesh S. Shelke** and V.D. Sonawane	Chemistry	Journal Of Technology	2024	1012-3407
10	Chemical Synthesis and Characterization Study of Nanocrystalline and Coral Rock-Like Kasterite $Cu_2ZnSnS4$ (CZTS) Thin Films	Sandesh B. Jirage, **Kishor V. Gaikwad,** Prakash N. Chavan, Sadashiv A. Kamble, Vijaykumar Bhuse	Chemistry	Iranian Journal of Materials Science and Engineering	2024	1735-0808
11	An efficient and environmental friendly synthesis of 1H-pyrazolo [1,2-b]phthalazine-5,10-dione in aqueous hydrotropic medium	Nilam S. Dhane, Aboli C.Sapkal, Nilam P.Dhumal, Dhananjay N. Gaikwad, Santosh B. Kamble, And **Kishor V. Gaikwad**	Chemistry	Indian Academy of Sciences	2024	0253-4142

RAJARSHI CHHATRAPATI S.I. KOLHAPUR

12	Okra peel -derived nitrogen-doped carbon dots: Eco-friendly synthesis and multi-functional applications in heavy metal ion sensing, nitro compound detection and environmental remediation	Sneha V. Koparde, Omkar S. Nille, Akanksha G. Kolekar, Prachi P. Bote, **Kishor V. Gaikwad**, Prashant V. Anbhule, **Samadhan P. Pawar**, Govind B. Kolekar	Chemistry	Spectrochimical Acta Part A:Molecular and Biomolecular Spectroscopy	2024	1873-3557
13	Transforming waste into multifunctional nanomaterials: Mg-doped carbon dots from cow dung for Y(III) detection and biomedical applications	Sneha V. Koparde, Omkar S. Nille, Akanksha G. Kolekar, Pranoti A. Kamble, Arpita Pandey Tiwari, Govind R. Kolekar, **Samadhan P. Pawar**	Chemistry	Inorganic Chemistry Communications	2024	1387-7003
14	Activated carbon from pencil peel waste for effective removal of cationic crystal violet dye from aqueous solutions	Dilip D. Anuse, Suryakant A. Patil, Ashwini A. Chorumale, Akanksha G. Kolekar. Prachi P. Bote, Laxman S. Walekar, **Samadhan P. Pawar**	Chemistry	Results in Chemistry	2024	2211-7156
15	Ultra-probe sonication assisted greener approach in aqueous hydrotropic media for the synthesis of pyranopyrazole derivatives	Nilam S. Dhane, Suraj R. Attar, Aboli C.Sapkale,Santosh B. Kamble ,**Kishor V. Gaikwad**	Chemistry	Research on Chemical Intermediates	2024	0922-6168
16	Epiphytic Pteridophytes Of Arunachal Pradesh (INDIA)	Vinket Kumar Rawat, **Shakil D. Shaikh**, Purushottam Kumar Deroliya, **V.B. Chopade** And Bharat Jadhav	Botany	Journal Of Technology	2024	1012-3407

RAJARSHI CHHATRAPATI SHAHU KOLHAPUR.

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17	Yoga Program on selected motor ability components and Psychological variables of earn and learn students	**Dr. Ganesh Maruti Lawangare**	Physical Education	Rabindra Bharati Patrika	2024	0937-0037
18	*Lokakalavanta vasudeva ani manavi mulye*	**Mr. Ankush Bharat Ghule**	Marathi	R.N. I. For India New Delhi	2024	2229-4929
19	A Performance Study of Prediction Model for Preterm Birth and Mode of Delivery Based on Machine Learning Tools.	**Prakash S. Chougule, Tejaswi S.Kurane**, Rahual H. Waliv, Ramesh D Shinde, Miss. Ankita V. Chougale, Miss. Sakshi R. Chaugule, Miss. Rutuja R. Chavan	Statistics	Gradiva Review Journal	2025	0363-8057
20	A study of Performance of loan default predictational Using Machine Learning Techniques	**Prakash S. Chougule, Tejaswi S.Kurane**, Mrs. Varsha C.Shinde' Rahual. H. Waliv Ramesh D.Shinde, Shruti N. Tiware Patil	Statistics	International Journal Of Education Research	2025	0883-0355
21	*Shasvat vikasamadhil krushi Adharit Udyogachi Bhumika*	**Prof. Dr. Madhura Babasaheb Desal**, Ms. Vishranti Jandhiwant Chavan	Economics	Vidyawarta	2025	2319-9318
22	Drug Recommendation System Using Machine Learning Technique	**Prakash S. Chougule, Tejaswi S.Kurane**, R.D.Shinde **G.A.Gadhari**,Mrs. V.C.Shinde ,Prashant S.Chavan	Statistics	Journal Of Technology	2025	1012-3407
23	*Sant Kabir ke sahitya me samajik yevam Dharmik Yekta ke Swar*	**Ravindra patil**	Hindi	Itihas Darpan	2025	0974-3065

24	*Kautumbik Hinsachar Samajshastriya Abhyas*	**Dr. Kannade M.K.**	Sociology	Ajanta	2025	2277-5730
25	*Mahilanvaril Atyachar : Swarup , Karne v upay*	**Prof. Dr. Madhura Babasaheb Desai**, Ms. Vishranti Jandhiwant Chavan	Economics	Ajanta	2025	2277-5730
26	Comparative Analysis of Heavy Metal Content in Soil from Karveer Tahsil Using Atomic Absorption Spectroscopy and Its Environmental Impact	Ratnadeep P Kamble, Pratik R Sardesai, **Pravina B Piste** and **Umesh S Shelke**	Chemistry	International Journal of Research in Academic World	2025	2583-1615
27	Sustainable Activated Carbon Production from Filter Waste Carbon Cartridge: Insights into Adsorption Isotherms, Kinetics, And Mechanisms	Prachi P. Bote, Sneha V. Koparde, Omkar S. Nille, Dilip D. Anuse, Akanksha G. Kolekar, And **Samadhan P. Pawar**	Chemistry	American Chemical Society	2025	0002-7863
28	QbD-Enhanced HPLC Method Development for Vildagliptin and Metformin HCl Formulations	Pankaj Sopan Hasabe, **Kishor Vinayak Gaikwad**, Venketa Satyanarayana Nandmuri, Akanksha Govind Kolekar, Kalyanraman Lakshmi Narayanan, **Samadhan Prakash Pawar**	Chemistry	Indian Journal of Pharmaceutical Education and Research	2025	0019-5464
29	Sustainable synthesis of tunable emissive sulphur-doped CDs: a synergistic approach for metal ion sensing and antimicrobial applications	Sneha V. Koparde, Onkar S. Nille. Akanksha G.Kolekar, Radhika B. Jadhav,Arpita Pandey Tiwari , **Samadhan P. Pawar**, Govind.B Kolekar	Chemistry	The Royal Society Of Chemistry	2025	2046-2069

RAJARSHI CHHATRAPATI S. COLLEGE KOLHAPUR.

30	Porous structure of Fe2O3 thin films prepared for supercapacitors via CBD method: effect of molar concentration	A. A. Admuthe, P. A. Desai ,S. G. Pawar ,S. L. Jadhav A. L. Jadhav ,D. B. Malavekar ,N. S. Bachankar, J. H. Kim ,**K. V. Gaikwad**,V. S. Jamadade	Chemistry	Springer	2025	1618-2642
31	Exploring the Frontiers of Sustainability: A Review on Eco-Friendly Methods for the Synthesis of Novel Heterocyclic Compounds	Abhishek Milind Jadhav, Surekha Navnath Jadhav, **Pravina Baburao Piste, Samadhan Prakash Pawar,** Sandesh Bapu Jirage, **Kishor Vinayak Gaikwad**	Chemistry	Journal Of Technology	2025	1012 -3407
32	On Wavelet Transform as an Extension of Fractional Fourier Transform and its Applications	**Shubham D. Shedge,** Bharat N. Bhosale and Sachin L. Mane	Mathematics	Journal Of Technology	2025	1012-3407
33	A Study the Impact of household air pollution on human health using Machine Learning Techniques.	**Prakash S. Chougule, Tejaswi S.Kurane, Shubham D.Shedge,** Ramesh D.Shinde, Rahual. H. Waliv Mrs. Varsha. C. Shinde Rajnikant G. Jawalkote	Mathematics	Kronika Journalinan	2025	0023-4923
34	*Bharatiya Dnyan paramparecha Samruddha varsa Verulche Kailas Mandir*	**Supriya Khole**	Histroy	Itihas Darpan	2025	0974-3065
35	Novel Cu(II) Complexes of 3,5-Di-terr-butyl-2-hydroxy benzylidene-2-aminobenzhydrazide: Synthesis, Spectral Characterization, Antimicrobial and Antioxidant Properties	**Sangeeta Korane**, Babasaheb Bhosle	Chemistry	Asian Journal Of Chemistry	2025	0970-7077

36	Multifunctional Cu (II) Complexes with a 2-Hydroxy-4-Methoxybenzylidene-2-Hydroxybenzhydrazide: Synthesis, Characterization, Biological Activity and Catalytic Applications	**Sangeeta Korane**, Bhimarao Patil, Atul Chaskar ,Babasaheb Bhosale	Chemistry	Journal Of Technology	2025	1012-3407
37	*Rajakaran Ani Netrutwa Bhumika*	**Prof. Seema Anand Gurav**	Sociology	An International Multidisciplinary half Yearly Reasearch Journal IDEAL	2025	2319-359X
38	*Bhartiya Dnyan Parampara Vikasatil Aundh Sansthanche Yogdan Ani Mahatva*	**Karim Mulla**	Political Science	Itihas Darpan	2025	0974-3065

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Criteria III

RAJARSHI CHHATRAPATI SHAHU COLLEGE KOLHAPUR.

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NAVIGATING FEAR AND DUTY: CULTURAL SUBTEXT IN THE FICTION OF ALISTAIR MACLEAN

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ABSTRACT :

This paper explores the politics and culture within Alistair MacLean's novels *Where Eagles Dare* and *The Guns of Navarone*. While these novels are primarily recognized as war narratives, they are also rich with underlying political and cultural motifs that reflect the socio-political climate of the Cold War era. Through a close analysis of these two works, this study reveals how MacLean's novels, set against the backdrop of World War II, are imbued with the cultural anxieties and political tensions characteristic of the mid-20th century. *Where Eagles Dare* is a quintessential example of Cold War paranoia expressed through a World War II setting. The novel's plot, centered on a covert mission to infiltrate a Nazi stronghold and uncover a traitor within the British ranks, resonates with the era's fear of espionage and internal subversion. This narrative of betrayal and deception can be seen as a reflection of the widespread suspicion and fear of communist infiltration that permeated Western societies during the Cold War. Additionally, the novel's emphasis on technological details in warfare mirrors the real-world technological competition between the superpowers, particularly in the fields of espionage and military innovation. Major Smith, the protagonist of *Where Eagles Dare*, embodies the ideal of British heroism, displaying traits of bravery, resourcefulness, and loyalty that were central to the British cultural identity during the post-war period. This portrayal reinforces the cultural narrative of British resilience and moral superiority, which was crucial in the context of Cold War ideological battles. Similarly, *The Guns of Navarone* which presents a narrative focused on a World War II mission to destroy a strategically important German artillery installation, also reflects Cold War cultural and political themes. The novel's diverse group of characters from different Allied nations symbolizes the unity and cooperation necessary to combat the common enemy, which in the Cold War context, can be seen as a metaphor for the Western alliance against communism. The depiction of extreme survival and endurance in harsh conditions serves as a metaphor for the resilience required during the prolonged Cold War period, where both Western and Eastern blocs faced ongoing tension and uncertainty.

KEY WORDS: World War II, Cold War, Cultural Motifs, Moral Ambiguity, Survival and Endurance, Espionage.

INTRODUCTION :

While Alistair Maclean's novels are primarily recognized for their intense action and complex plots, they encapsulate a rich cultural and political subtext that reflects the profound impact of World War II and the Cold War on mid-20th century society. This research paper aims to comprehensively examine how these historical events shaped MacLean's work and contributed to the evolution of a new literary genre. The primary focus of this study is to explore the deep-seated influence of geopolitical tensions on MacLean's writing, particularly in his novels

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The Significance of English for Specific Purposes in Professional Development

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ABSTRACT:

This paper discusses the significance of English for Specific Purposes (ESP) in Professional development and it traces its historical growth. It comprises the efforts of linguists to define it, each from a different perspective. This paper also an attempt to explain the importance of English for specific Purposes in Professional life for the better development of a person or a group on different areas. Here, we can study how is English for specific purposes different from English as a Second Language (ESL) also known as a general English. It discusses the teaching and learning process of an ESP course and highlights the fact that the creation, planning and structure of an Esp course is very challenging mission because it has to be tailored to the requirements of its learners.

Keywords: ESP, linguists, ESL, General English, English language Teaching

Introduction:

The major use of English as a method of international communication is consistently expanding. This was reflected in many areas as English started to be used in business field. Hence, many nations around the world have presented and used English language courses in all stages of education and presented ESP courses to achieve the exact and special goal as early as the university level. This is a common teaching method that teacher has to be able to meet the special and exact demand and needs of the students as per their major or profession.

English is an international language that is divided into English for General Purposes (General English or GE) and English for Specific Purposes (ESP). The term special or "Specific" is ESP means "The exact objective" for learning English language. Learner's study the English that is related to their major or field in which they are involved in work or education. In this way students can use their knowledge in their profession. For the success as they are expecting from their efforts. The major intention of this area is to help the students in developing their professional vocabulary as well as to develop their professional language and make them ready to face the challenges in the market of the world and overcome the barriers to achieve the success. The ESP is divided into three categories: English for Science and Technology (EST), English for Business and Economics (EBE) and English for Social Studies (ESS). This branching first was done by Hutchinson and waters in 1987. Each of these three categories is divided into English for Academic Purposes (EAP) and English for Occupational purposes (EOP). Thus, it can give us a clear idea that the need of learner to learn English will decide the course that the learner is accepting.

In other words, ESP meant to be taught to tertiary level in colleges like medicine, pharmacy, nursing business .... etc. or people who are employed according to their special skills and the

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गोवा मुक्तिसंग्रामाचे अखेरचे पर्व : ऑपरेशन विजय

❋

डॉ. नीलेश भाऊसो वळकुंजे
राजर्षि छत्रपती शाहू कॉलेज, कोल्हापूर

भारताच्या स्वातंत्र्य चळवळीचे अखेरचे पर्व म्हणजे गोवामुक्तिसंग्राम होय. या मुक्तिसंग्रामाने भारतातील युरोपीय वसाहतवादी व्यवस्थेचा शेवट केला होता. त्यामुळे गोवामुक्तिसंग्रामाचे आधुनिक भारताच्या इतिहासात अनन्य साधारण महत्त्व आहे. या मुक्तिलढ्याची सुरूवात दि. १८ जून १९४६ रोजी प्रजा समाजवादी नेते डॉ. राममनोहर लोहिया यांनी केली होती. त्यांनी मडगाव येथील मैदानात (आजचे लोहिया मैदान) पोर्तुगिजांच्या भाषणविषयक कायद्याचा भंग करून या मुक्तिलढ्याची सुरूवात केली. लोहिया यांची ही कृती गोव्याबरोबरच भारतीय जनतेला गोव्याच्या मुक्तीसाठी मार्ग दाखविणारी होती. गोव्याच्या मुक्तीसाठी गांधीप्रणीत सत्याग्रह हा मार्ग उत्तम पर्याय असल्याची जाणीव त्यांनी लोकांना करून दिली होती. परिणामी सन १९४६ ते १९५५ या कालावधीत गोव्याचा लढा पूर्णपणे सत्याग्रह चळवळीने व्यापला होता. या कालावधीमध्ये गोव्याच्या मुक्ततेसाठी अनेक सत्याग्रह चळवळी निर्माण झाल्या.

भारत सरकारने गोव्याच्या मुक्तीसाठी लष्करी कारवाईचे स्वरूप स्वीकारले. दि. १७ ते १९ डिसेंबर १९६१ या कालावधीत भारत सरकारने गोव्याच्या मुक्तीसाठी लष्करी कारवाई करून पोर्तुगिजांच्या ताब्यातून गोव्याची मुक्तता केली. या कारवाईला 'ऑपरेशन विजय' या नावाने संबोधले गेले.

ऑपरेशन विजयची पार्श्वभूमी :

गोवा विमोचन समितीच्या दि. १५ ऑगस्ट १९५५ च्या सामुदायिक सत्याग्रह चळवळीनंतर गोव्यात भूमिगत चळवळीने मोठ्या प्रमाणात जोर धरला होता. या चळवळीच्या वाढत्या प्रभावामुळे गोव्यातील पोर्तुगीज सरकार त्रस्त झाले होते. अशा

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'CORPORATE SOCIAL RESPONSIBILITY AND ETHICAL BUSINESS PRACTICES'

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Abstract

The concepts of Corporate Social Responsibility and ethical behavior has been around for a long time, but it is just recently becoming a part of the strategic decision-Making process for all industries. CSR is a vital component of health and safety. As a result, the entire company has a Corporate Social Responsibility aim and reports on its efforts. It has formed the backbone of all firms' strategic management.

These two concepts are very important for organizational growth and success. Specifically, they consider business ethics to lead to positive employee, customer and community relations. Not only that but also, they perceive that better public image and reputation; greater customer loyalty; strong and healthier community relations can increase to the benefit of corporations that are socially responsible. The paper addresses the concepts of business ethics and corporate social responsibility and relationship between them. . This study is qualitative in nature based on the comparative content analysis of reported literature about both CSR and business ethics.

Keywords: *Ethical Behavior, Corporate Social Responsibility, Organizational Growth and Success*

INTRODUCTION:

In recent year, there is a growing trend toward the value of Ethical Business and Corporate Social Responsibility to a business. The idea that business enterprises have some responsibilities to society beyond that of making profits for shareholders has been around for centuries.

Ethical behavior and corporate social responsibility can bring significant benefits to a business.

One of the core beliefs is that business organizations have a social and ethical responsibility, as well as, the economic mission of creating value for shareholders or owners of businesses. Whereas, the economic responsibilities of a business are to produce goods and services that society needs and wants at a price that can perpetuate the continuing existence of the business, and also satisfy its obligations to investors; ethical responsibilities are those behaviors or activities expected of businesses by society and other stakeholders such as employees .

The European Commission defines CSR as "a concept whereby companies decide voluntarily to contribute to a better society and cleaner environment. In this way, CSR is "about how companies manage the business processes to produce an overall positive impact on society".

https://doi.org/10.33472/AFJBS.6.6.2024.6606-6612

African Journal of Biological Sciences

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Research Paper Open Access

Natural Catalyzed Synthesis of Chalcone by Using Grindstone Chemistry under Solvent Free Conditions

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ABSTRACT:

A facile and efficient synthesis of Dibenzalacetone (3a-3i) has been achieved by the condensation of Aromatic aldehyde and aliphatic ketone in presence of different natural catalysts. This has been carried out by using Grindstone Chemistry through intramolecular aldol condensation for half an hour. All synthesized compounds were characterized on the basis of UV, IR, NMR, GCMS spectral and elemental analysis. The yields were excellent and requires short reaction time, easy work up, energy saver and without solvent are the notable advantages of this method.

Keywords: Chalcone, Natural catalysts, Grindstone chemistry, Benzaldehyde, Acetone.

1. INTRODUCTION

The chalcones and their derivatives are significant versatile intermediates in synthesis of heterocyclic compounds [1] owing to their possession of a ketoethylenic group, -CO–CH=CH–. Recent literature survey proved that, the presence of enone functionality in chalcone moiety is found to be responsible for various pharmaceutical and medicinal applications. These applications encompass a wide range of therapeutic activities such as anticancer [2], anti-

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Research Paper Open Access

Evaluation of Antimicrobial Activity and Efficient Synthesis of 3, 4-Dihydropyrimidin-2-(1H)-One by Using Cobalt Chloride Doped PolyanilineComposite (PANI-Co) As Catalyst

Umesh S. Shelke[1*], Shakil D. Shaikh[2], Pravina B. Piste[3]

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ABSTRACT:

The present study aimed to use a method for the synthesis of some 3, 4 -dihydropyrimidin-2-(1H) - ones by using Cobalt Chloride Doped Polyaniline Composite (Co- PANI-) as Catalyst. The study tried to study the Biginelli reaction can be performed without solvent and with new catalyst or not. To find the effectiveness of the catalyst (Co- PANI), we described a novel protocol for the efficient synthesis of some 3, 4-dihydropyrimidin-2- (1H) -one using aldehydes, alkyl acetoacetate, and urea or thiourea at 80°C under solvent-free conditions by Cobalt Chloride Doped Polyaniline Composite (Co-PANI) as Catalyst. This catalyst is efficient due to its high yields, use in mild conditions, ecofriendly, environmentally friendly, cost effective and reusable. The synthesized compounds were characterized by spectroscopic technique. The synthesized compounds were evaluated for antimicrobial activity. The results showed that these compounds show a remarkable biological activity against all the tested bacteria. We have demonstrated a novel method for the synthesis of substituted dihydropyrimidinones catalyzed by Cobalt Chloride Doped Polyaniline Composite (Co-PANI) as Catalyst.

Keywords: Cobalt Chloride Doped Polyaniline composite (Co-PANI), DHPMs, antimicrobial activities, Biginelli reaction, MIC.

"Efficient Synthesis and Antimicrobial Potential of N-Mannich Bases of 3, 4- Dihydropyrimidin-2-(1H)-ones Catalyzed by Cobalt Chloride Doped Polyaniline Composite"

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Abstract:

This study explores a novel, eco-friendly protocol for synthesizing N-Mannich bases of 3,4-dihydropyrimidin-2(1H)-ones using cobalt chloride doped polyaniline composite (Co-PANI) as a catalyst under solvent-free conditions. Employing the Biginelli reaction with aldehydes, alkyl acetoacetate, and urea or thiourea at 80°C, we demonstrate that Co-PANI catalysis yields high efficiency, mild reaction conditions, and excellent reusability, making it a cost-effective and environmentally benign option. The synthesized compounds were structurally characterized through spectroscopic techniques, and their antimicrobial efficacy was evaluated. Results indicate that these compounds exhibit significant activity against various bacterial strains. This method highlights the potential of Co-PANI as an effective, reusable catalyst, advancing sustainable practices in organic synthesis and offering promising antimicrobial applications for dihydropyrimidinones.

Keywords: N-Mannich Bases of DHPMs, biological activities, Biginelli reaction, MIC.

Introduction:

Pharmaceutical industries have shown a strong interest in multicomponent reactions, green chemistry approaches, and solvent-free synthesis methods for producing complex drugs. These methodologies are essential for exploring the molecular diversity involved in complex reactions, particularly with heterocyclic compounds [1-6]. Among these, the Biginelli synthesis stands out as a valuable multicomponent reaction in organic and medicinal chemistry, enabling the efficient production of multifunctional compounds, such as 3,4-dihydropyrimidin-2(1H)-ones and related heterocycles [7].

MINERAL ANALYSIS OF MEDICINALLY IMPORTANT FERN: *ADIANTUM PHILIPPENSE* L.

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ABSTRACT

Phytochemical study of ferns has assumed an extraordinary importance due to its immense economic value especially their vast medicinal importance. *Adiantum philippense* is one the species of *Adiantum* which is highly medicinal used in various treatment. therefore in the present investigation attempts were made to study the mineral status of species collected from different areas of Northern Western Ghats of Maharashtra where it grows luxuriantly. The minerals status shows that, it contains sufficient macronutrients but differs seasonally. This may one of the reasons that species is used by the local practitioners as a medicine to cure various diseases.

Keywords: *Adiantum*, medicinal fern, Western Ghats of Maharashtra.

INTRODUCTION

The homosporous fern genus *Adiantum* L. of family Adiantaceae is one of the most common and widely distributed species all over India. It is commonly known as maidenhairs. Phytochemical studies of pteridophytic plants are important while evaluating plant wealth of any region. Phytochemical analysis has been done on large number of Indian fern and fern allies. But the majority of the reports pertain to quantitative estimation of primary metabolites which are universal in occurrence and are highly variable with the environment. They are important in ecophysiological studies (Khanna, 2002). It is also not possible to determine the source of any economically useful materials without any phytochemical study. The phytochemistry has been studied in less number of non-flowering plants in contrast to flowering plants. According to Joseph and Manickam (1993) no practical work has been done on the phytochemistry of ferns of Western Ghats. Therefore, it was thought worthwhile to carry out its mineral studies to investigate its nutritional status through its macronutrients analysis.

CROSSLINKED CHITOSAN-POLYVINYL ALCOHOL BLEND BEADS FOR REMOVAL AND RECOVERY OF Cr (II) FROM WASTEWATER

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ABSTRACT

Crosslinked chitosan/poly (vinyl alcohol) (PVA) blend aqueous solution was suspended in toluene-chlorobenzene to form droplets. Some of the water then distilled out as azeotropes with the aromatic hydrocarbons to reduce the water content of the suspension droplets. Glutaraldehyde was finally added to the suspension to result in the cross linked chitosan/PVA beads with low water content and high mechanical strength. In addition, prepared crosslinked beads were characterized by FTIR, X-ray diffraction (XRD), Scanning electron microscopy (SEM), and thermogravimetric analysis (TGA) the efficiency of crosslinked chitosan/PVA bended bead as an adsorbent for the removal of Cr (II)from water was studied. It was found to exhibit substantial adsorption capacity over a wide range of initial Cr (II) ion concentration. Effect of time, temperature pH, adsorbent dose and the concentration of adsorption of Cr (II) were investigated by batch process. Pseudo-first-order and pseudo-second-order model were evaluated. The kinetics data for the adsorption process follow the second order rate equation. The equilibrium studies data could be described well by the Langmuir and Freundlich isotherms. The thermodynamic parameters such as ΔG^0, ΔH^0, ΔS^0, are calculated. It was found that the values $\Delta H^0$and ΔS^0 increase while the values ΔG^0 decline with rise in temperature. Thus the adsorption process was found to be endothermic and spontaneous. The maximum adsorption Cr (II) ion (76.51%) in pH range 5-6 indicated that material could be effectively utilized for the removal of Cr (II) ion from waste water. The adsorption study showed 62% recovery of Cr (II), when 0.1 EDTA solutions were used as an effluent.

KEYWORDS: Chitosan/PVA beads, Adsorption, Cr(II)ion, Langmuir and Freundlich isotherms etc.

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RESEARCH PAPER

Chemical Synthesis and Characterization Study of Nanocrystalline and Coral Rock-Like Kasterite Cu_2ZnSnS_4 (CZTS) Thin Films

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Abstract: *The Cu_2ZnSnS_4 (CZTS) thin film is a newly emerging semiconductor material in the thin film solar cell industry. The CZTS is composed of economical, common earth-abundant elements. It has advantageous properties like a high absorption coefficient and the best band gap. Here we have applied a low-cost chemical bath deposition technique for the synthesis of CZTS at low temperature, acidic medium and its characterization. The films were characterized by different techniques like X-ray diffraction, Raman, SEM, Optical absorbance, electrical conductivity and PEC study. The X-ray diffraction and Raman scattering techniques were utilized for structural study. The XRD reveals the kasterite phase and nanocrystalline nature of CZTS thin films. These results and their purity were confirmed further by advanced Raman spectroscopy with a 335 cm^{-1} major peak. The crystallite size was found to be 50.19 nm. The optical absorbance study carried out by use of UV-visible spectroscopy analyses its band gap near about 1.5 eV and its direct type of absorption. The electrical conductivity technique gives a p-type of conductivity. The scanning electron microscopy (SEM) study finds its rock-like unique morphology. The EDS technique confirms its elemental composition and its fair stoichiometry. The analysis of PEC data revealed power conversion efficiency-PCE to 0.90%.*

Keywords: *Nanocrystalline, Semiconductor, Solar cells, Thin films, CZTS.*

1. INTRODUCTION

The whole world has been troubled by complicated environmental issues due to the enormous utilization of fossil fuels. To overcome increasing energy crises, solar energy is a more renewable option than any other limited resource. The solar energy is based on photovoltaic technology. The recent PV technology of thin film solar cells has excessively used silicon, cadmium telluride (CdTe) and copper indium gallium di-selenide (CIGS) as semiconductor materials. But these materials have severe limitations like high processing costs of silicon, composition of rare earth elements like In, Ga and toxicity of elements like Cadmium (Cd) [1, 2]. Hence these materials will not be helpful in future to satisfy ever-increasing energy requirements with a green environment approach.

The current PV technology needs semiconductor materials whose elements have a plentiful composition in the earth's crust which is helpful in the fabrication of low-cost and environmentally benign solar cells. In this regard, Cu_2ZnSnS_4 (CZTS) has been explored extensively as the environment's best promising absorber materials due to their excellent optoelectronic properties like band gap 1.5 eV and having as high as absorption coefficient over 10^4 cm^{-1} [3-4]. The CZTS is a p-type semiconductor material with a composition of ample and harmless elements. The CZTS has two primary structures kasterite and stannite type which have diverse arrangements of Cu^{1+} and Zn^{2+} atoms in the crystal structure [5]. However, Kasterite CZTS is thermodynamically more stable [6]. Overall CZTS is a substitute absorber material for the existing scenario of semiconductor material.

So far CZTS thin films have been prepared by several techniques such as RF magnetron sputtering deposition [7], thermal evaporation [8], atom electron-beam-evaporation [9], pulsed laser deposition [10], etc. but these vacuum methods are costlier due to its special requirements and high-temperature processes. Other non-vacuum methods involve sol-gel deposition [11], spray pyrolysis [12], chemical vapor deposition [13], spin coating technique [14], electrodeposition methods [15], nanoparticle methods [16], silar method [17] etc. To date, the solar cell based on

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REGULAR ARTICLE

An efficient and environmental friendly synthesis of 1*H*-pyrazolo[1,2-b]phthalazine-5,10-dione in aqueous hydrotropic medium

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Abstract. This study reports a hydrotropic activity for synthesizing 1*H*-pyrazolo[1,2-b]phthalazine-5,10-dione through one pot four component aldehyde condensation, malononitrile, phthalic anhydride, and hydrazine hydrate. The simple and green hydrotropic synthetic approach offers numerous advantages such as non-toxic, inexpensive, mild reaction conditions, avoidance of harmful solvents, shorter reaction time, an excellent yield of products, simple workup, Chromatography-free, and eco-friendly. ^{1}H-NMR confirmed all the synthesized compounds.

Keywords. Green chemistry; multi-component reactions; catalyst free; aqueous hydrotropic medium; heterocycles; room temperature; 1*H*-pyrazolo[1,2-b]phthalazine-5,10-dione.

1. Introduction

Multicomponent reactions (MCR) are pivotal in synthesizing heterocyclic compounds,[1–3] drawing researchers due to their numerous advantages in producing biologically and pharmaceutically active molecules from readily available starting materials. These reactions offer significant benefits such as accelerated reaction rates, reduced time consumption, and elimination of the need for extensive purification. Green solvents, crucial in sustainable methodologies, enhance these reactions particularly in aqueous conditions, ensuring eco-friendliness and abundance. Nitrogen-containing heterocyclic rings have garnered attention for their applications in biological, pharmaceutical, agrochemical, and functional materials.[4,5] Pyrazoles, notably central to many biologically active compounds like celecoxib, viagra, and pyrazofurine, are pivotal in drug development.[6–8]

Moreover, heterocycles containing the phthalazine moiety are particularly intriguing due to their demonstrated pharmacological and biological activities.[9,10] The 1*H*-pyrazolo[1,2-b]phthalazine-5,10-dione derivatives represent a unique class of heterocyclic frameworks with significant biological effects including antibacterial,[11] anticonvulsant,[12] cardiotonic,[13] vasorelaxant,[14] cytotoxic,[15] antimicrobial,[16] antifungal,[17] anticancer,[18] anti-inflammatory,[19] analgesic,[20] antihyperglycemic,[21] antihypoxic, antipyretic,[22] insecticidal, molluscicidal,[23] fungicidal,[24] and anti-HIV activities.[25] In recent years, these derivatives have gained increased attention due to their diverse and potent biological properties.

Various types of literature discuss the multicomponent synthesis of 1*H*-pyrazolo[1,2-b]phthalazine-5,10-dione. This compound is synthesized through a one-pot four-component reaction involving aromatic aldehyde, malononitrile, phthalic anhydride, and hydrazine hydrate, catalyzed by substances like N-methylimidazole,[26] $NiFe_2O_4$@B, N, F-tri doped CeO_2 (NFTDNC),[27] bovine serum albumin (BSA),[28] perlite NPs/SiO_2/guanidine,[29] poly(aniline-co-m-phenylenediamine),[30] water extract of papaya bark ash

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Okra peel-derived nitrogen-doped carbon dots: Eco-friendly synthesis and multi-functional applications in heavy metal ion sensing, nitro compound detection and environmental remediation

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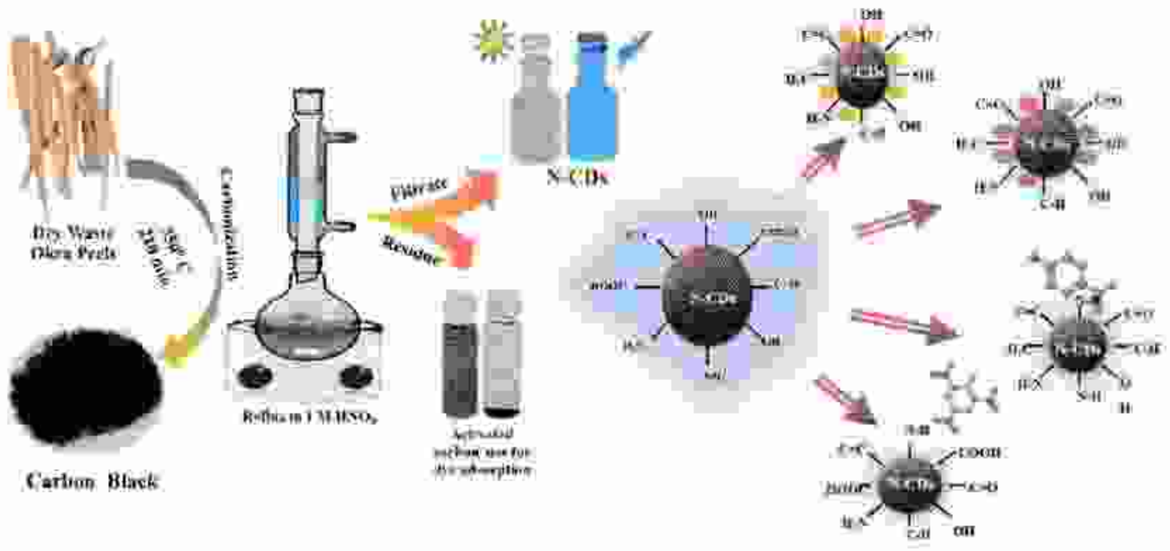
HIGHLIGHTS

- Kitchen waste okra peels derived synthesis of nitrogen doped carbon dots (N-CDs) as a fluorescent probe.
- N-CDs a fluorescent probe shows sensitivity towards Cr^{6+} and Mn^{7+} metal ions with instant decolourisation of Mn^{7+}.
- The developed fluorescent probe shows sensitivity and selectivity towards 4-nitroaniline (4-NA) and picric acid (PA).
- The developed method has good effectivity for real water sample with good recovery rate.
- The circular economy based reactivated carbon as an adsorbent for removal of model pollutant dyes.

GRAPHICAL ABSTRACT



ARTICLE INFO

Keywords:
Nitrogen doped carbon dots (N-CDs)
Fluorescence sensor
Fluorescence quenching
Emerging pollutant detection
Environmental remediation

ABSTRACT

The present study explores the kitchen waste okra peels derived synthesis of nitrogen doped carbon dots (N-CDs) via simple carbonization followed by reflux method. The synthesized N-CDs was characterized using, TEM, XPS, FTIR, XRD, Raman, UV–Visible and Fluorescence Spectroscopy. The N-CDs emits bright blue emission at 420 nm with 12 % of quantum yield as well as it follows excitation dependent emission. Further, the N-CDs were employed as a fluorescence sensor for detection of hazardous metal ions and nitro compounds. Among various metal ions and nitro compounds, the N-CDs shows fluorescence quenching response towards Cr^{6+}, and Mn^{7+} metal ions as well as 4-nitroaniline (4-NA) and picric acid (PA) with significant hypsochromic and bathochromic shift for Mn^{7+}, 4-NA and PA respectively. The developed fluorescent probe shows relatively low limit of detection (LOD) of 1.46 μg/mL, 1.05 μg/mL, 2.1 μg/mL and 2.2 μg/mL for the above analytes respectively. The N-CDs did not show any significant interference with coexisting ions and successfully applied for real water sample analysis. In addition, circular economy approach was employed for adsorption of dyes by reactivating leftover waste carbon residue which was obtained after reflux. Thus, the kitchen waste valorization and circular economy

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Transforming waste into multifunctional nanomaterials: Mg-doped carbon dots from cow dung for Y(III) detection and biomedical applications

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ARTICLE INFO

Keywords:
Cow Dung
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Doped Carbon Dots
Fluorescence Sensing
Rare Earth Metal Ion Sensing
Environmental Remediation

ABSTRACT

Rare earth metal Yttrium (Y^{3+}) plays a vital role in many electronic devices however, discarding these devices eventually contaminates the environmental sources. Herein, we have developed a Mg-doped carbon dots (M-CDs) as a fluorescent probe for selective and sensitive determination of Y^{3+} in water bodies. The M-CDs having maximum emission at 420 nm upon 310 nm excitation with 20 % quantum yield and which was synthesized from upcycling of agricultural waste i.e., cow dung by simple carbonization followed by hydrothermal method. M-CDs were confirmed using different analytical and characterization techniques as well as stable in different pH and ionic strength solutions. The M-CDs was highly selective towards Y^{3+} ions over different metal ions with significant blue shift. This fluorescent probe performs a good linear relationship between the different concentrations of Y^{3+} ion and fluorescence intensity ($R^2 = 0.99$) within the range of 0.2 to 20 μg/mL with a detection limit of 0.019 μg/mL. The study indicates quenching of Y^{3+} was result of dynamic quenching and the Inner Filter Effect (IFE) effect. Also, the cytotoxicity of M-CDs was checked via CAM assay and significant growth in blood vascularization with healthy growth of chick embryo confirmed the M-CDs were biocompatible. The nontoxic M-CDs was employed for MCF-7 breast cancer cell imaging which gives bright blue fluoresce under UV light excitation. Further, aiming to a circular economy approach the residual carbon remaining after hydrothermal was used as reactivated carbon for the abatement of environmental pollutants. The sustainable, cost-effective and agricultural waste-derived Mg-doped CDs have potential applications in analytical, environmental, forensic as well as biomedical fields.

1. Introduction

Yttrium (Y) is a widely used rare earth element in many electronic devices such as microwave filters, and LEDs in the production of phosphorescence materials which are used in cell phones and large display screens, leasers as well as in radars. However, after discarding these devices; yttrium is eventually contaminates environmental sources such as soil and water which leads to negative effects on aquatic animals and human beings as well as on photosynthesis and plant growth [1]. According to the guidelines of the US EPA and WHO the permissible concentration of yttrium in drinking water should be 6.4 μg/L [2]. Therefore, it is a major concern to maintain contamination of groundwater, rivers, and other water bodies from such hazardous heavy metals like yttrium. Scientist around the world have been developing various methods such as ICP-OES, AAS, ICP-MS, FES, and XRF for the detection of heavy metal ions; however, their expensive instrumentation, delicacy, and high maintenance affect their wide applicability [3–7]. Until now some research groups have developed selective sensing platforms for Y^{3+} ion in aqueous media by using various sensing techniques. Previously, Salicylaldehyde Acylhydrazone, Cyclen=1,4,7,10-tetraazacyclododecane, CNTs, N-CDs have utilized as Y^{3+} sensor [8–11]. However, to the best of our knowledge cow dung derived carbon dots were first time used for sensing of Y^{3+} ions in this report.

Carbon dots (CDs) are one of the members of carbon family shows excellent photoluminescent properties as well as great biocompatibility, water solubility and colloidal as well as photostability [12,13]. These

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Activated carbon from pencil peel waste for effective removal of cationic crystal violet dye from aqueous solutions

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ARTICLE INFO

Keywords:
Pencil peel based activated carbon
Crystal violet dye
Adsorption
Freundlich Isotherm
Pseudo-Second Order

ABSTRACT

In this investigation, the pencil peel (PP) is utilized as a scavenger for adsorptive removal of crystal violet (CV) dye. Pencil peel activated carbon (PPAC) is produced through a straightforward physical activation method by annealing pencil peel in a muffle furnace at 300 °C. The prepared PPAC shows the mesoporous nature having specific surface area of 217.44 $m^2\ g^{-1}$. The highest uptake of CV dye was observed at equilibrium as working solution pH-8.0, CV dye concentration-100 mg L^{-1}, the PPAC dosage-0.25 g at 200 rpm speed. The observed experimental results align with the Freundlich adsorption isotherm model, suggesting of multilayer adsorption. The kinetic study attributes the uptake rate adheres to the pseudo-second-order kinetic rate model (regression coefficient, $R^2 = 0.99$).

1. Introduction

Water pollution constitutes a significant environmental challenge faced by developing nations. One of the major contributors to this issue is the textile industry [1]. Various processes in the textile industry, such as fiber production, sizing, desizing, scouring, bleaching, and dying, require considerable water [2]. The liquid waste generated from these processes is often contaminated with toxic substances including synthetic dye and heavy metals [3]. The application of synthetic dyes extends beyond the textile sector, encompassing various industries such as leather processing, paper production, plastics manufacturing, and pharmaceutical development. The global annual production of dyes exceeds 7×10^8 Kg [4]. Consequently, industrial effluents often contain high concentrations of artificial dyes, which are commonly released into aquatic ecosystems without adequate treatment. Water pollution caused by synthetic dyes from different industries presents a significant environmental and health hazard, endangering both aquatic ecosystems and human well-being [5,6]. Artificial dyes, even in trace amounts, can pose significant risks to environmental well-being. Due to their ability to withstand high temperatures, oxidation, and exposure to light.

Crystal violet (CV), a cationic dye is frequently utilized in textile manufacturing as a coloring agent. Its widespread use can be attributed to its accessibility, high performance, and cost-effectiveness [7]. The toxic effects of CV dye on both aquatic and land-based organisms are long-lasting, as it remains in the environment for extended periods. The use of CV dye has been shown to affect human health negatively, causing various symptoms and conditions. These adverse effects include elevated heart rate, feelings of sickness, circulatory collapse, bluish skin discoloration, yellowing of the skin and eyes, paralysis of all four limbs, and death of body tissues [8,9]. In severe situations, it can cause respiratory and renal failure as well as permanent corneal and conjunctival damage [10]. Nowadays the mitigation of such dyes is considered a burning research area [11] therefore there is an urgent need for decontamination from the aqueous stream. To address this concern, the adsorption technique is employed as an inexpensive, easy for handling waste to useful strategy. In literature, various methods are reported for water purification such as photocatalysis [12,13], solvent extraction [14], adsorption [15], flocculation/coagulation [16], ozonation [17], ion exchange [18], membrane filtration [19], electrochemical destruction [20]. Adsorption is considered a highly adaptable method for treating wastewater [21,22] owing to voluminous adsorbent material like natural material to synthetic lab-prepared materials as well as it has

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Research on Chemical Intermediates
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Ultra-probe sonication assisted greener approach in aqueous hydrotropic media for the synthesis of pyranopyrazole derivatives

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Abstract

In this study, we report a simple, green, effective, and enhanced method for synthesizing pyranopyrazole from four-component condensation of aldehyde, malononitrile, ethyl aceto-acetate, and hydrazine hydrate employing four components in one pot that is multicomponent reactions (MCRs). Multicomponent reactions carried out by using a universal solvent: water has a quality position in organic and green synthesis. By using an aqueous hydrotropic solution and ultra-probe sonication, raising the rate of reaction and getting an excellent yield are the main features of this article. Key features of the current practice include the use of non-hazardous reaction conditions, operational simplicity, and the use of cost-effective initiating substances. The pure product can be isolated easily through simple filtration, eliminating the need for column chromatography. The process yields excellent results and is time-efficient. Additionally, the hydrotrope can be recycled up to five times without significant loss of activity, making it highly beneficial for meeting industrial needs and addressing environmental concerns.

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EPIPHYTIC PTERIDOPHYTES OF ARUNACHAL PRADESH (INDIA)

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ABSTRACT

Arunachal Pradesh is the most North-easterly state of India, with Bhutan to the West, Myanmar to the East, Tibet to the North and Assam in the South. Pteridophytes represent a diverse group of plants which forms an interesting and conspicuous part of the forest ecosystem. The present research studies the species diversity and composition of epiphytic ferns and fern allies from Arunachal Pradesh. Polypodiaceae is the most dominant and diverse followed by Pteridaceae. The number of species was plotted against different altitudinal gradients which resulted in hump-shaped species distribution pattern. Maximum number of species richness was recorded from the mid-altitudinal range. Results show that bigger host trees having rough bark texture generally sheltered maximum species compared to trees having smooth bark. Additionally, the life form and threat status of fern and fern allies have also been assessed.

Keywords. ***Polypodiaceae, Epiphytic ferns, Habitat, Altitude,***

INTRODUCTION

Pteridophytes represent a diverse group of plants which forms an interesting and conspicuous part of the forest ecosystem. Epiphytic ferns are mostly occur in the tropics and they are necessary and fragile members of humid forests, such that their diversity can be seriously affected by any form of disruption in the forests (Hietz *et al.*, 2006). The pteridophytes perform several critical ecological functions as indicator plants for habitat loss and fragmentation (Silva *et al.*, 2018), improving soil conditions (Walker, 1994) and also in removing inaccessible arsenic from mined wastelands (Tu and Ma, 2005). Furthermore, they are known to adapt to various disturbances and accumulate toxins from the environment (Mehltreter *et al.*, 2010). Normally, epiphytic fern diversity is higher in the primary forest than in disrupted habitats (Hickey, 1994). In this context, the present study examines the species diversity and composition of epiphytic ferns and fern allies in Arunachal Pradesh. The high rainfall in Arunachal Pradesh, the most Northerly occurrence in

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YOGA PROGRAM ON SELECTED MOTOR ABILITY COMPONENTS AND PSYCHOLOGICAL VARIABLES OF EARN AND LEARN STUDENTS RAJARSHI CHHATRAPATI SHAHU COLLEGE KOLHAPUR

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Abstract

Yogic exercise plays an important role in the maintenance of the above systems. The practice of Yoga not only develops the body but also produces the mental faculties. Moreover, the Yogi acquires mastery over the involuntary muscles of his organism. In this research used the experimental research methods for testing yoga program on earn and learn scheme students. Thirty college students who were studying and working under the scheme of earn and learn in Rajarshi Chhatrapati Shahu College Kolhapur, were randomly chosen as subjects. They were divided into two groups, Group A (fifteen subjects) and Group B (fifteen subjects). The groups were designated as Group "A" (Control group) and Group "B" (Experimental group). The experimental group underwent Yogic training program for eight weeks and the subjects in control group were not engaged in any activity during this Yogic training period. Pre-test data were collected three days before the training programme, post test data were collected three days after the yogic training programme. The data collected from the two groups were statistically examined for significant difference, if any, applying the analysis of covariance. Conclusion: Yoga group had significantly improved the selected motor ability components and psychological variables of deaf and dumb students. Yoga group had a significant improvement in the selected motor ability components and psychological variables of collegiate earn and learn students than the control group.

Keywords: Yoga, Motor Ability, Psychological variable, Students.

Introduction

Today due to urbanization, the human system is being affected by different kinds of population and creates sudden declination of our life span. Specifically, this environment pollution affects the cardiac system due to wide spread of carbon monoxide in the atmospheric air. In order to carryout day today work, every individual needs health functioning of Cardio - respiratory system. In sports, the above mentioned system plays a vital role in order to sustain the systems for a prolong time and complete the given task without fatigue.

The task of daily life no longer provide sufficient vigorous exercise to develop and maintain adequate level of physical fitness with increased mechanization there has been a corresponding decrease in the number of tasks that require a significant expenditure of energy. The human body was designed and constructed for movement and vigorous activity not for rest, and it functions more efficiently when it is active. To develop and maintain a desirable level of health and fitness one must participate regularly in a well designed exercise programme.

Yoga controls one's sense resulting in an integrated personality. Positive changes in the life style of the people can be brought through Yoga during the middle and old age. Behavior can also be mounded properly leading to balanced personalities. It clearly reveals a sound body. To keep our body in good conditions, it is essential that the various organs and systems of our body must be in a good condition. Yogic exercise plays an important role in the maintenance of the above systems. The practice of Yoga not only develops the body but also produces the mental faculties. Moreover, the Yogi acquires mastery

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लोककलावंत वासुदेव आणि मानवी मूल्ये

श्री.अंकुश भारत घुले
संशोधक विद्यार्थी व प्राध्यापक
राजर्षी छत्रपती शाहू कॉलेज, कोल्हापूर.

प्रस्तावना :

प्राचीन काळापासून गावगाड्याच्या संस्कृतीत लोकसंस्कृतीच्या उपासकांना विशेष महत्त्व आहे. यातील 'लोकसंस्कृती' मधील 'लोक' ही संकल्पना व्यापक अर्थाने वापरली जाते. 'लोक' म्हणजे विविक्षित समाजातील जन होय. समाजाला दिशा देण्याचे काम या लोकसंस्कृतीच्या उपासकांनी केले आहे. त्यांनी केलेल्या कार्यामुळे आपली संस्कृती श्रेष्ठ पदाला पोहचली आहे. गावगाड्यामधून हे उपासक उदयाला आले आहेत. आपल्या कलेच्या माध्यमातून लोकांचे मनोरंजन व प्रबोधन ही मंडळी करीत होती. पूर्वीच्या काळी सुगीच्या दिवसांत हे लोकसंस्कृतीचे उपासक गावोगावी जाऊन आपली कला सादर करायचे. असे हे लोक कलावंत वर्षातून एकदा गावी येत असल्यामुळे गावातील लोक त्यांना धान्याच्या रूपात बिदागी देत असतं. अशा या लोकसंस्कृतीच्या उपासकांमध्ये पिंगळा, वासुदेव, बहुरूपी, भराडी, गोंधळी, नंदीवाले, कुडमुड्या जोशी, डोंबारी, डवरी, पोतराज, माकडवाले, दरवेशी आदींचा समावेश होतो. यातील काही उपासक काळाच्या ओघात नष्ट झाले आहेत. मात्र काही लोकसंस्कृतीच्या उपासकांनी आजच्या काळातही आपली लोककला टिकवून ठेवली आहे. हे लोक कलावंत लोकसंस्कृतीचा अविभाज्य भाग आहेत. लोक कलावंत टिकले तर आपली लोकसंस्कृती टिकणार आहे. त्याच बरोबर ती विकसित होणार आहे. मात्र हे लोक कलावंत असेच काळाच्या ओघात पडद्याआड जात राहिले तर आपली जी संस्कृती आपण श्रेष्ठ आहे म्हणतो ती टिकवून ठेवणे कठीण जाणार आहे. लोकसंस्कृतीच्या उपासकांमधील सर्वच उपासक महत्त्वाचे आहेत. त्यामुळे असे उपासक आणि त्यांची लोककला आपल्या लोकसंस्कृतीसाठी महत्त्वाचे असणार आहे. या लोकसंस्कृतीच्या उपासकांनी आपापल्यापरीने व आपल्या कलामधून समाजाला मानवी मूल्यांची शिकवण देण्याचे महान कार्य केले आहे. म्हणून त्यांना 'लोकशिक्षक' असेही म्हणतात.

वासुदेव हा या लोकसंस्कृतीच्या उपासकांमधील एक महत्त्वाचा उपासक आहे. वासुदेवाच्या गीतातून समाजाला योग्य दिशा देण्याचे मानवी मुल्ये समाजात रुजविण्याचे काम वासुदेव या लोककलावंतानी केले आहे. प्रस्तुत शोध निबंधाच्या माध्यमातून आपण वासुदेव या लोकसंस्कृतीच्या उपासकाविषयी व त्यांच्या गीतातून व लोककलेतून येणाऱ्या मानवी मुल्यांचा आढावा घेणार आहोत.

- **वासुदेव :**

वासुदेव हा श्रीकृष्णाचा भक्त आहे. तर काहीजण वासुदेवाला श्रीकृष्णाचा प्रतिनिधी मानतात. पाहटेच्या वेळी वासुदेव हा गावांमध्ये येतो. रामकृष्णाच्या नावाचा गजर करीत तो घरोघरी जाऊन दाण मागतो. देवाच्या नावाने दाण मागताना वेगवेगळ्या देवतांची नावे घेतो. पहाटेच्या प्रहरी देवदेवतांची गाणी गात वासुदेव येतो. ही गाणी तो विशिष्ट तालावर गातो. त्यामुळे एक प्रकारचे चैतन्यमय वातावरण निर्माण होते. घरातील सुवासिनी स्त्रिया या वासुदेवाच्या झोळीत धान्य दाण म्हणून घालतात. 'लोकसंस्कृतीचे उपासक' या लेखात वासुदेवाचे वर्णन करताना डॉ.सौ.वीरा मांडवकर लिहितात, 'वासुदेव हे जातीने मराठा श्रेणीतलेच आहेत; परंतु त्यांच्या या विशेष कामामुळे किंवा त्यांच्या वेगळ्या वृत्तीमुळे त्यांची स्वतंत्र जात गणली जाऊ लागली असावी. काही अभ्यासकांच्या मते ही एक धार्मिक भिक्षेकऱ्यांची जात असावी. गावोगावी भटकून ते आपला उदरनिर्वाह करीत असावेत. त्यांचा वावर मुख्यतः दक्षिण भारतात आहे. त्यांच्या उगमाविषयी कथा सांगितली जाते की, एका ब्राह्मण जोतिषास एका कुणबी स्त्रीपासुन झालेल्या सहदेव नावाच्या मुलापासून त्याची उत्पत्ती झाली आहे.' वासुदेव हा लोकसंस्कृतीमधील महत्त्वाचा उपासक आहे. त्यांच्या उत्पत्तीविषयी प्रस्तुत मांडवकर यांच्या विवेचनात सविस्तर माहिती मिळते. वासुदेव या लोकसंस्कृतीच्या उपासकाचा पेहराव ही एक वेगळ्या पद्धतीचा असतो. त्यांच्या परंपरेविषयी आता आपण जाणून घेणार आहोत.

- **वासुदेवाची परंपरा :**

वासुदेव या लोकसंस्कृतीच्या उपासकाची परंपरा प्राचीन काळापासून चालत आलेली आहे. मराठी संस्कृतीत हजार- बाराशे वर्ष जुनी अशी वासुदेवाची परंपरा असावी असे अभ्यासकांचे मत आहे. वासुदेवाविषयी प्राचीन काळातील धर्मग्रंथात माहिती मिळते.

A Performance Study of Prediction Model for Preterm Birth and Mode of Delivery Based on Machine Learning Tools.

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Abstract: Preterm births affect around 15 million children a year worldwide, Current development in science and technology in medical field the efforts focus on mitigating the effects of the pre-maturity, not on preventing it. In this study, we studied different maternal health factors like Age, Height, Weight, BMI, BMI Category that affect on preterm birth and Similarly, prediction of mode of delivery based on Age, Height, Weight, Blood Pressure, TSH Level, HB . The objective of this study was to develop and compare machine learning predictive models for preterm birth based on logistic regression, random forest and stratified k-fold cross validation machine learning algorithms for detecting the delivery method is Normal or C- section. our study shows that model based on logistic regression show high accuracy than random forest for predicting Preterm births whereas model based on random forest shows excellent performance with high accuracy than logistic regression and stratified k-fold cross validation for prediction of mode of delivery. Therefore we use random forest model is used for real data prediction.

Keywords: Machine Learning, Logistic Regression, Stratified K-fold Cross Validation, Random Forest, ROC -AUC Curve.

Introduction: Preterm births affect around 15 million children a year worldwide. Current development in science and technology in medical field the efforts focus on mitigating the effects of the pre-maturity, not on preventing it. Although caesarean(C-Section) deliveries hold life-saving potential, their increasing rate poses a substantial global health challenge. By 2030, it is projected that around 28.5% of all global births will involve caesarean sections(C-Section), which equates to approximately 38 million women annually [1]. In India, CD rates have steadily increased. Data from the National Family Health Surveys (NFHS) demonstrate an increase in the CD rates 8.5% in 2005–2006, 17.2% in 2015–2016, and 21.5% in 2019–2021[2].Preterm birth refers to the delivery of a baby completing 37 weeks of gestation it is a global public health issue and one of the leading causes of Neonatal Mortality and Morbidity. Nearly 15 million infants are born prematurely worldwide, and more than 1 million die from preterm birth and its complications before the age of 5 [3]. Understanding the cause risk factors and prevention strategies is essential for improving maternal and child health outcomes. Recent data indicates that India recorded the highest number of preterm births old wide in 2020 with approximately 3.02 million cases, according for 20% of all preterm births globally.PTB not only causes death and diseases in the new born, but also causes anxiety and depression in postpartum women [4]. The choice of delivery mode has a significant impact on the health of both mothers and infants. With the continuous advancement of medical technology, the global utilization rate of caesarean section as a crucial delivery method is increasing [5]. Therefore, it is essential to deeply understand the factors influencing the mode of delivery for predicting and preventing caesarean section. The rate of C-section deliveries in India has risen significantly over the years, increasing from 8.5% in 2005-06 to 21.5% in 2019-21. This increasing rate also raises questions about whether all C-section are medically necessary. Maternal health place a crucial role in determining the mode of delivery, which can be either vaginal or caesarean section (C-section). Understanding and the predicting model of delivery based on maternal health parameters have becomes essential for optimizing maternal health outcomes. Advancement and technology, particularly in machine learning (ML) and artificial intelligence (AI) have, significantly enhanced the ability to predict mode of delivery by analysing various maternal health parameters. Our research focuses on exploring factors affecting both C-section and normal deliveries. In this study examine how Age, Weight, Height, TSH levels, Blood Pressure, HB contribute to delivery outcomes. The objective of this study was to develop and compare machine learning predictive models for preterm birth based on logistic regression, random forest and stratified k-fold cross validation machine learning algorithms for detecting the delivery method is Normal or C- section.our predictive model assist health care providers in making informed decisions there by improving maternal health outcomes.

Objectives:

- Statistical Analysis of factors affecting Preterm birth.
- To build a predictive model to detect preterm birth based on maternal health factors.
- To analyze whether Age and BMI Category differ significantly in both group (preterm risk and no preterm risk).
- To analyze age-wise distribution of mode of delivery.
- To analyse the relationship between the mode of Normal vs. caesarean delivery and maternal age.
- To evaluate the prevalence of anemia among women following different delivery methods
- To build a predictive model based on maternal health factors.

Literature Review: Preterm birth is becoming a vital public health concern, given its correlation with neonatal mortality and morbidity. The causation of preterm birth is complex and multifactorial issue therefore remains the subject of considerable research and investigation. A study conducted by Richard P Dickey, Xu Xiong examined the effect of Height, Weight, Body mass

A study of Performance of loan default prediction model Using Machine Learning Techniques

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Abstract: Loan lending has been playing significanee role in financial world through out the year. It is quite profitable for the both lenders and borrower's. In the banking sector a loans have become a key component that steers the economy and directly impact of the growth of a nation economy. The loan default predication is to p redict rather the borrower will delay the repayment or not. This is an important problem of banking and fi nance companies. Now a days there are numerous risk identified with bank sector regarding giving loan to the client and for the individual who get the loan. In our study our main aim is that to build up the loan defaulter predication model based on machine learning technique. Three machine learning models like. Rando m Forest. Logistic Regression, Light GBM to predict whether a customer may get loan or not.In this study we compute correlation Heatmap and VIF factor it shows that there is no correlation between the variables also we used random forest to identify top ten features which are highly affected on default prediction.Using SMOTE and SMOTE ENN methods we constructed above three models then our study shows that all of these three models based on Smote ENN technique perform excellent with high accuracy to accurately predict loan defaulter as compared to model based on SMOTE .This paper also shows that machine learning models may be a better option than traditional techniques for organizations trying to forecast the failure of loans.

Key words: Loan default, Logistic Regression, Random Forest. Light GBM, Smote. Smote- ENN

Introduction: In world All people needs a loan there are many loan trading banks institutes etc people take help of these for there financial problems or personal issues economical Competition in world makes a person or individual to have a loan. To keep their transactions fluid and earn revenue to sustain themselves through economic periods small to large scale banking organisations rely on borrowing activities.Due to the interest earned from loans and therefore, very important in the banking sector financial risk may arise for the banks. Based on advance non repayment by institutes amount big, and the each year people paying from lending institutes bad loans to borrowing financial institutes at the upfront so in such a way huge loss suffered and the financial distress impact on the financial sectors all over the world.Loans predictive model building this can be very helpful for Financial Institute to come up with the challenges of Lending history reducing the chances of large losses due to Loan defaulter and trusted money defaulters not repaying. So lending is a win-win for both the lender and the borrower but also it exposes both the lender and the borrower to significant risk which can basically be boiled down to the inability of the borrower to pay back the loan in time. This is a mutual decision as to the lenders and the borrowers and is known as 'Credit Risk'. In conventional lending model banking officers primarily uses 5C Principal (collection of character. capital, capacity, collateral and terms) to access the capacity of customer must be availed before the loan would granted. This judgement however, is subjective to each person reading, and there are a lot of factors influencing how a consumer may experience the transaction. So considering above problem this paper aims to build and machine learning model to lend the loan to a non defaulter customer which will help to identify whether approved the loan to an particular individual or not.

Literature Review: Practitioners in the banking and financial sectors have increasingly turned to machine learning (ML) and deep learning (DL) models to automate and enhance the process of credit risk assessment and loan prediction. These advanced algorithms are able to process vast amounts of data far more efficiently and accurately than traditional methods. providing more reliable insights into a candidate's creditworthiness. Machine learning models such as decision trees. random forests, support veetor machines (SVM), and k-nearest neighbours (KNN) have been commonly used for this purpose. More recently, deep learning algorithms like

पाहिजेत त्याचे निराकरण केले पाहिजे.

१२. निष्कर्ष

भारतातील शेतमजुरांची पाच प्रकार पडतात. त्यामध्ये अनुक्रमे भूमिहीन शेतमजूर, भूमिधारी शेतमजूर, जोडलेला शेतमजूर, रोजंदारी शेतमजूर आणि लिंग भेदानुसार शेतमजूर. भारतातील शेतमजुरांची संख्या दिवसें दिवस वाढत आहे. शेतमजुरांची उत्पन्न कमी असल्यामुळे शेतमजुरांना अनेक समस्यांना तोंड द्यावे लागते. जसे की आर्थिक, सामाजिक आणि कौटुंबिक समस्या याच शेतमजुरांच्या समस्यांवर अनेक प्रकारचे उपाय सरकारने योजले आहेत. पण त्यांची प्रत्यक्ष अंमलबजावणी पूर्ण तळागाळापर्यंत होत नाही याची नोंद सरकारने घेतली पाहिजे.

संदर्भ

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शाश्वत विकासामधील कृषी–आधारित उद्योगाची भूमिका

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शिवाजी विदयापीठ कोल्हापूर

गोषवारा :

शेती हा जगातील सर्वात मोठा उद्योग आहे, जो एक अब्जाहून अधिक लोकांना रोजगार देतो आणि दरवर्षी १.३ ट्रिलियन डॉलर्सचे अन्न उत्पादन देतो. सुमारे ५० टक्के राहण्यायोग्य जमिनीवर, कुरण आणि शेती ही दोन्ही जमीन विविध प्रजातींसाठी उदरनिर्वाह आणि अधिवासाचे महत्त्वाचे स्रोत म्हणून काम करते. शाश्वत व्यवस्थापनाद्वारे, कृषी उपक्रमांमध्ये महत्त्वाच्या परिसंस्थांचे संवर्धन आणि पुनरुज्जीवन करण्याची, पाणलोट क्षेत्रांचे रक्षण करण्याची आणि माती आणि पाण्याचे आरोग्य वाढविण्याची क्षमता आहे. उलटपक्षी, अस्थिर पद्धती पर्यावरण आणि मानवी कल्याणासाठी महत्त्वपूर्ण धोके निर्माण करतात. सध्याची शेती पद्धती बहुतेकदा कृत्रिम खते, कीटकनाशके आणि एकल शेतीवर मोठ्या प्रमाणात अवलंबून असतात — ज्यामुळे पर्यावरणाचे नुकसान होते आणि संसाधनांचा ऱ्हास होतो. त्याचे परिणाम लक्षणीय आहेत. त्याचबरोबर जागतिक अन्न व्यवस्था एका गंभीर वळणावर आहे. आपल्या सध्याच्या कृषी पद्धती पर्यावरणावर प्रचंड ताण आणत आहेत, ज्यामुळे हवामान बदल, जैवविविधतेचे नुकसान आणि मातीचा ऱ्हास होत आहे. ग्राहक अधिक पारदर्शकता आणि नैतिक स्रोतांची मागणी करत आहेत, शाश्वततेवर लक्ष केंद्रित करून उत्पादित केलेले अन्न

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Drug Recommendation System Using Machine Learning Technique

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Abstract: In today's digital era healthcare is one among the major core areas of the medical domain. People trying to find suitable health-related information that they are concerned with. The Internet could be a great resource for this kind of data, however you need to take care to avoid getting harmful information. In medical emergencies, rapid and precise drug recommendations are crucial for patient survival and effective treatment. A drug Recommendation System in machine learning (ML) is a software application designed to assist healthcare professionals and patients in selecting the most appropriate medication. The system processes comprehensive patient data, including medical histories and real-time health indicators, to provide accurate drug recommendations In this article our main aims to introduce a machine learning-based drug recommendation system based on four different methods like Random Forest, SVM, Passive-Aggressive and Logistic Regression (Over) classifiers. Which are analyses the reviews and predict conditions based on these conditions recommended relevant top five drugs. Our study shows that random forest method is superior as compared to logistic regression, passive aggressive, support vector machine. Passive aggressive method is give excellent result as compared to support vector and logistic regression. Support vector machine is better as compared to logistic regression. In overall comparison the performance of logistic regression is worst.

Keywords: Drug recommendations system, machine learning, text analysis, TF-IDF, Random Forest, Logistic Regression, SVM, Passive-Aggressive.

Introduction: The rise in coronavirus cases is rapid, leading to a shortage of doctors. There are fewer doctors in rural areas compared to cities.[1] Since medical school takes between 6 and 12 years to complete, this issue has worsened, making it hard to bring in more doctors. A telemedicine framework should be fully utilised during this challenging period.[1]The frequency of clinical mistakes has increased in modern healthcare environments. Medication-related errors affect more than 200,000 people in China and 100,000 in the US annually. Over 40% of doctors, especially experts, make mistakes while writing prescriptions. This occurs because their decisions are based on a limited scope of knowledge, which influences the solutions they provide [3][4]. For patients who need professionals with an in-depth understanding of microscopic organisms, antibacterial agents, and patient care, choosing the best prescription is essential [2]. Due to new research, clinical personnel can access more medications and diagnostics daily. As a result, doctors find it more and more challenging to choose the best course of action or drugs for patients based on their symptoms and medical background.

Computer applications have significantly improved with the introduction of artificial intelligence (AI). Emulation of human cognitive processes in digital systems is at the heart of artificial intelligence. The development of AI is mainly dependent on machine learning methods, which include data collection, rules for information extraction, the production of both approximations and exact conclusions, and the confirmation of these results. The effectiveness of artificial intelligence is largely contingent upon the precision of the algorithms employed in machine learning. The precision of machine learning algorithms is predominantly contingent upon substantial training datasets. In contemporary times, a vast amount of data is available for training systems. The integration of artificial intelligence into the drug development process has increased. Currently, AI is pivotal in the analysis and advancement of drug discovery. Pharmaceutical companies, research and development institutions focused on AI, and medical professionals can collaborate to investigate new medicinal solutions tailored to specific needs. Clinical trials and medical techniques are typically used to assess the safety of drugs. However, based on their personal experiences, patients—significant stakeholders—can provide insightful

संत कबीर के साहित्य में सामाजिक एवं धार्मिक एकता के स्वर

रविंद्र पाटील
राजर्षि छत्रपति शाहू कॉलेज
कोल्हापुर

सारांश:

भारतीय साहित्य में संत साहित्य का गौरवपूर्ण इतिहास रहा है। संत साहित्य ने समाज को आधुनिकवादी विचार दिया है। इनमें संत कबीर का स्थान युगद्रष्टा कवि के रूप में महत्त्वपूर्ण है। उन्होंने साखी और दोहों के माध्यम से समाज को सही दिशा देने का काम किया है। सांप्रदायिकता की स्थिति भारत में कबीरदास के समय भी थी और आज भी है। दोहे और साखी के माध्यम से कबीर ने हिंदू और मुसलमानों दोनों के दुर्बलताओं के मस्जिद और मुल्ला पर कडा प्रहार किया है वहीं दूसरी ओर पत्थर पूजनेवाले हिंदूओं को भी नहीं छोडा है। कबीर के अनुसार हिंदू-मूसलमानों की एकता में सबसे बाधक तत्व उनके राम और रहिम है। इन दो नामों के कारण ही दोनों धर्मों के बीच तणाव एवं सांप्रदायिकता की स्थिति बनी हुई दिखाई देती है। जो कबीर के समय भी थी और आज भी है। कबीर ने सामाजिक विषमता और आडंबरों का खुलकर विरोध किया है। अत: कबीर भक्तिकाल के क्रांतिकारी महापुरुष के रूप में आते हैं। जिन्होंने उस समय मानसिक गुलामी एवं द्वीदा में फँसे लोगों को नव संजिवनी देने का काम किया। कबीर आँखन देखी पर विश्वास रखते थे। सामाजिक कूरीतियाँ और आडंबर जैसी बातों को जड से मिटाने के लिए कबीर ने आत्मज्ञान का साहारा लिया था। कबीर दु:खी पीडित असहायों के बीच सुख शांति निर्माण करना चाहते थे। कबीर कहते हैं मनुष्य का जीवन भी कस्तुरी मृग जैसा है। मृग की नाभी में कस्तुरी होती है परंतु अज्ञान के कारण मृग कस्तुरी ढूँढने के लिए भूखा, प्यासा पूरे जंगल का चक्कर लगाता है। अत: कबीर लोगों में भक्तिमार्ग का आकर्षण दिखाकर लोगों के हृदय में शांति स्थापित करने की ईच्छा व्यक्त करते हैं।

शोध विवरण:

भारतीय साहित्य में संत साहित्य का गौरवपूर्ण इतिहास रहा है। संत साहित्य ने समाज को आधुनिकवादी विचार दी है। भारतीय साहित्य को संत साहित्य की लंबी परंपरा प्राप्त है। संतो ने अपनी वाणी से सत्य का दर्शन कराया है। इसमें संत नामदेव और कबीर का बहुत बडा योगदान रहा है। इतिहास बताता है कि सभी संतों ने मनुष्य के दुखपूर्ण जीवन में मरहम लगाने का बहुत बडा कार्य किया है। इन संतों की पंक्ति में संत कबीर का नाम सबसे पहले आता है। कबीर एक युगद्रष्टा कवि है। उन्होंने साखी और दोहों के माध्यम से समाज को सही दिशा देने का काम किया है। "कबीर भौतिक जीवन के मायाजाल में खो होती सहजता की खोज कर रहे थे। उन विडम्बनाओं में पूजापाठ, धार्मिक, अनुष्ठान और कर्मकांड आदि बोझ बनकर मनुष्य के भीतर भेद-दृष्टि को जन्म दे रहे थे। सुख बिलुप्त था और अज्ञान सबकी थाल में विषाद का प्रसाद परोस रहा था। ऐसी ही परिस्थितियों ने कबीर को उलटबासी का उपहार दिया और वे इस निष्कर्ष पर पहुँचे कि ज्ञान की सत्ता स्वीकार कर लेने पर भी साधक और परमात्मा के बीच गुरु अनिवार्य होता है।"[1]

सांप्रदायिकता के विरोधी कबीर:

सांप्रदायिकता की स्थिति भारत में कबीदास के समय में भी थी और आज भी है। वर्तमान समय में सर्वाधिक चिंतनीय विषय अगर कोई है तो वह है सांप्रदायिकता की वर्तमान समय में राजनीति से ईमानदारी और निष्ठा की बाते खत्म होती जा रही है। नेता लोग अपने-अपने जाति और समुदाय के प्रतिक बन गए हैं। संत कबीर ने इस प्रवृत्ति का कडा विरोध किया था। वे नीडर थे।

"हिंदू तुरुक की एक रहा है, सतगुरु है बताई
कहे कबीर सुनहू संतों, राम न कहेउ खुदाई।"[2]

संत कबीर का साहित्य आनेवाले अनेक पीढियों के लिए पथदर्शक है। वर्तमान समय में देश का प्रत्येक नेता धार्मिक एकता स्थापित करने की बात तो करता है लेकिन वह खूलकर समर्थन नहीं करता। वह समाज में धर्मांधता फैलानेवाले प्रवृत्तियों पर खुलकर बात नहीं करता क्योंकि खुलकर बात करने के लिए नेता के पास आंतरिक शक्ति की शुद्धता और

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१५. कौटुंबिक हिंसाचाराचा समाजशास्त्रीय अभ्यास

डॉ. कन्नाडे ममता कार्तिक
समाजशास्त्र विभागप्रमुख, राजर्षी छत्रपती शाहू कॉलेज, कोल्हापूर.

प्रस्तावना

कुटुंबसंस्था ही समाजातील महत्त्वाची सामाजिक संस्था आहे. सर्वच मानव समाजात कुटुंबसंस्थेस केंद्रीय स्थान प्राप्त झालेले आहे कारण कुटुंब संस्था ही व्यक्ती व समाज या दोघांच्याही दृष्टीने महत्त्वाचे कार्य पार पाडत असते. मानवाने सर्वांगीण सुरक्षिततेच्या दृष्टीने कुटुंबसंस्थेची स्थापना केली. परंतु काही व्यक्तीच्या दृष्टीने कुटुंब ही त्रासदायक संस्था ठरते. कारण त्यांना कौटुंबिक हिंसाचारास तोंड द्यावे लागते. आजच्या स्त्रियांच्या विविध कौटुंबिक समस्या व अत्याचारांची कारणे ही इतिहास काळातील भारतीय समाजाच्या जडणघडणीत आहेत.

कौटुंबिक हिंसाचार ही एक गंभीर सामाजिक आणि मानसिक समस्या आहे. भारतात कौटुंबिक हिंसाचारास प्रामुख्याने स्त्रिया बळी पडतात. कुटुंबात स्त्रियांचा विशेषता पत्नी, सून, विधवा अशा स्त्रियांचा मोठ्या प्रमाणावर छळ होत असला तरी पुरुष देखील घरगुती अत्याचाराला बळी पडतात पण महिलांच्या तुलनेत पुरुषांचे प्रमाण कमी असलेले पहावयास मिळते. महिलावरील हिंसाचार हे मानवी हक्काचे उल्लंघन आणि महिलावरील भेदभावाचा एक प्रकार आहे.

कौटुंबिक हिंसाचाराचा अर्थ

ॲन्थोनी गिडीन्स

कुटुंबातील एका सदस्याने दुसऱ्या एक किंवा अनेक सदस्यांच्या विरोधात केलेला शारीरिक दुरुपयोग म्हणजे कौटुंबिक हिंसाचार होय.

कौटुंबिक हिंसाचारापासून स्त्रियांचे संरक्षण अधिनियम कायदा 2005

व्यथित स्त्रीच्या शारीरिक किंवा मानसिक आरोग्यास, सुरक्षिततेस, एकूण जीवितास, कल्याणास धोकादायक परिस्थितीत नेणारे वातावरण तसेच व्यथित स्त्रीच्या जीवनास किंवा कोणत्याही अवयवास घातक आणि उपद्रवी ठरेल अशी वागणूक, स्त्रीचा लैंगिक छळ, लैंगिक दुरुपयोग, शाब्दिक किंवा भावनिक छळ, आर्थिक छळ किंवा आर्थिक फायद्यापासून वंचित ठेवणे तसेच आर्थिक कारणासाठी दुरुपयोग होत असेल तर तो कौटुंबिक हिंसाचार समजला जाईल. कौटुंबिक हिंसाचाराची अशी व्यापक व्याख्या 2005 च्या कायद्यात केली आहे.

कौटुंबिक हिंसाचार कायदा प्रामुख्याने पत्नी किंवा महिला लिव्ह-इन भागीदारांना, पती किंवा पुरुष लिव्ह-इन भागीदार यांच्याकडून, त्याच्या नातेवाईकांसह घरगुती हिंसाचारापासून संरक्षण करतो. बुद्धिमत्ता, शारीरिक क्षमता, सर्जनशीलता, कष्ट करण्याची

२२. महिलांवरील अत्याचार: स्वरूप, कारणे व उपाय

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संशोधक विद्यार्थिनी, शिवाजी विद्यापीठ, कोल्हापूर.

गोषवारा

आज भारतीय स्वातंत्र्याला ७६ वर्षे उलटून गेली तरी देखील समाजात स्त्री बाबत समानतेचा दृष्टिकोन अपेक्षेप्रमाणे विकसित होऊ शकला नाही ही खेदाची बाब आहे. स्त्रीच्या पूर्वीच्या परिस्थितीत आज बदल झालेले असले तरीही स्त्री अजूनही खऱ्या अर्थाने पुरुषाच्या बरोबरीला आलेली नाही. आधुनिक स्त्रीला सर्व प्रकारच्या संघर्षातूनच वाट काढावी लागते. स्त्री म्हणजे सृजनशीलता,सामर्थ्य आणि करुणाजन्य शक्ती होय पण या शक्तीचा २१ व्या शतकात देखील छळ होताना दिसत आहे. घराची आर्थिक बाजू सांभाळताना. तिला घर सांभाळून नोकरी करताना तारेवरची कसरत करावी लागते. आजही स्त्रीचा जन्म आनंदाने स्वीकारला जात नाही. आईच्या गर्भात ही ती सुरक्षित नाही निर्णय प्रक्रियेत स्त्रीला फारसे महत्त्वाचे स्थान दिले जात नाही.तिच्या श्रमाची गणना उत्पादक श्रमांमध्ये होत नाही.देशातील विविध वृत्तपत्रे व चित्रवाहिन्या पाहिल्यास स्त्री भ्रूण हत्या प्रकरणे, स्त्रिया वरील अत्याचाराची उदाहरणे मोठ्या प्रमाणात पहावयास मिळतात.अजून हुंडाबळी सारखे गुन्हे दिसून येतात. कायद्याने जरी स्त्री पुरुष समानता असली तरी त्याची अंमलबजावणी होत नाही किंवा अजूनही स्त्रीच्या मनावर रुढी, प्रथा, परंपरा धर्माचा पगडा असल्यामुळे स्त्रीच्या हक्कासाठी व संरक्षणासाठी केलेल्या कायद्याचा वापर करून घेत नाही .आज तर भांडवलशाहीमध्ये स्त्रीयांच्या सौंदर्याचाही बाजार मांडला जात आहे शोषण चालूच आहे फक्त शोषणाचे संदर्भ, शोषणाची साधने बदलली आहेत. शोषण करण्याची प्रक्रिया बदलली आहे.बाकी सारे तेच आहे.प्रसार माध्यमातून प्रसारित होणाऱ्या बातम्यांमधून देखील स्त्रीची विकृत प्रतिमा सतत रंगवली जाते एकूणच काय तर स्त्री, स्त्रियांचे प्रश्न स्त्रियांच्या भावना ,स्त्रीचे माणूस म्हणून जगणं आज धोक्यात आल्याचं पावला पावला गणित आपणास जाणवते आहे. स्त्रीला करावा लागणारा संघर्ष, स्वतःच्या कुटुंबाबरोबर करावा लागणारा संघर्ष ,सभोवतालच्या समाजाशी करावा लागणारा संघर्ष,देशाशी करावा लागणारा संघर्ष एकूणच काय जन्मापासून मरेपर्यंत स्वतःला सिद्ध करण्यासाठी करावा लागणारा संघर्ष ही भारतातील स्त्रीची सत्य अशी कैफियत आहे .या परिस्थितीचा विचार करता महिलांचे सक्षमीकरण व स्त्रिया विषयी समाजाची मानसिकता बदलणे ही एक काळाची गरज आहे. देशाच्या जडणघडणीमध्ये व्यक्तीचे व्यक्तिमत्व घडवण्यात स्त्रियांचा वाटा महत्त्वाचा आहे.आजच्या स्त्रीने जुनाट खुळचट प्रतिमा पुसून टाकून नवीन स्वातंत्र्य समतेचा पुरस्कार करणारी नवीन प्रक्रिया उभा केली पाहिजे. समाजाने स्त्रीकडे पाहण्याचा दृष्टिकोनात बदल केला तर निश्चितच स्त्रियांना योग्य प्रकारे न्याय मिळेल व एक स्वाभिमानी स्त्री म्हणून या जगात वावरता येईल. जोपर्यंत स्त्री-पुरुषांमध्ये समानतेच्या

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Comparative Analysis of Heavy Metal Content in Soil from Karveer Tahsil Using Atomic Absorption Spectroscopy and Its Environmental Impact

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Abstract

The presence of heavy metals in soil has become a significant environmental concern due to their toxicity, persistence, and potential to bioaccumulations in ecosystems. This study focuses on the analysis of key heavy metals such as lead (Pb), cadmium (Cd), arsenic (As), chromium (Cr), and mercury (Hg), which commonly originate from industrial activities, agricultural inputs, mining, and urbanization. Analytical techniques including Atomic Absorption Spectroscopy (AAS), Inductively Coupled Plasma Mass Spectrometry (ICP-MS), and X-Ray Fluorescence (XRF) are reviewed for their effectiveness in detecting and quantifying these contaminants. The behavior and mobility of heavy metals in soil are influenced by factors such as pH, organic matter, and soil texture, which in turn affect their bioavailability and ecological risk. Understanding the distribution and concentration of heavy metals is essential for environmental monitoring, risk assessment, and the development of remediation strategies. This study highlights current methodologies, key findings from recent literature, and future research directions aimed at mitigating soil contamination and protecting public healt.

Keywords: Heavy Metals, Ecosystem, Toxicity and analysis.

Introduction

The introduction of heavy metals into soils can occur through multiple pathways, including the use of phosphate fertilizers, sewage sludge applications, industrial effluents, atmospheric deposition, fossil fuel combustion, and improper disposal of electronic and domestic wastes. Once introduced, heavy metals can persist in the soil matrix for extended periods, undergo complex geochemical transformations, and influence the physicochemical properties of soils. Moreover, they may become bioavailable under certain conditions and enter the food chain, leading to adverse health effects in humans and animals, including carcinogenicity, nephrotoxicity, neurotoxicity, and reproductive toxicity.

Given the increasing environmental and public health implications of soil contamination, there is a critical need to monitor and assess the levels of heavy metals in various soil environments. This necessitates the use of robust, precise, and sensitive analytical techniques capable of detect in trace concentrations of metals across a range of complex matrices. Among the available methods, Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) has emerged as one of them streliable and widely employed techniques for multi-elemental analysis of environmental samples.

Soil is the material that is found on the earth's surface and is made of organic and inorganic material. The typical soil consists of about 45% mineral, 5% organic matter, 20-30% water, and 20-30% air. It is a blend of natural issue, minerals, gases, fluids, and living beings that together help to the existence of many life forms that have evolved on our planet. The Earth's body of soil is the aerosphere, which has four vital functions: it is a medium for plant growth, it is a means of water storage, supply and purification, it is a modifier of Earth's atmosphere. It is a natural surroundings for living beings. It would be very wrong to think of the land as a simple collection of fine mineral particles. The soil also contains air, water, dead organic matter and various types of living organisms. The soil interfaces with the lithosphere, the hydrosphere, the atmosphere and the biosphere. Soil is a major component of the Earth's ecosystem. Soils may become contaminated by the accumulation of heavy metals and metalloids through emission from the rapidly expanding industrial areas, mine tailings, disposal of high metal wastes, leaded gasoline and paints, land application of fertilizers, animal manures, sewage sludge, pesticides, wastewater irrigation, coal combustion residues, spillage of petrochemicals, and atmospheric deposition. Heavy metals constitute an ill-defined group of inorganic chemical hazards, and those most commonly found at contaminated sites are

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Article

Sustainable Activated Carbon Production from Water Filter Waste Carbon Cartridge: Insights into Adsorption Isotherms, Kinetics, And Mechanisms

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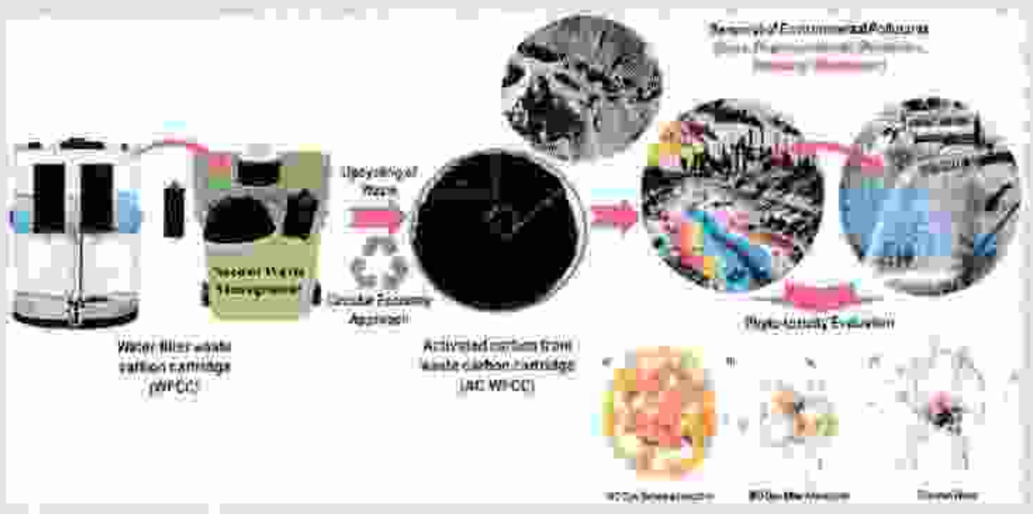
ABSTRACT: In this study, an efficient, sustainable, and environmental waste upcycling approach was employed for the one-step preparation of a chemically activated adsorbent using water filter carbon cartridges (AC-WFCC). The simple chemical activation method provides a straightforward and scalable approach, contributing to both waste management and environmental remediation. AC-WFCC was thoroughly examined using XRD, BET, SEM, HR-TEM, FT-IR, and Raman spectroscopy to confirm its structural integrity and high surface area (922.18 $m^2 \cdot g^{-1}$). It exhibited a maximum adsorption capacity of 306.22 $mg \cdot g^{-1}$ for the removal of methyl orange (MO). The detailed investigational study on the effects of pH, adsorbent dose, contact time, and concentration on adsorption performance was carried out. The adsorption process follows the Redlich−Peterson adsorption isotherm model ($R^2 = 0.988$) and pseudo-second-order kinetics ($R^2 = 0.999$). The thermodynamic parameters ΔG, ΔH, and ΔS revealed the spontaneous and exothermic nature of the adsorption of MO by AC-WFCC. Further, a phytotoxicity study on *Vigna Munga* seeds was performed, and it demonstrates the nontoxic behavior of AC-WFCC with 80 to 100% seed germination in treated dye solution. AC-WFCC was regenerated and reused for up to five successive cycles. Finally, the applicability of the adsorbent was checked towards diverse environmental pollutants with excellent efficacy.



KEYWORDS: *waste upcycling, activated carbon, adsorption, kinetic, thermodynamic, environmental remediation, phytotoxicity*

1. INTRODUCTION

Water pollution due to physical, chemical, or biological factors is causing aesthetic and detrimental effects on aquatic life and human beings. In the last couple of decades, water pollution has become a significant global environmental concern due to the industrial revolution and population growth in developed countries.[1] The increase in population has led to the generation of tremendous amounts of waste, which is beyond the limit of the self-purification capacity of water, and hence accumulation of emerging pollutants into water sources results in various harmful effects. On the other hand, industrial activities also generate significant volumes of wastewater laden with diverse pollutants, posing severe environmental and public health risks. Wastewater generated from industries mainly contains high concentrations of dyes, organic content, heavy metal ions,[2] pharmaceuticals, micro- and nanoplastics,[3] as well as personal care products, etc.[4,5] Among many other industries, the dye industry is the major source of water pollution.[6] The disposal of dyes into effluents affects aquatic life and human beings. These dyes have different classifications on the basis of color, structure, solubility, etc., such as anionic, cationic, and nonionic.[7] The most widely used dyes in textile industries are methylene blue, crystal violet, malachite green, methyl orange, etc.[8−10]

Methyl orange (MO) is a water-soluble synthetic organic azo dye commonly employed as a pH indicator and as a coloring agent in many industries. Its discharge into aquatic ecosystems poses significant environmental and health risks. The vibrant color of MO can hinder light penetration into water bodies, affecting the natural process of photosynthesis and hence disrupting the aquatic food chain. Furthermore, the presence of MO in water causes respiratory tract irritation, skin irritation, gastrointestinal irritation, and eye irritation.[7,10] Hence, the removal of MO dye is essential to mitigate its adverse effects on the aquatic ecosystem, biodiversity, human

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Original Article

QbD-Enhanced HPLC Method Development for Vildagliptin and Metformin HCl Formulations

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ABSTRACT

Objectives: This research employs the Quality by Design strategy to design an optimized High-Performance Liquid Chromatography method aimed at analyzing vildagliptin and metformin hydrochloride in pharmaceutical dosage forms. **Materials and Methods:** The mobile phases A and B comprised a buffer-acetonitrile mixture in ratios of 950:50 v/v and 600:400 v/v, respectively. Chromatographic separation was achieved using an YMC Triart C-18 column, with Vildagliptin detection conducted at 210 nm via UV absorbance. Various independent parameters were selected for investigation and risk assessment was employed to evaluate their impact on the analytical responses. **Results:** QbD prioritizes product understanding, risk management and process control to enhance quality assurance and regulatory tractability. Analytical Quality by Design principles ensure robust and flexible methods throughout the product lifecycle. **Conclusion:** This study developed a robust HPLC method for Vildagliptin using a Quality by Design (QbD) approach. Key factors like mobile phase composition and buffer pH were optimized through multivariate analysis. The resulting method, validated for accuracy, precision and robustness, outperformed traditional methods and is suitable for routine pharmaceutical analysis.

Keywords: HPLC method development, Metformin hydrochloride, Pharmaceutical dosage forms, Product understanding, Quality by Design, Risk management, Vildagliptin.

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INTRODUCTION

The current research work aims to utilize the QbD procedure for developing and optimizing a high performance LC technique for vildagliptin and metformin hydrochloride in a pharmaceutical dosage form. QbD is a methodical method improvement strategy that kicks off with predetermined goals and stresses a comprehensive consideration of both the product and the process. This involves prioritizing knowledge of products and manufacturing procedure, quality risk assessment and process rheostat, all based on thorough scientific principles.[1] By employing QbD principles, the primary goal is to ensure a higher level of confidence regarding product eminence, gain regulatory flexibility and continuously improve the method throughout its lifecycle. To achieve this, the foundation of the QbD method lies in implementing established guidelines, such as ICH Q8 Pharmaceutical Development, ICH Q9 Quality Risk Management and ICH Q10 Pharmaceutical Quality System.[2-4] In context of pharmaceutical product development, analytical science plays a critical role leading to the concept of analytical QbD. A scientific and risk-based approach for developing analytical methods is analytical QbD. Its objective is to recognizing predetermined goals and effectively drive critical essential scheme having properties that are affected by method variables. The end outcome of this strategy is improved method performance as well as high resilience, robustness and adaptability for ongoing expansion.[5,6] The application of AQbD leads to the establishment of a well-known, appropriate and reliable technique that consistently conveys the projected results over the entire product life span, analogous to the method QbD.[7,8] To make sure the technique is effective and reliable throughout the product's lifespan, it is crucial to assess the robustness and ruggedness of HPLC methods early in the method development stage for QbD. This proactive approach prevents the need for extensive redevelopment, revalidation and retransfer of analytical methods in the case of adopting a weak or unreliable system.[9] The primary vision of AQbD is to recognize potential drawback strategy and provide a reliable, operational design environment or design space while adhering to relevant

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Analytical Methods

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Sustainable synthesis of tunable emissive sulphur-doped CDs: a synergistic approach for metal ion sensing and antimicrobial applications†

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Over the last two decades, materials from the carbon family attracting increasing attention, carbon dots (CDs) have been synthesized *via* naturally or synthetically derived precursors, which are mostly limited to single fluorescence emission. Tunable emissive CDs have great importance in multiple applications. Therefore, in the present study, multi-emissive sulphur doped carbon dots (S-CDs) were synthesized using the leaves of *Nyctanthes arbor tristis*, commonly known as night-flowering jasmine (NFJ), as a precursor, by a simple acid carbonization method. Interestingly, different synthesis parameters were employed for tuning the optical properties of the S-CDs, of which the synthesis time played a vital role for tuning the fluorescence emission of the S-CDs. Bright blue (BB-CDs), yellow (Y-CDs), and cyan blue (CB-CDs) fluorescence emissions with reaction times of 1, 6, and 8 h were observed. These three CDs have emission ranges of 391, 661 and 408 nm with corresponding quantum yields of 38.96, 6.59, and 25.06%, respectively. The structural and functional morphology of all three S-CDs were analyzed using various characterization techniques. S-CDs showed both excitation dependent (BB-CDs, CB-CDs) and independent (Y-CDs) emission behavior with good photo and pH stability. Furthermore, all the S-CDs were utilized as fluorescent probes for the detection of metal ions, and BB-CDs selectively detect Fe^{3+}, Y-CDs detect $Cr^{6+}$and Mn^{7+}, and CB-CDs detect Cr^{6+} and Fe^{3+}ions with corresponding LODs of 0.1, 1.66, 0.96, 2.18 and 1.56 μg mL^{-1}, respectively. The static quenching mechanism was observed for BB-CDs and CB-CDs, while in the case of YB-CDs, Cr^{6+} shows the dynamic quenching mechanism. In addition, the antibacterial behavior of all three S-CDs was analyzed against *S. aureus* and *K. pneumoniae* (Gram positive and Gram negative) bacteria. These S-CDs show good potential in metal ion sensing in environmental water samples and biological activity.

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1 Introduction

Tunable emissive carbon dots (CDs) have attracted much attention owing to their excellent properties, such as high water solubility, excellent biocompatibility, low toxicity, facile synthesis and ease of surface functionalization.[1–4] CDs have been applied for various applications such as fluorescence sensing, bio-imaging, anti-counterfeiting, drug delivery, photothermal therapy (PTT), LEDs, bone tissue engineering and many more.[5–8] Therefore, CDs have generated broad interdisciplinary research interest in materials science, biology, medicines and core chemistry.[7,9,10] Owing to their outstanding advantages, CDs have been regarded as a new generation of fluorescent materials. The tunable fluorescence behavior of CDs is one of their outstanding properties. Over previous years, many reports have demonstrated the multicolor photoluminescence (PL) behavior of CDs upon varying their physical and chemical parameters. Iyer *et al.* have synthesized CDs with emission in the blue and green regions *via* a hydrothermal and microwave method using orange peel biomass as a carbon precursor.[11] In another report, Wang *et al.* experimented on spinach with water, acetone and ethanol as a solvent to achieve blue, red and greyish white luminescent CDs.[12] Similarly, researchers have achieved multicolor CDs by optimizing different parameters, such as the selection of the precursor, synthesis method, heteroatom/metal ion doping and solvents.[13–15] However, it is still a challenge to obtain multicolor CDs in one synthesis method with one precursor.

The synthesis of CDs can be achieved by both top-down and bottom-up approaches. Several bottom-up methods such as hydrothermal, microwave irradiation, thermal decomposition

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RESEARCH

Porous structure of Fe_2O_3 thin films prepared for supercapacitors via CBD method: effect of molar concentration

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Abstract

In present study, iron oxide (Fe_2O_3) thin films were fabricated using a simple chemical bath deposition method, and the effect of precursor concentration (0.05 M, 0.1 M and 0.15 M) on the electrochemical properties was investigated. The X-ray diffraction analysis confirmed that the hematite (Fe_2O_3) phase of material, while water contact angle measurements revealed a hydrophilic nature. The scanning electron microscopy images exhibited a random distribution of porous structures, with a uniform coating and rough grain morphology. The energy-dispersive X-ray spectroscopy further confirmed the presence of iron (Fe) and oxygen (O) elements in the films. Brunauer–Emmett–Teller (BET) surface area analysis showed 41.19 $m^2\ g^{-1}$ of specific surface area for Fe_2O_3 thin film deposited using 0.15 M precursor. The electrochemical performance of the films was evaluated for charge storage applications, with cyclic voltammetry revealing a high specific capacitance of 495 F g^{-1} at a scan rate of 5 mV s^{-1} for 0.15 M precursor concentration in 1 M NaOH electrolyte. Galvanostatic charge–discharge measurements confirmed a specific capacitance of 337 F g^{-1} at a current density of 3.1 A g^{-1}. These findings suggest that Fe_2O_3 thin films deposited at optimized concentration of iron precursor exhibit significant potential as candidates for supercapacitor applications.

Keywords Iron oxide · Chemical bath deposition · Energy storage · Specific capacitance · Supercapacitor

Introduction

The demand for energy has significantly increased due to the advancement of humanity. However, conventional energy production methods are contributing to serious environmental challenges and climate change. The growing urgency for clean and sustainable energy sources can only be addressed through the utilization of renewable energy. Despite this, certain renewable energy sources are intermittent, which poses a challenge to their reliability over extended period [1]. It is crucial to develop renewable, non-conventional energy sources and establish an efficient energy storage system that can operate coherently. In other words, there is a need to transition from traditional, reliable energy collectors to more efficient, rapid and sustainable power storage solutions. Energy storage is becoming a more important research topic in the present work [2, 3]. The fabrication and synthesis of suitable materials exhibiting high power density and charge/discharge rate in addition to the longer life cycle and environmental favourable are the current research focus among material scientists [4, 5]. Also, Supercapacitors have gained significant attention due to their advantages, including portability, lightweight design, rapid charging capabilities, and high cyclic stability [6, 7]. Given these advantages, extensive research has been dedicated to the development

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Exploring the Frontiers of Sustainability: A Review on Eco-Friendly Methods for the Synthesis of Novel Heterocyclic Compounds

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Abstract:

The quest for sustainable and environmentally benign methods for the synthesis of heterocyclic compounds has gained significant momentum in recent years. This review article provides a comprehensive overview of the latest developments in eco-friendly methods for the synthesis of novel heterocyclic compounds. We discuss the advantages and limitations of various green chemistry approaches, including microwave-assisted synthesis, ultrasound-assisted synthesis, solvent-free synthesis, and biocatalytic synthesis. Furthermore, we highlight the applications of these heterocyclic compounds in various fields, such as pharmaceuticals, agrochemicals, and materials science.

Introduction:

Heterocyclic compounds are an important class of organic molecules that play a vital role in various biological and chemical processes. They are widely used in pharmaceuticals, agrochemicals, and materials science due to their unique properties and reactivity. However, traditional methods for the synthesis of heterocyclic compounds often involve the use of toxic solvents, harsh reaction conditions, and hazardous reagents, which can have detrimental effects on the environment and human health.

Heterocyclic compounds containing nitrogen, oxygen and sulphur atom widely present in various natural products and biologically active molecules, functional materials, ligands and catalysts, and are also used as multipurpose building blocks in organic synthesis [1]. Particularly, many commercial medicines and agrochemicals possess heterocyclic moieties [2]. Substantial efforts

On Wavelet Transform as an Extension of Fractional Fourier Transform and its Applications

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Abstract:

Wavelet theory is associated with building a model for a signal, system or processes with a set of special signals and is emerged as a powerful tool of signal denoising.The main objective of this paper is to study the wavelet transform as an fractional Fourier transform (FrFT) and its some basic properties. Applications of the extended wavelet in solving generalized nth order linear nonhomogeneous ordinary differential equations. Also gives applications in signal processing and convolution of mother wavelet and Mexican Hat Wavelet.

Keywords: fractional Fourier transform, wavelet transform, signal processing

Introduction:

The theory of fractional Fourier transforms (FRFTs) has advanced considerably since its inception, largely driven by the need to extend the classical Fourier transform for diverse applications in optics, signal processing, and quantum mechanics.[10] A core tool involves the Fourier domain computation of an approximate digital random transform. The Fractional Fourier Transform (FrFT), a generalization of the Fourier Transform (FT), depends on a parameter α, which corresponds to the angle in the phase plane [1]. Curvelet transforms exploit sparsity and have found numerous applications [3,4]. The wavelet transform is a powerful tool for multi-scale geometric image analysis [7]. It decomposes a signal into a representation that reveals signal details as a function of time. Traditionally, the wavelet transform and the Fractional Fourier Transform (FrFT) have been widely used in signal and image processing. Wavelet transforms, as extensions of the FrFT, have proven valuable in solving ordinary and partial differential equations, such as the heat equation and the Schrödinger equation [9]. Wavelet-based multi-resolution techniques have been extensively applied in various fields, including signal and image processing, bioinformatics, computer vision, scientific computing, and optical data analysis[6]. The FrFT has also shown significant utility in addressing certain problems in quantum physics. The growing interest of

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A Study the Impact of household air pollution on human health using Machine Learning Techniques.

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Abstract: Due to the rapid development of technology, urbanization and increased population, air pollution has become a hot topic, in particular because of the effects on health. However, much of the focus has been on outdoor air pollution as well as indoor air pollution , Some of the most important sources of indoor air pollution are Volatile Organic Compounds (VOCs) and Particulate Matter (PM). There are a variety of VOCs emitted from modern household products (e.g., paints, lacquers, cleaning liquids, furnishings, copiers, printers, glues, adhesives or permanent markers). Air pollution is a major environmental health threat. Exposure to fine particles in both the ambient environment and in the household causes about seven million premature deaths each year. The main indoor air pollutants are Volatile Organic Compounds (VOCs) and Particulate Matter (PM). PM sources included smoking, cooking, heating, candles, and insecticides, whereas sources of coarse particles were pets, housework and human movements. VOC sources included household products, cleaning agents, glue, personal care products, building materials and vehicle emissions. This public health crisis is receiving more attention, but one critical aspect is often overlooked: how air pollution affects children in uniquely damaging ways. Recent data released by the World Health Organization (WHO) show that air pollution has a vast and terrible impact on child health and survival. In this study we take secondary data of India was taken from git hub. Analyses the data by using machine learning models like Random search CV, Bagging Classifier, Linear regression, logistic regression, XG Boost . for comparing the all the factors of AQI values useing linear regression ,logistic regression and XG Boost models .it is observed that XG Boost has high accuracy than linear regression ,logistic regression and logistic shows better performance as compared to linear regression and it is shows that for PM2.5 values randomized search CV and for AQI values of all factors XG Boost and logistic regression are fitted good.

Keywords: Bagging Classifier, Randomized Search CV, Linear regression, logistic regression, XG Boost ,Public Health, Air Quality Index, and Household Air Pollution.

Introduction: Pollution is becoming an alarming threat to our planet day after day. Food pollution has been the focus of national and international public health organisations, particularly pesticide residues and bioaccumulating substances. They have also focused on reducing outdoor air pollution caused by cities, factories, and automobile exhaust emissions. Meanwhile, whereas people in high-income countries (HICs) spend much of their lives indoors, the pollution of the indoor environment still needs to be addressed [1–3]. Indeed, domestic air and indoor pollution can be traced back to prehistory, when humans first moved to temperate climates, started building shelters, and used fire for cooking, heating, and lighting. Indoor pollution is a global health issue. Today, all over the world, about 2.4 billion people still make food with solid stuff (like wood, farm leftovers, coal, and animal poop). Many of these individuals are impoverished and reside in low- and middle-income nations, with a significant gap between urban and rural settings. In 2020, just 14% of people living in urban areas depended on dirty fuels and outdated technologies, in sharp contrast to the 52% rate of the global rural population.[4]. Despite transitioning from biomass fuels to petroleum products and electricity accompanying modernisation in developed countries, pollution remains a persistent threat to public health [5]. Although inhalation is the primary way indoor pollutants are exposed, it is important to consider cutaneous and oral exposure, especially for children who frequently interact with their hands and frequently participate in activities that involve contact with floors [6][7]. According to Wilson's research, kids touch their mouths, eyes, and noses more often than adults do. In particular, hand-to-mouth contact may be

भारतीय ज्ञान परंपरेचा समृद्ध वारसा: वेरुळचे कैलास मंदीर

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प्रस्तावना:

प्राचीन काळापासून भारतात विविध विषयांचा सखोल अभ्यास होऊन त्या संबंधित भरपूर लिखाण झाले. केवळ लिखित नाही तर वास्तूरूपातही या ज्ञानाचे रुपांतरण झाले. यामध्ये काळाच्या ओघात भर पडत गेली. काही परकीय आक्रमकांनी या ज्ञानात भर घातली तर काही आक्रमणाच्या काळात यातील काही ज्ञान नष्टही झाले मात्र ही ज्ञानपरंपरा हजारो वर्ष चालू राहिली. ब्रिटिश काळात मात्र ही परंपरा कुंठीत झाली. ब्रिटीश अधिकारी मेकॉलेप्रणित शिक्षण व्यवस्थेने भारतीय ज्ञानाला कपाटात ठेवण्याच्या योग्यतेचे ठरवून पाश्चात्य ज्ञानाच्या प्रसारास अधिक प्रोत्साहन दिले. भारतीय ज्ञान-संस्कृती- परंपरा मोडीत टाकण्याचा प्रयत्न केला गेला. पाश्चात्य ज्ञान हे श्रेष्ठ, विज्ञानवादी ही संकल्पना लोकप्रिय बनली. शाळा-महाविद्यालयातून हेच ज्ञान अभ्यासक्रमातून शिकवले जाऊ लागले. भारतीय ज्ञान हे भौतिक जीवनाबरोबरच आध्यात्मिक जीवन, शारीरिक आरोग्याबरोबरच मानसिक आरोग्याचा समतोल राखण्यावर भर देणारे होते. मात्र पाश्चात्य ज्ञान चंगळवादी संस्कृतीवर भर देणारे होते. या तत्वज्ञानामुळे समतोल बिघडत गेला. यातूनच भारतीय ज्ञानाच्या पुन्हा अभ्यासाची गरज भासू लागली. भारतीय ज्ञान परंपरेची वैशिष्ट्ये, जागतिक ज्ञान परंपरेत भारतीय ज्ञान परंपरेने घातलेली भर, भारतीय ज्ञानातील विज्ञान याच्या अभ्यासास पुन्हा सुरुवात झाली. राष्ट्रीय शैक्षणिक धोरण २०२० हा टप्पा या दृष्टीने महत्त्वाचा ठरला. भारतीय ज्ञान प्रणालीचा अभ्यासक्रमात समावेश करण्यात आला. भारतीयांनी अध्यात्म, वाडमय, ललितकला, खगोलशास्त्र, गणित, न्यायशास्त्र, आरोग्यशास्त्र, स्थापत्यशास्त्र, शिल्पशास्त्र इ. अनेक शास्त्रात ज्ञानाची निर्मिती केली. या शास्त्रात भारतीयांनी खूप प्रगती केली होती. भारतीयांनी स्थापत्यशास्त्र आणि शिल्पशास्त्रात केलेल्या प्रगतीची साक्ष आजही भारतातील लेणी देतात.

भारतातील लेणी:

लेणी म्हणजे नैसर्गिक डोंगर, टेकडी किंवा पर्वत कोरून तयार केलेल्या गुहा होत. याचा उल्लेख शैलाश्रय किंवा शैलगृहे असाही केला जातो. त्याला संस्कृतमध्ये लयनम असे म्हणतात. यावरूनच लेणी हा शब्द रूढ झाला असावा.[1] सर्वसामान्यपणे मानवनिर्मित गुहांना लेणी असे म्हटले जाते. प्राचीन काळात भारतातल्या विविध भागात वास्तव्यासाठी अशा गुहांची निर्मिती केली गेली. याचे अवशेष आजही सापडतात. काळाच्या ओघात या लेण्यांच्या निर्मितीमध्ये सुबकता, कलात्मकता आली. भारतातील प्रमुख धर्म हिंदू, बौद्ध, जैन धर्मपंथीयांनी अशा लेण्यांची निर्मिती केली. त्यामध्ये बौद्धधर्मीय लेण्यांची संख्या जास्त आहे.[2] साधक, संन्यस्त, श्रमणांच्या निवासासाठी याचा उपयोग केला जात असावा. भारतातील सुमारे १२०० लेण्यांचा शोध आतापर्यंत लागला आहे. यापैकी १००० पेक्षा जास्त लेणी महाराष्ट्रात आहेत. यामध्ये बौद्ध धर्मीयांची लेण्यांची संख्या जास्त आहे. या लेण्यांचा विहार म्हणून वापर केला जात होता. त्याचबरोबर धार्मिक, शैक्षणिक केंद्र म्हणूनही त्यांचा विकास झाला.[3]

वेरूळ लेणी समूह:

महाराष्ट्रातील सर्वात प्रसिद्ध लेणी समूह म्हणून वेरूळ लेणी समूहाचा उल्लेख करावा लागतो. संभाजीनगर जिल्ह्यामध्ये (पूर्वीचे नाव औरंगाबाद) ही लेणी आहेत. संभाजीनगर (पूर्वीचे शहर औरंगाबाद) शहराच्या वायव्येस तेवीस किलोमीटर अंतरावर चरणाद्री डोंगर रांगेत या लेण्या कोरण्यात आल्या आहेत. वेरुळचे प्राचीन नाव एलापूर होते. ब्रह्मसरोवर या पोथीत वेळापूर असा उल्लेख सापडतो. थोडक्यात अपभ्रंश होऊन वेरूळ हे नाव प्रचलित झाले.[4] या लेण्यांना भारत सरकारने १९५१ मध्ये राष्ट्रीय स्मारक म्हणून घोषित केले होते. या लेणी समूहाचे सर्वात महत्त्वाचे वैशिष्ट्य म्हणजे भारतातील तत्कालीन तीन प्रमुख धर्माच्या म्हणजेच हिंदू, बौद्ध आणि जैन धर्माच्या अतिशय सुंदर लेणी येथे आहेत. येथील वैशिष्ट्यपूर्ण लेण्यांमुळे १९८३ मध्ये या लेण्यांना युनेस्कोने जागतिक वारसा स्थळाचा दर्जा दिला आहे. या लेणी समूहातील एक ते चौतीस नंबरची लेणी आपल्याला पाहता येतात. या लेण्यांमधील लेणी क्रमांक १ ते १२ बौद्धधर्मीय , १३ ते २९ हिंदूधर्मीय आणि क्रमांक ३० ते ३४ जैनधर्मीय लेणी आहेत.[5] तीनही धर्माच्या सामंजस्याची ही लेणी प्रतिक मानली जातात.

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Novel Cu(II) Complexes of 3,5-Di-*tert*-butyl-2-hydroxy benzylidene-2-aminobenzhydrazide: Synthesis, Spectral Characterization, Antimicrobial and Antioxidant Properties

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The present study reports the synthesis and characterization of three copper(II) complexes of novel hydrazone ligand 3,5-di-*tert*-butyl 2-hydroxy benzylidene 2-aminobenzhydrazide [H_2L]. The complexes *viz.* [Cu(HL)(Cl_2)H_2O] (**1a**), [Cu(HL)$_2$(NO_3)]·2/3H_2O (**2a**), [{Cu(HL)}$_2$(μ-SO_4)]·1^1/$_4$$H_2O$ (**3a**) and ligand (H_2L) were characterized by elemental analysis, spectroscopic techniques (FT-IR, ^{1}H NMR, ^{13}C NMR, UV-visible, LC-MS and PXRD), molar conductance, magnetic susceptibility measurement and thermal analysis. Thermal data of complexes at different temperatures provides the valuable information about different fragments of structure, their molecular weights, thermal stability, coordinated and fractional number of lattice water molecules in the synthesized metal complexes. Complex **1a** exhibit distorted octahedral geometry, whereas complexes **2a** and **3a** exhibit square planer to square pyramidal geometry inferred from magnetic, electronic and spectroscopic data. In all the complexes, the ligand coordinate to metal in tridentate mode through the ONO [O_{enolic}, $N_{azomethine}$ and $O_{phenolic}$] chelating system. The antibacterial potential of synthesized molecules have been determined against Gram+ve and Gram-ve bacteria *Bacillus subtilis*, *Bacillus cereus*, *Escherichia coli*, *Pseudomonas vulgaris*, *Staphylococcus aureus*, *etc.* The antioxidant activity was also determined using DPPH radical scavenging assay. It is clear that the new complexes are good active compounds for use in a variety of applications.

Keywords: Copper(II) complexes, Hydrazone, Antimicrobial activity, Antioxidant activity, Square pyramidal, Thermal studies.

INTRODUCTION

According to report of Global Research on Antimicrobial Resistance (GRAM) project, death of nearly 1.2 million people per year due to infection of drug resistant microbes [1]. Hence to develop innovative and more effective antimicrobial drugs has been the challenge for the researchers [2]. Great interest has been seen in the last decades to the chemistry of hydrazone having -CH=N-NH-linkage in its structure [3,4]. In the field of coordination chemistry they function as multidentate ligand due to presence of different heteroatoms in its structure [5]. Transition metal(II) complexes of hydrazones and hydrazides reflects multiple chelating capability and structural flexibility [6,7]. The nitrogen atom of azomethine is very instinctive as it readily interconnect with active species in biological molecule through hydrogen bonding impsoving their biological activities [8]. A wide range of pharmacological activities of hydrazone complexes are well known and shows influential antibacterial, anticancer, antitumour and antioxidant properties [9-13].

Among the essential elements for life, copper facilitates a wide variety of metabolic reactions including oxido-reduction, electron transport and oxygen transfer [14]. Copper complexes of hydrazone also shows extensive biological, catalytic and analytical applications [15-18]. Deng *et al.* [19] synthesized Cu(II) acetylpyridine benzoyl hydrazone complexes and shows significant anticancer and antitumour activities. Shebl *et al.* [20] evaluated the antimicrobial properties of Cu(II) complexes of hydrazone ligand derived from 4,6-diacetylresorcinol. Antimicrobial and antioxidant properties of B-formyl chromone hydrazone complexes were reported by Philip *et al.* [21]. Several reports are available on benzhydrazide derivatives too [22,23]. However no report are available on hydrazone Schiff base derived from 3,5-di-*tert*-butyl-2-hydroxy benzaldehyde and 2-amino benzhydrazide. Therefore, in view of our interest in synthesis of new Schiff base complex, we reported three novel

Multifunctional Cu (II) Complexes with a 2-Hydroxy-4-Methoxybenzylidene-2-Hydroxybenzhydrazide: Synthesis, Characterization, Biological Activity and Catalytic Applications

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Abstract

The hydrazone ligand 2-hydroxy-4-methoxybenzylidene-2-hydroxybenzhydrazide ([H_3L]) have been synthesized by condensing 2-hydroxybenzhydrazide and 2-hydroxy-4-methoxybenzaldehyde in methanol. Copper(II) complexes—$[Cu(H_2L)(NO_3)]\cdot 1/3H_2O$ (1a), $[\{Cu(H_2L)\}_2(\mu\text{-}SO_4)]\cdot 1\frac{2}{3}H_2O$ (2a), and $[Cu(H_2L)(H_2O)Cl]$ (3a)—were prepared by refluxing $Cu(NO_3)_2\cdot 3H_2O$, $CuSO_4\cdot 5H_2O$, and $CuCl_2\cdot 2H_2O$, respectively, with a methanolic solution of [H_3L]. These complexes were characterized using spectroscopic techniques, including FT-IR, ^{1}H-NMR, ^{13}C-NMR, UV-Visible spectroscopy, and PXRD analysis. Additional characterization was performed using thermogravimetric (TG) analysis, molar conductivity, elemental analysis, and magnetic susceptibility measurements. FT-IR spectra provided valuable insights into the coordination sites, while UV-Visible spectroscopy revealed ligand-to-metal charge transfer (LMCT) bands in the range of 24,271–26,178 cm^{-1} and d-d transitions in the range of 14,492–16,129 cm^{-1}, alongside $n\text{-}\pi^*$ and $\pi\text{-}\pi^*$ transitions in all complexes. Based on magnetic, electronic, and spectroscopic data, the complexes were proposed to exhibit square-planar to square-pyramidal geometries. X-ray powder diffraction (PXRD) confirmed the crystalline nature of all complexes. The experimental TGA results correlated well with the spectroscopic data, reinforcing structural assignments. The ligand acted as a dibasic tridentate chelating agent, coordinating through the phenolate oxygen, azomethine nitrogen, and ketonic oxygen donor sites with the Cu(II) ion. The antibacterial activity of the synthesized Cu (II) complexes was evaluated against human pathogenic bacteria, including *Bacillus subtilties, Bacillus cereus, Escherichia coli, Pseudomonas vulgaris, and Staphylococcus aureus.* Additionally, the Cu (II) complexes exhibited significant antioxidant activity. Their catalytic performance was also investigated in benzyl alcohol oxidation using hydrogen peroxide as a green oxidant.

Key words

Transition metal complexes, catalysis, ligand, UV-Visible spectroscopy

१७. राजकारण आणि नेतृत्व भूमिका

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रयत शिक्षण संस्थेचे, राजर्षी छत्रपती शाहू कॉलेज, कोल्हापूर.

प्रस्तावना

समाज कोणता हि असो, आदिवासी ग्रामीण शहरी,समाजाची प्रगती साधण्यासाठी नेतृत्व हे गरजेच आहे. आदिवासी समाजात पूर्वी मातृसत्ताक पद्धती होती अशावेळी आदिवासी स्त्रियांनी राजकीय व सामाजिक नेतृत्वाची जबाबदारी स्वीकारली. आपण जर बघितलं तर प्राचीन काळ आदिमानवाचा तर ऐतिहासिक काळा हा मानवी विकासाचा आणि तो उत्क्रांतीवाद गतीने मानवाचा विकास होत गेला. मानवी संस्कृतीचा विकास होत असताना माणुस सुरुवातीच्या काळात हळूहळू नदीकाळी स्थिरावला आणि त्यानंतर अग्नीचा शोध लागला प्राचीन काळी माणूस एकटाच राहत भटकंती करता होता. पण नंतर तो घर बांधून समाजसोबत राहू लागला. आणि त्यातून टोळ्या निर्माण झाल्या आणि त्या टोळ्या भूमीच्या अस्तित्वासाठी लढू लागल्या. त्यातून पुढे व ज्यांचे राज्य उदयास येऊ लागले आणि आपल्या राज्यासाठी प्रदेशासाठी त्यांनी नेतृत्व उभे केले प्राचीन काळात सुध्दा अनेकांनी संघटन निर्माण करुन त्या ठिकाणी त्यांनी नेतृत्व उभे केले होते त्यामुळे नेतृत्व हा शब्द समाजातील सर्व लोकांना तो परिचित झाला आणि आपण जर बघितलं तर आजतागायत अनेक समाजांमध्ये खूप मोठ्या प्रमाणात त्या ठिकाणी लोकांनी नेतृत्व उभे केले आहे. अशाच प्रकारे ही परंपरा पुढे चालत आली

आपल्या गुणांनी, कर्तृत्वाने तसेच अधिकाराने अन्य व्यक्तींना मार्गदर्शन करण्याचे सामर्थ्य ज्या व्यक्तीत आहे, तसेच जी व्यक्ती इतरांकडून आपल्या कल्पनेनुसार कार्य करून घेते त्या व्यक्तीला नेता (Leader) असे म्हणतात. नेत्याच्या ठायी असलेल्या या प्रवृत्तीला नेतृत्व (Leadership) असे म्हणतात. समाजातील विविध क्षेत्रांत नेतृत्व करणाऱ्या व्यक्ती असतात. संगीत, नाट्य, शिक्षण, कला, अर्थ, गिर्यारोहण अशा विविध क्षेत्रांत मार्गदर्शन करणाऱ्या नामवंत व्यक्ती या खऱ्या नेता होत. केवळ राजकारण या क्षेत्रातच नेतेमंडळी असतात ही आपली कल्पना संकुचित व चुकीची आहे. राजकारण हे काही एकमेव क्षेत्र नव्हे! महात्मा गांधी, पंडित जवाहरलाल नेहरू, लाल बहादूर शास्त्री, अटलबिहारी वाजपेयी हे जसे राजकीय क्षेत्रातील नेते तसेच मदर टेरेसा, मेधा पाटकर, अण्णा हजारे, नील आर्मस्ट्रॉंग, कपील देव, पंडित भीमसेन जोशी, उस्ताद अमजद अली खाँ, पंडित रविशंकर, शेरपा तेनसिंग हे अन्य विविध क्षेत्रांतील नेते होत.

ग्रीक अरिस्टॉटल विचारवंत यांनी म्हटले आहे की माणूस हा समाजशील प्राणी आहे आणि तो समाजाशिवाय राहू शकत नाही. कारण समाजात वावरतांना त्यांना अनेक समाजभिमुख गोष्टी कराव्या लागतात आणि त्यातील महत्वाचा घटक म्हणजे नेतृत्व होय. आपल्या समाजातील रुढी परंपरा संस्कृती या जोपासण्यासाठी त्या समाजातून एक नेतृत्व म्हणून उदयास येणे गरजेचे असते.

भारतीय ज्ञान परंपरा विकासातील औंध संस्थानचे योगदान आणि महत्व

करीम मुल्ला
राजर्षी छत्रपती शाहू कॉलेज
कोल्हापूर

प्रस्तावना:

औंध संस्थान हे महाराष्ट्रातील एक ऐतिहासिक संस्थान होते, ज्याची स्थापना सन १६९८ साली झाली. ब्रिटिश भारताच्या मुंबई इलाख्यातील डेक्कन स्टेट्स एजन्सीमध्ये याचा समावेश होता. प्रारंभीची राजधानी कराड येथे होती, परंतु नंतर ती औंध येथे स्थलांतरित झाली. विसाव्या शतकातील औंध संस्थानाचे शासक, विशेषतः श्रीमंत बाळासाहेब पंतप्रतिनिधी, हे कला, संस्कृती आणि शिक्षणाच्या क्षेत्रात अत्यंत प्रगतिशील होते.. भारतीय ज्ञान परंपरेच्या संवर्धनात औंध संस्थानाचे योगदान महत्त्वपूर्ण आहे. श्रीमंत बाळासाहेब पंतप्रतिनिधी यांनी भारतीय कला, संगीत, साहित्य आणि शिक्षणाच्या विविध अंगांना प्रोत्साहन दिले. त्यांच्या नेतृत्वाखाली, संस्थानात पारंपरिक ज्ञान आणि आधुनिक शिक्षण यांचा समन्वय साधण्यात आला, ज्यामुळे भारतीय संस्कृतीचे संवर्धन आणि प्रसार झाला.औंध संस्थानाच्या या प्रयत्नांमुळे भारतीय ज्ञान परंपरेचे विविध पैलू विकसित झाले. त्यांच्या या योगदानामुळे संस्थानाने भारतीय सांस्कृतिक वारशाच्या संवर्धनात महत्त्वाची भूमिका बजावली असल्याचे दिसून येते.

बाळासाहेब पंतप्रतिनिधी हे विद्या, कला आणि संस्कृतीचे मोठे संरक्षक होते. इतकेच नव्हे तर ते उत्तम, सिद्धहस्त लेखक, तसेच व्याख्याते होते. त्यांनी धार्मिक, ऐतिहासिक, ललित, वैचारिक, सांस्कृतिक, चित्रकला, शिल्पकला, आहारशास्त्र, व्यायामशास्त्र आदी चौफेर घटकांवर विपूल प्रमाणात लेखन केले आहे. तसेच त्यांनी स्वतःचे आत्मचरित्रही दोन खंडात लिहिले आहे. मराठी साहित्यामध्ये त्यांच्या लेखनाने मोलाची भर घातली आहे. त्यांनी विविध क्षेत्रातील अनेक ख्यातनाम विद्वानांना संस्थानात आश्रय दिला होता. प्रस्तुत शोधनिबंध औंध संस्थानात सुमारे शतकापूर्वी प्रागतिक दृष्टीने भारतीय ज्ञान परंपराचा मोठ्या प्रमाणात प्रचार आणि प्रसार केल्याचे दिसून येते. औंध मध्ये वेदाभ्यास, चित्रकला, शिल्पकला, व्यायामशास्त्र (सूर्यनमस्कार), अध्यात्मिक, आदी भारतीय ज्ञान परंपरांचा कशा प्रकारे विकास केला याचा आढावा प्रस्तुत अभ्यासात घेतला आहे. भारतीय ज्ञान प्रणालीचे विविध घटक औंध संस्थानात कसे विकसित केले, याचा अभ्यास प्रस्तुत शोधनिबंधात ऐतिहासिक संशोधन पद्धतीने करण्यात आला आहे.प्राथमिक व दुय्यम साधनाचा आधार घेऊन संकलित माहितीचे ऐतिहासिक सांस्कृतिक दृष्टीकोनातून विश्लेषण केलेले आहे.बाळासाहेब पंतप्रतिनिधी यांनी आपल्या सत्ताकाळात प्राचीन वेदाभ्यास, चित्रकला, शिल्पकला, योग अभ्यास (सूर्यनमस्कार), साहित्य –लेखन, कला-संगीत या प्राचीन ज्ञान परंपरांचा विकासासाठी मोठ्या प्रमाणावर प्रयत्न केले. याचा संपूर्ण अभ्यास सविस्तर,पद्धतशीर आणि सुसंबद्धपद्धतीने मांडण्यात आला आहे. ,

वेदाभ्यास :

बाळासाहेब पंतप्रतिनिधी यांनी विविध क्षेत्रातील अनेक ख्यातनाम विद्वानांना संस्थानात आश्रय दिला होता. पंडित श्रीपाद दामोदर सातवळेकर हे त्यापैकीच एक होते. पं. सातवळेकरांना सहकार्य देऊन वेदसंवर्धन आणि अध्ययनासाठी 'स्वाध्याय मंडळ औंध' या संस्थेची स्थापना केली होती. हे एक प्रकारचे वैदिक शिक्षण आणि संशोधन केंद्र होते. येथे वेद, उपनिषदे, गीता आणि वेदांत यांचा अभ्यास केला जात असे. लोकांमध्ये वेदाध्ययन आणि स्वाध्यायाची आवड निर्माण करण्यासाठी ग्रंथ, व्याख्याने आणि प्रशिक्षण वर्ग चालवले जात असत. भारतीय ज्ञानपरंपरेमधील वैदिक अर्थात वेदाभ्यासला मोठ्या प्रमाणात चालना दिली. त्यांनी संपूर्ण आयुष्य वेदांचा अभ्यास, प्रचार आणि प्रसार करण्यासाठी समर्पित केले. बाळासाहेब पंतप्रतिनिधी यांनी पं. सातवळेकर यांच्या कडून भारताच्या प्राचीन वेद - उपनिषद यांचे मराठी –हिंदी मध्ये भाषांतराचे महत्वपूर्ण कार्य करवून घेतले केले. त्यांनी वेदांचे मराठीत आणि हिंदीत सुबोध भाषांतर केले. वेदांचा मूलभाव आणि त्यांचे आधुनिक उपयोग यावर त्यांनी विशेष संशोधन केले. संस्कृत आणि हिंदू तत्त्वज्ञान, भारतीय संस्कृती आणि तत्त्वज्ञानाचा प्रचार करण्यासाठी त्यांनी अनेक ग्रंथ लिहिले. उपनिषदे, गीता आणि वेदांत यांचा सखोल अभ्यास केला. 'स्वाध्याय मण्डळ' आणि 'वेदांत भाष्य' या उपक्रमांतून त्यांनी वैदिक तत्त्वज्ञान लोकांपर्यंत पोहोचवले. वेदप्रकाश, गीता रहस्य,