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1st International Conference | MIET KUMAON | 11th & 12th, March 2024 MIET

MIET Kumaon
Shiksha Nagar, Lamachaur, Haldwani

in collaboration with

USERC

1st International Conference

on

EMERGING TRENDS IN STEM & HEALTH – AGRI SCIENCES FOR SUSTAINABLE DEVELOPMENT

11th & 12th, March 2024

Venue: MIET Kumaon
Shiksha Nagar, Lamachaur, Haldwani

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MIET KUMAON HALDWANI Nainital Uttarakhand

Two Days International Conference

On

"Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development"

Under the aegis

of

UCOST & USERC

(11th & 12th March 2024)

in Collaboration With

Kumaun University, Nainital
Swami Shraddhanand College, Delhi
Uttarakhand Open University, Haldwani
Department of Higher Education, Govt. of Uttarakhand

Organized by

MIET KUMAON

Shiskha Nagar, Lamachaur, Haldwani, Nainital, Uttarakhand-263139

The First International Conference on 'Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development' was successfully held over two days on the 11th and 12th of March 2024. The International Conference Organized by MIET Kumaon at Shiskha Nagar, Lamachaur, Haldwani, the conference was conducted under the auspices of the Uttarakhand State Council for Science & Technology, based at Vigyan Dham, Jhajra, Dehradun, and the Uttarakhand Science Education and Research Centre, located at EC Road, Dalanwala, Dehradun. The event was held in collaboration with esteemed academic partners, including Kumaun University, Nainital; Swami Shraddhanand College, Delhi; Uttarakhand Open University, Haldwani; and the Department of Higher Education, Government of Uttarakhand.

MIET Kumaon, started in 2011, is a leading educational place in Uttarakhand. The institution provides diverse courses through its colleges. The College of Management & Computer Application offers BBA and BCA programs for business and computer studies. Healthcare programs, including B.Sc. Nursing and GNM courses, are offered by the College of Nursing. The College of Paramedical Sciences provides BPT, BMLT, and BMRIT programs, cultivating skilled professionals in healthcare. MIET Kumaon plays a vital role in providing well-rounded education and conducting research, shaping the future of eager professionals, and making a significant impact on education in Uttarakhand. With a strong commitment to excellence and innovation. ACIC DEVBHUMI FOUNDATION is a non-profit organization formed in accordance with Section 8 of the Companies Act, 2013 with registered office located at MIET Kumaon Campus, Shiksha Nagar, Lamachaur, Kaladhungi road, Haldwani, Nainital. The foundation is dedicated to fostering innovation and entrepreneurship within the community.

Editor

Dr. Kamal Singh Rawat
CEO, ACIC Devbhumi Foundation

Dr. Tarun Kumar
Executive Director, MIET Kumaon

Co-Editor

Mr. Vatsalya Sharma
Assistant Professor, MIET Kumaon

First Edition, 2024

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MIET Kumaon, Shiskha Nagar, Lamachaur,
Haldwani, Nainital-263139 Uttarakhand

Preface

It is with great pleasure and enthusiasm that we present this compilation of conference proceedings, documenting the rich exchange of ideas and knowledge shared during the "Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development" conference, held on the 11th and 12th of March 2024 at MIET Kumaon, Lamachaur, Haldwani.

The primary objective of this conference was to explore the evolving landscape of Science, Technology, Engineering, Mathematics (STEM), Health, and Agricultural Sciences, and to examine their interconnectedness in the pursuit of sustainable development. Throughout the two-day event, distinguished speakers, researchers, educators, and practitioners from various disciplines engaged in stimulating discussions, presented innovative research findings, and deliberated on practical solutions to address the complex challenges facing our societies.

We extend our sincere appreciation to the Uttarakhand State Council for Science and Technology (UCOST) and the Uttarakhand Science Education and Research Centre (USERC) for their invaluable support and collaboration, which played a pivotal role in making this conference a success. Their unwavering commitment to fostering scientific research and innovation has significantly contributed to the advancement of knowledge and development in our region.

Our heartfelt gratitude goes to the organizing committee, session chairs, presenters, volunteers, and attendees for their dedication and active involvement in shaping the conference program and facilitating meaningful interactions. Their collective efforts have not only enriched the intellectual discourse but have also laid the groundwork for future collaborations and initiatives aimed at driving positive change.

This proceedings book serves as a comprehensive record of the presentations, discussions, and insights shared during the conference. It is our sincere hope that the findings and recommendations outlined herein will serve as a valuable resource for researchers, policymakers, educators, and practitioners alike, inspiring continued dialogue and action towards achieving sustainable development goals in our communities and beyond.

We would like to express our gratitude to all those who have contributed to the success of the "Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development" conference, and we look forward to continued collaboration and engagement in advancing knowledge and innovation for the betterment of society.

Acknowledgments

We extend our heartfelt gratitude to all individuals and organizations whose unwavering support and contributions were instrumental in making the "Emerging Trends in STEM & Health Agri Sciences for Sustainable Development" conference a resounding success.

First and foremost, we express our sincere appreciation to the Uttarakhand State Council for Science and Technology (UCOST) and Uttarakhand Science Education and Research Centre (USERC) for their generous support and collaboration, without which this conference would not have been possible. Special thanks to Prof. Durgesh Pant, Director General, UCOST and Dr. Anita Rawat, Director, USERC, Dehradun, for their invaluable guidance and assistance throughout the planning and execution of the conference.

We are deeply indebted to Mr. Vishnu Saran Agarwal, Chairman, MIET Group of Institutions; Mr. Puneet Agarwal, Vice-Chairman, MIET Group of Institutions; and Prof. (Dr.) B.S. Bisht, Managing Director, MIET Kumaon, for their unwavering support and motivation, which played a pivotal role in the successful organization of the conference.

We are also grateful to the esteemed academic leaders who graced the conference with their presence and shared their invaluable insights, including Prof. Dr. D.S. Rawat, Vice-Chancellor, Kumaon University; Prof. Dr. O.P.S. Negi, Vice-Chancellor, Uttarakhand Open University; Prof. (Dr.) C.D. Suntha, Director, Higher Education, Uttarakhand; and Professor Dr. J.M.S. Rana, former UKPSC chairman, and Prof. (Dr.) P.D. Pant, Registrar, Uttarakhand Open University.

Special thanks to the dedicated members of the organizing committee, volunteers, and staff for their exceptional commitment and hard work in ensuring the smooth execution of the conference.

We also acknowledge the invaluable contributions of our esteemed speakers, moderators, researchers, and participants, whose expertise, enthusiasm, and engagement enriched the conference proceedings and facilitated meaningful discussions.

Last but not least, we extend our heartfelt appreciation to all the media workers, photo & video teams, social media support team, and our ground staff. Your dedication, professionalism, and tireless efforts behind the scenes were indispensable in bringing the conference to life and ensuring its success.

Dr. Dhan Singh Rawat
Minister
Medical Health and Medical Education,
Co-operative, Higher Education, Sanskrit
Education, School Education

Govt. of Uttarakhand

Vidhan Sabha Bhavan
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Room No. 18
Ph. 0135-2666410 Off.
0135-2666411 Fax
Mob. 9412370255

Message

I extend my congratulations to the college for orchestrating the remarkable conference titled "Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development," jointly organized by MIET Kumaon, UCOST, USERC, Kumaon University, Uttarakhand Open University (UOU), and the Department of Higher Education in Uttarakhand. My heartfelt congratulations and best wishes go to the conference coordinators, Dr. Tarun Kumar Saxena & Dr. Kamal Singh Rawat, and the entire organizing committee for their exceptional efforts and dedication.

This conference serves as a significant platform to delve into and showcase the evolving trends in STEM (Science, Technology, Engineering, and Mathematics) & Health - Agri Sciences, highlighting their pivotal role in fostering sustainable development. It not only underscores the rich heritage of our nation but also aligns seamlessly with the objectives outlined in the National Education Policy (NEP) 2020. The NEP emphasizes holistic student development and the advancement of our nation, making this subject matter incredibly pertinent.

I commend the unwavering dedication and commitment exhibited by the entire conference team in promoting our cultural heritage and facilitating discussions on topics of immense importance. Their efforts not only contribute to the dissemination of knowledge but also inspire others to engage meaningfully in discussions that shape the future of our society.

Once again, hearty greetings and best wishes,

(Dr. Dhan Singh Rawat)

कुमाऊँ विश्वविद्यालय नैनीताल

स्लीपी हॉलो, नैनीताल–263001, उत्तराखण्ड, भारत

Kumaun University, Nainital

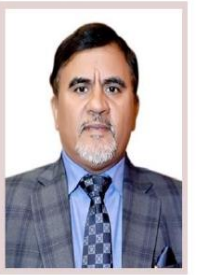
Sleepy Hollow, Nainital-263001, Uttarakhand, India
(Accredited "A" Grade by NAAC)

प्रो० दीवान एस. रावत
एफ एन ए एससी, एफ आर एस सी, सी केम (लन्दन)
कुलपति

Prof. Diwan S. Rawat
FNASc, FRSC, CChem (London)
Vice-Chancellor

K U Nainital

Message



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Once again, hearty greetings and best wishes,

Prof. Diwan S. Rawat
Vice Chancellor

दूरभाष (कार्यालय) 05942–235068, मो. 9411101144, 9810232301 फैक्स (कार्यालय) 05942–235576
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प्रो० ओम प्रकाश सिंह नेगी
कुलपति
Prof. Om Prakash Singh Negi
Vice Chancellor

उत्तराखण्ड मुक्त विश्वविद्यालय
Uttarakhand Open University

उत्तराखण्ड मुक्त विश्वविद्यालय

Message

At the out set,

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Once again, hearty greetings and best wishes for the success of international conference.

Sincerely yours

(Prof. Om Prakash Singh Negi)
Date: 02-03-2024

Vishvidhyalaya Marg, Near T.P. Nagar, Haldwani-263139 (Nainital) Uttarakhand विश्वविद्यालय मार्ग, निकट ट्रान्सपोर्ट नगर, हल्द्वानी-263139 (नैनीताल) उत्तराखण्ड
Mob. : 8954043377, Ph. : 05946-263014 Fax : 05946-262032 Website: www.uou.ac.in, E-mail: vc@uou.ac.in

HEMWATI NANDAN BAHUGUNA UTTARAKHAND MEDICAL EDUCATION UNIVERSITY
हेमवती नन्दन बहुगुणा उत्तराखण्ड चिकित्सा शिक्षा विश्वविद्यालय
New Hope Town (Sisambada), PO : Selaqui, Dehradun (India) न्यू हाप टाउन (सिसमबाडा), पत्रालय : सेलाकुई, देहरादून
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पत्रांक: 2704/एच0एन0बी0यू0एम0यू0/कु0स0/ 2023–24 दिनांक: 12 मार्च, 2024

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Once again, heartly greetings and best wishes from core of my heart.

(Dr. Ashish Uniyal)
Registrar

Dr. Ashish Uniyal
Registrar
Uttarakhand Medical
University, Dehradun

Govt of Uttarakhand
USERC

Uttarakhand Science Education & Research Centre (USERC)
Department of Information and Science Technology
(Government of Uttarakhand)

Message

I extend my congratulations to the MIET college for organizing the remarkable conference titled "Emerging Trends in STEM & Health-Agri Sciences for Sustainable Development. This conference serves as a significant platform to delve into and showcase the evolving trends in STEM (Science, Technology, Engineering, and Mathematics) & Health - Agri Sciences, highlighting their pivotal role in fostering sustainable development. It not only underscores the rich heritage of our nation but also aligns seamlessly with the objectives outlined in the National Education Policy (NEP) 2020. The NEP emphasizes holistic student development and the advancement of our nation, making this subject matter incredibly pertinent.

I appreciate the unwavering dedication and commitment exhibited by the entire conference team in promoting our cultural heritage and facilitating discussions on topics of immense importance. Their efforts would not only contribute to the dissemination of knowledge but also inspire others to engage meaningfully in discussions that shape the future of our society.

Best Wishes

Prof (Dr.) Anita Rawat
Director USERC

21/4, E.C. Road, Dehradun - 248 001, Uttarakhand, INDIA.
Ph.: 91-135-2710302, Web: www.userc.in, E-mail: u.serc@rediffmaill.com

उच्च शिक्षा निदेशालय, उत्तराखण्ड

हल्द्वानी – 263139 (नैनीताल)

Mail-Higherducation.director@gmail.com
फोन नं005946–240555, 240666,240777

संदेश

I extend my congratulations to the college for orchestrating the remarkable conference titled "Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development," jointly organized by MIET Kumaon, UCOST, USERC, Kumaon University, Uttarakhand Open University (UOU), and the Department of Higher Education in Uttarakhand. My heartfelt congratulations and best wishes go to the conference coordinators, Dr. Tarun Kumar Saxena & Dr. Kamal Singh Rawat, and the entire organizing committee for their exceptional efforts and dedication.

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Once again, hearty greetings and best wishes,

(Dr. C. D. Suntha)
Director
Higher Education Uttarakhand,
Haldwani, Nainital

स्वामी श्रद्धानन्द महाविद्यालय

(दिल्ली विश्वविद्यालय), अलीपुर, दिल्ली-110036

Swami Shraddhanand College

(University of Delhi), Alipur, Delhi-110036

Ref. No. SSC/DU-Go/2023-24/2170 Dated. 06-03-2024.

Message

I have come to know this International Conference on "Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development" to be held on 11th & 12th March 2024 in MIET Kumaon, Haldwani, Nanital.

This conference will be a vital platform to explore and showcase the evolving trends in STEM & Health - Agri Sciences, emphasizing their crucial role in sustainable development. It aligns seamlessly with the objectives outlined in the National Education Policy (NEP) 2020, emphasizing holistic student development and national advancement.

I healthy congratulate the active members of our college Dr. Nishant Verma, Dr. Bholey Singh, Dr. Pradeep Pratap Singh, Dr. Seema Gupta and the entire organizing committee for their outstanding efforts to make it success.

I commend the dedicated conference team for promoting our cultural heritage and facilitating discussions on significant topics. Their efforts not only contribute to knowledge dissemination but also inspire meaningful engagement in discussions shaping the future of our society.

Best wishes,

Prof. Praveen Garg
Principal
Swami Shraddhanand College
(University of Delhi) Alipur, Delhi

Phone : 011-27206533, 27207533 • Telefax : 27202278
E-mail : principalssncollege@gmail.com
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MIET KUMAON
(A Unit of Devbhumi Foundation)
Shiksha Nagar, Lamachaur, Kaladhunghi Road, Haldwani, Distt. Nainital-263139 (U.K.)
Website: www.mietkumaon.ac.in

Ref. : MIET.K/2024/conf2

Date : 7/03/2024

Message

Dear Participants,

It is with great pleasure that I welcome you to the Two Days International Conference on Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development, organized by MIET Kumaon, USERC, and UCOST. This conference serves as a platform for scholars, researchers, and industry professionals to come together and exchange ideas, discuss challenges, and explore solutions in the fields of Science, Technology, Engineering, Mathematics (STEM), Health, and Agriculture.

In today's rapidly evolving world, the need for sustainable development has never been more pressing. As we navigate the challenges of the 21st century, it is imperative that we harness the power of STEM and Health - Agri Sciences to create a more sustainable future for all. This conference provides a unique opportunity to share knowledge, collaborate, and inspire one another to drive positive change.

I would like to extend my sincere thanks to the organizing committee, sponsors, and all participants for their dedication and hard work in making this conference a reality. I am confident that the discussions and insights shared during these two days will pave the way for innovative solutions and new avenues of research that will benefit society as a whole.

I wish you all a productive and enriching conference experience.

Best regards,

Shri. Vishnu Saran

Chairman

MIET Group of Institutions

MIET KUMAON

(A Unit of Devbhumi Foundation)

Shiksha Nagar, Lamachaur, Kaladhunghi Road, Haldwani, Distt. Nainital-263139 (U.K.)
Website: www.mietkumaon.ac.in

Ref. : MIETK/2024/104 Date : 8/03/2024

MESSAGE

Dear Esteemed Participants,

I am delighted to extend a warm welcome to all of you to the Two Days International Conference on Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development, organized by MIET Kumaon, USERC, and UCOST. It is a privilege to witness the gathering of scholars, researchers, and industry experts who are dedicated to advancing the fields of Science, Technology, Engineering, Mathematics (STEM), Health, and Agriculture for the betterment of society.

This conference comes at a crucial time when the world is facing numerous challenges that require innovative and sustainable solutions. Through the exchange of ideas, collaboration, and discussion of emerging trends, we hope to contribute significantly to addressing these challenges and paving the way for a more sustainable future.

I would like to express my gratitude to the organizing committee for their hard work and dedication in putting together this conference. I would also like to thank our sponsors for their generous support, without which this event would not have been possible.

I encourage all participants to actively engage in the discussions, share their expertise, and explore opportunities for collaboration. Together, we can make a difference and create a brighter future for generations to come.

I wish you all a productive and enlightening conference.

Warm regards,

puneetagarwal.

Shri. Puneet Agarwal

Vice Chairman

MIET Group of Institutions

MIET KUMAON
(A Unit of Devbhumi Foundation)
Shiksha Nagar, Lamachaur, Kaladhunghi Road, Haldwani, Distt. Nainital-263139 (U.K.)
Website: www.mietkumaon.ac.in

Ref. : MIETK/2024/dm3

Date : 7/03/2024

MESSAGE

Dear Participants,

It is my honor to welcome you all to the Two Days International Conference on Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development, organized by MIET Kumaon, USERC, and UCOST. This conference brings together experts, scholars, and enthusiasts from various fields to discuss and explore the latest trends and innovations in Science, Technology, Engineering, Mathematics (STEM), Health, and Agriculture.

Sustainable development is a key priority for us all, and this conference provides a platform to share knowledge, ideas, and best practices that can contribute to a more sustainable future. I am confident that the discussions and interactions over the next two days will inspire new collaborations and initiatives that will have a positive impact on our communities and the environment.

I would like to extend my gratitude to the organizing committee for their hard work and dedication in putting together this conference. I would also like to thank our sponsors for their support in making this event possible.

I encourage all participants to take full advantage of this conference, engage in meaningful discussions, and forge new partnerships that will drive innovation and progress in our respective fields.

I wish you all a successful and enjoyable conference.

Best regards,

Dr. Bahadur Singh Bisht

Managing Director

MIET Kumaon

उत्तराखण्ड मुक्त विश्वविद्यालय
Uttarakhand Open University

Ref. No. UOU .....
Date ...02/03/2024.....

Message

I congratulate the college for orchestrating the remarkable conference titled "Emerging Trends in STEM & Health - Agri Sciences for Sustainable Development," jointly organized by MIET Kumaon, UCOST, USERC, Kumaon University, Uttarakhand Open University (UOU), and the Department of Higher Education in Uttarakhand. My heartfelt congratulations and best wishes extend to the conference coordinators, Dr. Tarun Kumar Saxena & Dr. Kamal Singh Rawat, and the entire organizing committee for their exceptional efforts and dedication.

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Once again, hearty greetings and best wishes from.

(Prof. P.D.Pant)
Registrar

उत्तराखण्ड मुक्त विश्वविद्यालय

Teenpani Bypass, Haldwani - 263139, Nainital, Uttarakhand तीनपानी बाईपास, हल्द्वानी - 263139, नैनीताल, उत्तराखण्ड
Tel.: 05946-286 000 • **Toll Free No.:** 1800 180 4025 • **Fax:** 05946-264 232 • **E-mail:** info@uou.ac.in • **Website:** www.uou.ac.in

A BRIEF ABOUT THE COMMITTEES

International Advisory Committee:
Prof. (Dr.) Anesh Maharaj, University of KwaZulu-Natal, South Africa.
Prof. (Dr.) Paolo Blecich, University of Rijeka, Croatia.
Prof. (Dr.) Sunzuma Gladys, Bindura University of Science Education, Zimbabwe
Prof. (Dr.) Tej Singh, Savaria Institute of Technology, Hungary
Dr. Washim Ahmed, Senior Scientist, Sygnature Discovery, Nottingham, England
Dr. Abhishek Mishra, Methodist Hospital Houston, Texas Area, USA

National Advisory Committee:
Prof. (Dr.) Hem Chandra, Vice-chancellor, HNBMEU, Dehradun
Prof. (Dr.) Satpal Singh Bisht, Vice-chancellor, S.S.J. University, Almora
Prof. (Dr.) N.S Bhandari, Former Vice Chancellor, S.S.J. University, Almora
Prof. (Dr.) Parveen Garg, Principal, Swami Shraddhanand College, Delhi
Prof. (Dr.) K.K. Pandey, Principal, Govt. PG College, Bazpur
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A Review on The Growing Plants Through Hydroponic Farming

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ABSTRACT

Today, the world is inhabited by over 7 billion people. Rapid population growth is the baneof the economy of underdeveloped, poor and developing countries in the world. India's national income which is barely two percent of the total global income clearly shows the tremendous strain of population on her economy. India is the first most populous country inthe world. Population explosion in India has resulted in a serious food shortage in the country. In spite of the fact that more than seventy percent of the working people are engaged in agriculture, Indian people still do not get even the minimum necessary amount of food(Vohra, S.M., 2015).Overpopulation leads to over-exploitation of natural resources. Increasing population puts further burden on the earth's capacity to produce food and water and other natural resources. To reduce the burden of the growing population, the following requirements are required for proper planning of the land.

Nutrient Expert and Growth Retardant Role in Productivity Efficiency of Wheat Crop

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ABSTRACT

Wheat is very sensitive to insufficient nitrogen and very responsive to nitrogen fertilization. In India total 17,637.8 thousand tonnes of nitrogenous fertilizer was consumed in 2018-19 (FAI 2019). Excessive N causes "luxuriant" growth, resulting in the plant being attractive to insects and diseases. The excessive growth can also reduce the strength of stem which induces lodging at the time of flowering and grain filling. It is quite important to know, whether nitrogen management could reduce lodging risk without reducing the yield potential (Zhang et al., 2017, Kesarwani et al., 2019). Stem shortening plant growth regulators (PGR's) such as chlormequat chloride are often used to limit lodging in wheat crop(Rajala et al., 2002, Kesarwani et al., 2018), thereby allowing cultivation of lodging-prone, adapted, high yielding cultivars in combination with higher inputs management like application of higher dose of nitrogenous fertilizer (Kapri et al., 2020). Many techniques are found suitable in site specific nutrient management in wheat viz. LCC (Leaf Colour Chart), optical sensors (Green Seeker) and Nutrient Expert (Kapri and Kesarwani 2019, Kumar et al.,2018). This research was therefore conducted to determine how different dose of Nitrogen as well as precision management with the usage of growth regulator affects the yield of wheat crop.

Socio-Economic Disparities and Constraints among insured & non-Insured Farmers in Nainital District, Uttarakhand

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ABSTRACT

Natural disasters and price fluctuations pose challenges to farmers' income and agricultural viability. The livelihood of many people in India as well as Uttarakhand relies on agriculture.Most of the farmers often rely on loans for advanced technology but struggle to repay them when crops are damaged. Pradhan Mantri Fasal Bima Yojana (PMFBY) introduced in 2016, offers affordable insurance premiums of 2.0 % for kharif crops, 1.5 % for rabi crops, and 5.0 % for commercial crops. Its goal is to stabilize farmers' income and reduce agricultural risks,providing financial support for crop loss caused by natural disasters. Crop insurance is crucialin stabilizing their income. As per Ministry of Agriculture and Farmers' Welfare more than 29.19 crore farmer applications have been insured under the scheme, with over Rs 95,000 croreworth of claims disbursed to farmers. Farmers of the state are withdrawing from the scheme due to challenges in claim settlement, implementation problems, and insufficient farmer awareness, particularly among those with lower socioeconomic status.

Status of Sustainable Agriculture Production and Food Security in Uttarakhand: Prospects & Challenges

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ABSTRACT

Agriculture plays a critical role in India's economy, contributing 32 per cent to the national income and 30 per cent to the GDP. Yet, ensuring food security remains a challenge, especially in hilly regions like Uttarakhand. Here, factors such as fragmented land holdings, soil erosion, and inadequate infrastructure hinder agricultural productivity. Globally, hunger and food insecurity persist, with approximately 735 million people experiencing chronic hunger by 2022. The Sustainable Development Goal 2 targets eradicating hunger by 2030, underscoring the urgency of addressing this issue. Our study aims to analyze how increased agricultural productivity can enhance food security and reduce hunger, while also examining the current status and challenges of agriculture in Uttarakhand. By understanding these dynamics, we can develop effective strategies to promote agricultural sustainability and alleviate food insecurity in the region.

Perception of Beneficiaries Towards Pradhan Mantri Krishi Sinchayee Yojana

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ABSTRACT

Water, the essential element for sustaining life on Earth, has gained increased significance amidst rising populations and the imperative for food security. This heightened demand for irrigation water emphasizes the crucial need for prudent management of available water resources. However, the availability of irrigation water is dwindling, necessitating efficient water harvesting and utilization. The importance of irrigation is particularly pronounced in rain-fed regions, where consistently low yields underscore its necessity. In response to this challenge, the Pradhan Mantri Krishi Sinchayee Yojana was launched, aiming to consolidate investments in the irrigation sector at the field level. This initiative seeks to offer comprehensive solutions for the irrigation supply chain, encompassing farm-level applications, water sources, and distribution networks. Despite Uttarakhand's abundance of water resources, the state predominantly relies on rainfed agriculture, with only 45 per cent of cultivated land under irrigation. To assess the attitudes of beneficiaries towards the Pradhan Mantri Krishi Sinchayee Yojana in Uttarakhand's Garhwal region, a study was conducted in Dehradun district, chosen purposively for its high beneficiary count. Two blocks, Doiwala and Raipur, were randomly selected, with a total of four villages surveyed. Using the Probability Proportionate to Size (PPS) method, the study interviewed 122 beneficiary farmers via pre-tested interview schedules. Findings revealed a predominance of male beneficiaries from the general caste, primarily middle-aged, with medium levels of social participation, farming experience, and annual income. While rice, sugarcane, wheat, and maize were major crops, infrastructural constraints, financial limitations, and geographical challenges hampered the realization of PMKSY benefits. Notably, positive correlations were observed between farmers' attitudes towards PMKSY and factors such as social participation, income, landholding, cropping intensity, and information-seeking behavior.

Assessment of Organic Manure & Irrigation Treatment on Growth & Yield of Rauwolfia Serpentina L. Benth. Ex Kurz. Under Tectona Grandis Based Agroforestry System of Tarai Region of Uttarakhand, India

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ABSTRACT

Present field experiment was conducted under the teak based agro-climatic conditions in northern India. It was laid down in RBD (randomized block design) having organic manure and irrigation schedule with 15 treatment combinations and three replicates each. The analyzed data reveals that, by applying 100% FYM +20 days irrigation the higher plant growth was 67.58 cm (plant height), 220.25 (number of leaves per plant), 32.25 (number of branches per plant), 15.70 cm (collar diameter) and 55.41 cm (root length). Yield parameter shows 30.52 gm (root fresh weight), 14.52 gm (root dry weight), 44.63 g ind-1 (root yield), 847.97 kg plot-1 (root yield) and 22.04 q ha-1 (root yield).

Physiochemical Properties of Soil in Different Forest Types along Altitudinal Gradients in West Central Himalaya

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Dr. Subhrat Sharma, Ladhak Regional Centre Head, GBPNIHE

ABSTRACT

The growth and reproduction of forest cannot be understood without the knowledge of soil. The vegetation improves the soil structure, water holding capacity, Bulk density, soilpH and carbon. The relation between soil and vegetation plays an important role in the development of the natural ecosystem. Changes in carbon stored in forest biomass have a large impact on atmospheric CO_2 concentrations, due to either sequestering or release of carbon. Therefore, the aim of the present study was to assess the Physico-chemical properties of soils in relation to forest Biomass and carbon. In different forest types and from its different altitudinal gradient wise. The paper describes the soil analysis, biomass and carbon stock of (*Q.glauca, Q. leucotrichophora*&*P. roxburghii*) forest occurring at analtitude of 1300 m,1400 m,1500 m respectively in the central Himalayas.In Physical properties of soil including water holding capacity was 60.11%, pH was 6.3, Bulk density was 0.88g/cm^3 and soil carbon was 1.38% for *Q.glauca* forest. For *Q.leucotrichophora*water holding capacity was 65.04%, pH was 5.7, Bulk density was 1.5g/cm^3 and soil carbon was 0.90% and for *P. roxburghii* water holding capacity was 22.94%, pH was 5.9, Bulk density was 1.43g/cm^3 and soil carbon was 1.12%.Tree Biomass, carbon for different altitude gradients wise was 174.74 t/ha & 87.37 t/ha (*Q.glauca*), 89.01t/ha & 44.51t/ha *Q.leucotrichophora*), 86.79 t/ha & 43.40 t/ha (*P. roxburghii*). In this study *Q. glauca* has found maximum soil carbon and pH value followed by *P. roxburghii and Q.leucotrichophora and Q. glauca* has found maximumTree biomass and carbon stockfollowed by *Q. leucotrichophora* and *P. roxburghii*.Soil is an important source of uncertainty in carbon balance from the temperateregions in part due to scarcity of reliable estimates of tree biomass and its variation acrosslandscapes and forest types.

Dependency of Local People on Van Panchayat Forest for Livelihood Generation in Nainital District of Kumaun Himalaya

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ABSTRACT

Forests in Uttarakhand Van Panchayat are crucial for mountain people, as they provide a variety of benefits to humans, such as economic, ecological, and cultural ones, which support their livelihood activities. (Islam et al., 2015). Anthropogenic activities such as the extraction of fuel, fodder, and litter are putting a lot of pressure on these forests (Shah, 1982; Pant and Singh, 1987). Therefore, this study explores the role of forest resource in the life and livelihood of rural people as well as to understand the effectiveness of forest and status of forest dependency in and around Nainital district of Kumaun Himalaya, Uttarakhand India.

Regeneration Status and Tree Biomass Under Different Management Regimes of Chir-Pine Forest, Kumaun Himalaya

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ABSTRACT

Chir pine is one of the most dominant forest tree species contributing for a huge proportion of total forest cover. These forests are deeply associated with the livelihood of the people and contribute to a remarkable portion in the revenue generation of the state. Proper management is necessary for better utilization of such a large natural resource available. The study deals with a comparative study of tree composition, Biomass, and regeneration status of Chir- pine forest under three different management regimes (Van Panchayat, Reserve Forestsand Civil Soyam forests). Phytosociological analysis was carried out within 20 quadrats of 10x10m each, which were further subdivided into 5x5m. Each sub quadrat. One sub quadrate within each large quadrate was randomly selected for sampling to evaluate the regeneration potential. The total tree density was 555ind/ha, 535 ind/ha and 390 ind/ha for Van panchayat,Reserve Forest and civil soyam forests respectively. The biomass and Carbon content was found higher in Reserved Forest (102.94 t/ha & 48.89 t/ha) as compared to Van panchayat (88.88 t/ha & 42.21t/ha) and Civil soyam forest (63.26 t/ha & 30.04 t/ha) respectively. The findings of the study show that reserve forests are managed better than as compared to van panchayat and civil soyam forests. All the three management regimes showed a fair regeneration pattern. In the chir-pine forest most of the species showed fair regeneration whichmeans the number of saplings were higher as compared to tree and saplings.

Isolation And Characterization of Endophytic bacteria with plant Growth Promoting Activity

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ABSTRACT

Endophytic bacteria may promote plant growth and development by assisting the host to survive under biotic as well as abiotic stress conditions. Endophytes are now being researched for their abilities to promote plant growth directly or indirectly by producing indoleacetic acid (IAA) siderophores, hydrogen cyanide (HCN) and by phosphate solubilization. In this study, ten bacterial isolates were recovered from the roots and leaves of Shorearobusta (Sal) collected from Dudhai,Vikasnagar in Dehradun, Uttarakhand. Seven isolates showed IAA production, five isolates were able to solubilize phosphate and six isolates showed siderophore production, however, none of the isolates produced HCN. Isolate B2 showed the best results for plant growth promotion in vitro. For molecular identification 16SrRNA gene region was amplified and sent for sequenced. Future studies are required to determine the potential application of these isolates as plant growth promoters in glasshouse and field conditions.

Synergizing Stem Innovations with Health-Agri Sciences for Sustainable Food Systems

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ABSTRACT

The world is facing unprecedented challenges in meeting the growing demand for food while simultaneously ensuring environmental sustainability and human health. As the global population continues to rise, agricultural practices are under immense pressure to increase productivity without exacerbating resource depletion and climate change. In this context, the convergence of STEM disciplines with Health-Agri Sciences presents a unique opportunity to address these complex issues holistically. This paper elucidates the comprehensive overview of the emerging trends in STEM and Health-Agri Sciences and explores their potential to foster sustainable food systems. Dhawan et.al (2022).It highlights the importance of interdisciplinary collaboration and presents case studies, demonstrating the practical applications of these innovations in addressing global challenges. By advocating for a holistic approach that integrates technological advancements with health sciences, this paper seeks to inspire researchers, policymakers, and stakeholders to leverage STEM and Health- Agri Sciences towards building resilient and sustainable food systems for future generations.

Eco-Friendly Agricultural Mulching: Advancing Biodegradable Polymeric Solutions & Sustainable Practices

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ABSTRACT

The paper investigates current developments in the application of biodegradable polymeric materials for agricultural mulching, focusing environmentally friendly methods made from waste from agro-industrial processes and renewable resources. In particular, the study looks into ways to improve polyvinyl alcohol's (PVA) solubility by adding chemicals and protein components. The PVA films incorporate lignocellulosic and starch-based additives from the wood and ethanol industries. These prepared films are applied with traditional spraying equipment, and their effects on the soil, grain growth and yield output are carefully assessed Additionally, lysimeter experiments are carried out to investigate the fate of PVA incorporated into the soil, offering perceptions into its behavior in the surroundings. The study's main objective is to address environmental issues brought on by non- biodegradable plastic films' widespread use in agriculture. The study offers affordable and environmentally friendly substitutes for sustainable farming methods in answer to these worries. Through studying the practicability and effectiveness of these biodegradable polymeric materials, the research adds important knowledge to the ongoing endeavors towards ecologically sustainable agricultural practices.

Ecology & Conservation of Rubia Manjit L.: An Important Medicinal Plant of Kumaun Himalaya, India

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ABSTRACT

Rubia manjit L. is a climbing or scrambling herb, with red rhizomatous base and roots. It is an essential raw drug for the traditional herbal formulations. The plant is commonly known as 'Indian Madder' and sold under the trade name 'manjistha'. It is reported to be used in the treatment of urinary tract disorders and skin problems. The present study is conducted in Nainital forest division of Kumaun Himalaya at an altitudinal range of 1800 to 2000m. Rubia manjit is usually found in the oak forests where the tree density ranged between 20 ind/ha to 490 ind/ha, shrub density varies from 40 ind./ha to 5280 ind./ha and herb density from 1000 ind/ha to 2,30,000 ind/ha. Phytosociological analyses were done in three oak forests to find out the distribution pattern of Rubia manjit. Rubia manjit contributes only about 3 percent of the total herbaceous plant population. The tree diversity of oak forest was 1.24-1.27, shrub diversity, 2.01- 2.06 and herb diversity was 3.02-3.45 whereas species evenness was 7.43 for tree layer, 9.2 for shrub layer and 14.78 for herb layer. The ecological study will be important for the conservation and management of the population of Rubia manjit. It is hoped that the scientific information and contribution of this species and their monetary benefit could improve the economic conditions of the local people and simultaneously reduce the pressure on the natural habitat.

Morphometric And Muscle Growth Variations between Triploid & Diploid Common Carp

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ABSTRACT

Inducing triploidy serves as a valuable tool in aquaculture, presenting numerous benefits in issues related to sexual maturation and escapes in aquaculture. For the identification of triploid fish, certain efforts are into progress to develop more practical and cost-effective techniques. These may include methods based on morphological differences, such as body shape. In this study, the morphological variation was examined to distinguish between diploid and triploid common carp. Triploidy was induced by providing a pressure shock of 6000 psi was applied at the fertilized eggs 5-6 min post-fertilization at approximately 20°C for 4-5 min duration. Ploidy level of the fish was confirmed by observing the erythrocytes shape, in which triploid erythrocyte was ellipsoidal in shape. The fish were incubated, hatched and raised, after which the morphometric parameters was studied between diploids and triploids of 15 dph and 75 dph. There were significant difference ($P<0.05$) between diploids and triploids of 15dph in some of the parameters like total length (TL), Head length (HL), Eye diameter (ED), Middle myotomal height (MMH) and posterior myotomal height (PMH) whereas no significant difference($P>0.05$) in any of the morphometric parameters was seen in between diploids and triploids of 75 dph. Histological examination of muscle tissue was conducted from the first month post-fertilization to the seventh month in both triploid and diploid common carp groups. The histological assessment revealed that the muscle growth of triploid common carp was significantly greater than that of diploid individuals throughout the study.

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Development Of MDM2-Targeting PROTAC Technology for Advancing Bone Regeneration.

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ABSTRACT

A proteolysis-targeting chimera (PROTAC) degrader is a heterozygotic bifunctional modular small functional molecule comprising of three parts: the E3 ubiquitin ligase ligand, the target protein ligand and the linker to connect both the ligands. They are engineered to induce the *invivo* degradation of disease-causing proteins by hijacking the ubiquitin-proteasome system. Historically, PROTACs have primarily been explored within the context of targeted protein degradation in cancer. However, our study challenges this convention by suggesting a novel application that extends their use to tissue regeneration. Here we reported PROTAC degraders,CL144 and CL174, E3 ligase targeting MDM2 for degradation to achieve osteogenic differentiation of MSCs. In addition, we provided evidence that synthesized PROTACs have more potent effect on biomineralization over Nutlin-3. We have also demonstrated that MDM2 PROTAC (CL144) more effectively upregulated osteogenic differentiation marker genes compared to the MDM2 inhibitor (Nutlin-3), leading to superior inductive effect on biomineralization *in vitro*. In our study, one of the hallmarks is the remarkable consistency observed across all phases, from initial development to pre-clinical investigations. The fact that our findings consistently align with the concept reaffirms the reliability and robustness ofour results. Through theseresults, we expected that a new therapeutic modality for hard tissue regeneration will be possible and the application range of PROTAC system can be expanded.

Metal Phosphates as Solid Acid Catalysts For Biomass Valorization.

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ABSTRACT

Investigations on the metal phosphate (MP: M = Al, Ti, Zr and Nb) solid acid catalysts are carried outin the valorization of biomass-based glycerol to value added chemicals such as acrole in and fuel additives through liquid as well as vapor phase catalytic transformation. Hydrothermal procedure wasemployed in the preparation of these catalysts. The physio- chemical properties, viz; amorphous or crystalline nature is determined by using X-ray diffraction, pore size distribution is measured from theirrespective N2 adsorption–desorption isotherms, stretching and bending modes of various molecules is found using FT-IR and charge transfer transitions are determined using UV-DRS of these catalysts. Studies of adsorbed pyridine using ex situ FT-IR analysis and NH3-temperature programmed desorptionare also carried out on these catalysts to get an insight into the structural and acidic properties by varyingthe metal component. The functionality of glycerol dehydration, acetylation and acetalization is explained in terms of the acidity and structural properties of these MP catalysts. From the results, it wasobserved that the NbP was the most active catalyst, and TiP as stable catalyst for long runs. It is noteworthy to mention here is that both catalytic reactions were significantly affected by the material properties such as total acidity and textural properties. However, the various reaction parameters suchas reaction temperature, mole ratio of glycerol to acetic acid, reaction time, and catalyst loadings also have some influence on the catalytic activity results.

Medicinal and Aromatic Plants in Heath and Agriculture Science for Sustainable Development

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ABSTRACT

The cultivation and utilization of medicinal and aromatic plants (MAPs) hold significant promise for sustainable development in health and agriculture. MAPs are rich sources of bioactive compounds that can be used in pharmaceuticals, cosmetics, and food additives, offering economic opportunities for farmers and entrepreneurs. Moreover, their cultivation promotes biodiversity and can contribute to the restoration of degraded lands. In the health sector, MAPs offer natural alternatives to synthetic drugs, with fewer side effects and lower environmental impact. They play a crucial role in traditional medicinesystems and have gained recognition in modern medicine for their therapeutic properties. Additionally, MAPs provide essential oils and fragrances used in aromatherapy, promoting mental and emotional well- being. In agriculture, MAPs serve as natural alternatives for pest management, reducing reliance on synthetic pesticides and promoting biodiversity. They also contribute to soil health and fertility through their allelopathic effects, which inhibit the growth of competing plants and pathogens, and their ability to fix nitrogen in the soil. MAPs provide additional source of revenue generation for farmers through the cultivation of high-value crops and the production of herbal-based products in terms of essential oils and aromatic compounds. Their cultivation can enhance the resilience of agro-ecosystemsto environmental stresses, such as drought and soil degradation, thereby improving food security and livelihoods in rural communities of Uttarakhand Himalayas. In present deliberation, the importance of some plants belonging to the family Lamiaceae and Zingiberaceae growing in Uttarakhand Himalayas for their significant contribution in heath and agriculture science for sustainable development will be discussed.

How to Improve Research Visibility

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ABSTRACT

Research needs to be explained clearly to others, to colleagues, to educational bodies, and to the Public by publications. Publishing high quality paper in scientific journals is halfway of receiving citation in the future. The rest of the way is advertising and disseminating the Publications by using the proper Research Tools. Today's researcher operates in a complex environment, interacting with funders, publishers, Collaborators, and other agents, and increasingly, this is done in an online context. Decision makers use different systems to gather information about research performance, and in this Increasingly digital world it falls to the researcher to ensure that they represent themselves and Their research contributions effectively. The visibility and impact of our article in the scientific community and amongst researchers, Practitioners and policy makers is crucial in raising our profile internationally as a serious Researcher in the field and thus increasing the possibilities for getting further research funding and for promoting our career. We all want to believe that our work is 'making a difference' and is recognized and read. Promoting our work is not self-aggrandizement but is an important part of knowledge transfer. It Enables us, for example, to make links and networks with other researchers with an interest in the Same area.

Introduction to Natural products analysis: Review Paper

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ABSTRACT

Natural products are those substances or chemical compounds which produced naturally by living organism for example milk, cornstarch, silk, essential oils, plant extracts, bioplastic, carotenoids etc. Many bio compounds are isolated and identified from these natural products in this era. Extraction of natural products mainly done from solvent extraction (SE), solid- phase extraction (SPE), supercritical fluid extraction (SFE), microwave assisted extraction (MAE), ultrasonic assisted extraction (UAE), pulsed electric field extraction (PEF), enzyme assisted extraction (EAE), pressurized liquid extraction(PLA). Column chromatographic techniques are used for isolation and purification of natural products. HPLC (High pressure liquid chromatography) and UHPLC (Ultra high-pressure liquid chromatography) alsoused to speed up the purification process. To determine the structure of molecules different spectroscopy methods like ultraviolet-visible (UV) spectroscopy, mass spectrometry, NMR spectroscopy are used. This paper mainly presents the common methods of extraction, separation and identification of natural products.

Assessment of Trace Elements and Heavy Metals Variation During Pre and Post Monsoon Seasons in Villages of Champawat District, India

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ABSTRACT

High-quality water is essential for maintaining human health, but it can naturally or artificially contain various trace and heavy metals. While many metals play important physiological roles in the body, the toxic effects of some metals pose significant health risks. Consequently, the contamination of water by heavy metals is a major concern for human health and ecosystems. This study focuses on screening drinking water for elemental content and comparing seasonal variations of trace and heavy metals in natural water sources and their corresponding tap supplies in the Champawat district, Uttarakhand, India. Trace and heavy metal concentrations were measured in parts per million (ppm) using an Atomic Absorption Spectrometer following official methods. Results indicate that the concentrations of trace metals such as iron, copper, manganese, and zinc, as well as heavy metals like chromium, lead, and mercury, were within the permissible limits set by the World Health Organization (WHO). Therefore, it is concluded that the levels of essential trace elements are within acceptable limits, while heavy metals were below detectable limits. Consequently, water from both natural sources and tap supplies in this region can be considered safe in terms of trace and heavy metal contamination.

Catalytic Direct α-Functionalization of Aliphatic Carboxylic Acid Derivatives

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ABSTRACT

The advent of catalytic functionalization of unactivated C–H bonds of common organic compounds including carboxylic acids, amides and their equivalents has modernized the retrosynthesis of complex molecules.1 In this context, primarily, the installation of a heteroatom-based groups by transforming aα-C−H bond of an aliphatic acid equivalent is a noteworthy transformation of fundamental importance, given the abundance of α-substituted carboxylic acid derivatives in numerous natural products, approved drugs and functional materials.2 Inspiring by the scope of opportunities, development of efficient and simple synthetic methods is enormously important to obtain these pharmaceutically active molecules drugs, other valuable compounds and materials. Classically, the enolate chemistry using strong base3 and nucleophilic substitution strategies3-4 are used for α-functionalization of aliphatic acids. Generally, not compatible for late-stage functionalization and installation of heteroatom- based substituents in case of enolate chemistry. whereas, in nucleophilic substitution reactions generates halogen waste and require pre functionalization. However, further development known as modern strategies, describe the novel concept for α-functionalization of aliphatic carboxylic acid derivatives. In which mainly two types of strategies are prevalent, first approach is transition metal free where α- C–H bond triggers via umpolung approach.5 Second one is the transition metal catalyzed C-H bond activation or functionalization strategy which is well known in literature. However, all these methods are very important in organic chemistry for the synthesis of various kind of valuable compounds. Inspiring by these methodologies, we have also stablished efficient and regiospecific methods of α- functionalization of aliphatic carboxylic acid equivalents under mild reaction conditions with or without transition metal catalyst as shown in scheme 1 (Transition metal free and metal catalyzed α-C(sp^3)–H bond functionalization of aliphatic carboxylic acid derivatives.)

Microwave Assisted Synthesis & Characterization of D- Mannose By Ditertiary Amyl Chromate In DMSO Solvent

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ABSTRACT

The oxidation of D-Mannose with TAC is a convenient and very simple method which has been discussed. Chromium (VI) based oxidants such as TAC have been used for variety of synthetic works in organic chemistry. The effects of solvent DMSO have been studied under microwave irradiation as a source of energy. Studies were carried out to produce interesting result for determining the properties of obtained product. The product formed by the interaction of organic substrates like D-Mannose in different molar ratio with TAC may give valuable clue their mechanism of the reaction and the structure of the compounds formed were studied. The thermal loss pattern may be helpful for the formulation of complexes and assessing the strength of bonds. In the present work, we have carried out the oxidation of D-Mannose with TAC in DMSO solvent have been carried out under microwave irradiation conditions. The products obtained have been analysed chemically, spectroscopically as well as thermogravimetrically to find some generalizations.

Synthesis, Thermal and Spectroscopic Analysis, Antimicrobial Activities, and Molecular Modeling of Zinc (II) Metal Complex of Benzoyl Glycine

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ABSTRACT

In order to analyze the ligand's characteristics and its uses, this work synthesizes and characterizes a benzamide-derived ligand(benzoyl glycine) before complexing it with metal ions. Benzamide and glycine reacted to create the ligand, which was then purified and precipitated. FTIR and 1H NMR were two of the important spectroscopic methods used to characterize the resultant ligand. Furthermore, thermogravimetric analysis (TGA) was used to study the thermal behavior of the ligand and its metal complex, revealing important thermodynamic characteristics. The zinc metal complex was subjected to X-ray powder diffraction experiments, which yielded structural insights. Density Functional Theory (DFT) calculations were used in molecular modeling to clarify the structure and characteristics of the molecules. Moreover, anti-microbial tests were used to assess the biological activity of the produced compounds against E. Coli and A. Niger. This thorough investigation lays the foundation for future research in this area by offering insightful information about the synthesis, characterization, and possible uses of the ligand and its metal complexes.

Spectro-Thermal Characterization, DFT Insights, and Biochemical Assessments of a Novel Oxime Ligand Interacting with Transition Metal Complexes

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ABSTRACT

The synthesis and characterization of a novel oxime ligand, 2,4-dihydroxy salicyldioxime, and its coordination complexes with Mn(II), Co(II), Ni(II), and Zn(II) ions are reported in this study. The ligand forms stable complexes with the metal ions in a neutral bidentate manner, utilizing the phenolic oxygen and oxime nitrogen for coordination. Spectroscopic techniques were employed for systematic characterization, revealing the nature of the metal-ligand interactions. Thermo gravimetric data provided thermodynamic activation parameters, indicating first-order kinetics in the decomposition process of the complexes. density functional theory (DFT) calculations were employed to gain in-depth insights into the electronic structure, optimized energy, molecular properties, and bonding characteristics of both the oxime ligand and its metal complexes. Theoretical modeling offered valuable information for understanding the interactions between the ligand and metal ions. Additionally, biological assays were conducted to assess the cytotoxic and antimicrobial activities of the synthesized compounds. These investigations aimed to elucidate the potential biomedical applications of the oxime ligand and its metal complexes in medicinal chemistry. The study not only contributes to the comprehension of the coordination chemistry of the synthesized complexes but also highlights their potential significance in drug development and therapeutic interventions. This research opens avenues for future applications in the field of medicinal chemistry, emphasizing the multifaceted potential of the synthesized compounds in diverse biomedical contexts.

Green synthesis and study of compounds /complexes formed by oxidation of substituted cycloalkanols such as 1,4 Cyclohexanediol with di-tertiary amyl chromate (TAC)

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ABSTRACT

The substituted Cycloalkanols such as 1,4 Cyclohexanediol, is a cyclic diol with the chemical formulaC6H12(OH)2. It consists of a six-membered cyclohexane ring with hydroxyl groups (-OH) attached at the 1st and 4th carbon positions. It is white coloured solid . This compound is a versatile building blockin organic synthesis and find applications in various fields including pharmaceuticals, polymers, resins,adhesives and fine chemicals. In the present paper we have reported the synthesis and study of some complexes /compounds of 1,4 Cyclohexanediol by oxidation with di-tertiary amyl chromate (TAC) toexplore the versality of the oxidising agent and expand the horizon of Green chemistry.

Analysis Of Essential Oil Composition of Peperomia Pellucida (L.) Kunth Collected From Foothill of Kumaun Himalaya

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ABSTRACT

Peperomia pellucida (L.) Kunth, belonging to the Piperaceae family, is an annual weed commonly found in areas characterized by high humidity and minimal sunlight exposure. The chemical composition of the essential oil from Peperomia pellucida has been extensively studied in various countries, but research on this topic in Uttarakhand, India, is limited. The objective of this study is to provide a comprehensive analysis of the essential oil composition extracted from Peperomia pellucida collected from the various region of Kumaun, Uttarakhand. Gas chromatography-flame ionization detection (GC-FID) and mass spectrometry (GC-MS) are used to examine the hydrodistilled essential oil of Peperomia pellucida (L.) Kunth, which was obtained from the various region of Kumaun, Uttarakhand. The major constituents of the oil of whole herb were carotol (32.3%), dill apiole (30%), Elemicin (6.5%), (E)-caryophyllene (6.5%), Germacrene-D (4.2), Methyl Eugenol (3.0%), Alpha-Bisabolol (1.4%), Bicyclogermacrene (1.4%), 1,8-cineole (1.4%) and (E)-Bisabol-11-ol (1.1%).

Composition of Essential Oil from Elsholtzia strobilifera (Benth.) Benth with its Biological Activity Collected from Garhwal region of Uttarakhand, India

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ABSTRACT

Plants of the genus Elsholtzia (Lamiaceae) have a long history of medicinal use in folk. Essential oils are plant's secondary metabolites responsible for their various biological activities. In industries such as food, cosmetics, and medicine they have wide applications as natural ingredients. This research represents the essential oil composition and biological activity of Elsholtzia strobilifera (Benth.) Benthcollected from Garhwal region of Uttarakhand, India has been investigated by Gas Chromatography and Gas Chromatography Mass - Spectrometry. The DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging and H2O2 (hydrogen peroxide) assays were used to evaluate the antioxidant activities. Theegg hatching inhibition assay and nematode mortality assay both were conducted in an analogous manner. A total of 42 compounds representing 86.53% of the oil is identified, of which Pinocarvone (38.4%) and trans- caryophyllene (11.90%) are found to be the major constituents. Acylfuran derivatives, which are considered as a specific chemical marker in Elsholtzia, are not detected.

Eco-friendly Approach Utilizing the Verbascum Thapsus L. as a Biosorbent for Cd (II) Ion Removal from Synthetic Wastewater

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ABSTRACT

One of the major global environmental issues we face today is the pollution of water due to harmfulheavy metals. These metals, like chromium, nickel, zinc, cadmium, arsenic, copper, and mercury, among others, are continuously linked to the pollution and harmful impact on the environment. Cadmium metal ions, toxic and widespread, accumulate in animals, posing health risks through tainted food and inhalation. Epidemiological studies link cadmium to increased cancer risk, particularly in the lungs. Emerging evidence suggests broader physiological impacts beyond pulmonary effects. Addressing water pollution from heavy metal ions involves diverse methods like ultrafiltration, ion exchange, and phytoremediation. While these techniques show potential, challenges persist, including low removal rates, high energy demands, and cost issues. Biosorption,a promising solution for heavy metal pollution, efficiently extracts contaminants with minimal sludge generation and no need for extra nutrients. It allows biosorbent regeneration and offers the potential for metal recovery, utilizing both viable and non-viable biomass. This study explores the utilization of Verbascum thapsus leaves for the removal of toxic Cd (II) ions from synthetic water contaminated with them. Various adsorption parameters, including pH, temperature, adsorbent dose, contact time, and initial metal ion concentration, were examined. The Freundlich and Langmuir isotherm models effectively represented the equilibrium data for all examined adsorption systems. Given its cost-effectiveness and high efficiency, Verbascum thapsus leaves present a readily available and renewable biological adsorbent for cadmium removal from wastewater.

Non Covalent Interaction of Imazapyr with Graphene: A DFT Study

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ABSTRACT

Over recent decades, a wealth of knowledge has emerged regarding the nexus between water quality and human health. As drinking water standards evolve and our comprehension of the health impacts associated with various contaminants progresses, it's anticipated that maximum permitted limits (MPL) for contaminants will eventually approach molecular thresholds. This reflects ongoing efforts to ensure the safety and quality of drinking water worldwide. Among the 92 regulated contaminant species, pesticides and herbicides are of particular concern due to their widespread usage and presence in drinking water. Both developing and industrialized nations increasingly recognize the toxicity and health risks associated with these chemicals, even at minimal concentrations. The ban on atrazine in England and Wales in 1993 led to the rise in usage of alternatives like imazapyr and triclopyr, which are more soluble in water, raising concerns about water pollution risks. While herbicide concentrations in water typically remain below legal limits, seasonal variations in agricultural practices can cause fluctuations, sometimes exceeding established thresholds. To ensure water quality standards are met and public health safeguarded, monitoring and managing these variations are crucial. Imazapyr, a broad-spectrum herbicide used in various agricultural and non-crop settings, presents challenges due to its persistence in soil and high water solubility. Various techniques, including electrochemical oxidation and adsorption, are being explored for its removal from water sources, with graphene-based materials showing promise due to their extensive surface area and chemical properties. Recent studies have highlighted their effectiveness in removing contaminants like arsenic and pesticides from water, offering hope for cleaner and safer water sources.

Effect of A-Site Cation Size on the Structural & Physical Properties of Mixed-Valence Perovskite Manganites

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ABSTRACT

In the present study, mixed-valence perovskite manganite oxides have been synthesized by the solid-state reaction method. The room temperature X-ray diffraction data were analyzed with the Rietveld analysis program GSAS for structure determination. The structure was refined with a rhombohedral cell in the space group R-3c, assuming a pseudo- Voight (pV) peak shape function. The crystallite size was estimated from XRD data using the Scherrer equation. Electric transport properties have been studied as a function of temperature from 5-300K and magnetic field from - 8T to 8T using four probe method. Magnetic properties have been studied as a function of temperature from 10-300K using a SQUID magnetometer.

Terpenoid composition, antioxidant and antifungal activity of Salvia plebeia R. Br.

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ABSTRACT

The GC-FID and GC-MS analysis of the essential oil of Salvia plebeia, led to identification of 32 compounds constituting 93.8 % of the oil. EO of this plant was dominated by sesquiterpenoids withmajor presence of β-caryophyllene, furanogermenone, germacrone and 14-hydroxy-α-humulene. Antioxidant activity determined by DPPH radical scavenging, metal chelating super oxide radical scavenging and reducing power assay, though the EO showed lower activity than the standard antioxidants but possessed significant reducing power. The in vitro antifungal activity of EO againstphytopathogens was determined by poisoned food method. EO showed strong inhibitory effect on the mycelial growth against all phytopathogens with an IC50 values ranging from 180.5 to 372.9 µg/mL and MIC ranging from 1500 to 3000 µg/mL. Among the test fungi, three fungi, viz., Helminthosporium maydis, Curvularia lunata and Albugo candida were highly susceptible for theoil in spore germination assay with their IC50 value 246.9, 263.8 and
316.8 µg/mL, respectively.

Adsorption Removal of Heavy Metal Ions by White Soil of Gangolihat Kumaon Hills

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ABSTRACT

Environmental pollution is a major concern, Caused by rapid globalization and industrialization. In various environmental pollution - water pollution is a common pollution now days which is increasing day by day, while we know that water is an essential part of life on earth. The water pollution due to the presence of Heavy metal ions is a dangerous cause. Heavy metal refers to any metallic element that has a relatively high density and molecular weight greater than 20, are poisonous or toxic even at low concentrations. Heavy metals naturally exist in soil system mostly in low concentrations incorporated in soil minerals. The effluent of industries is the main source ofHeavy metals in the soil and water sources. The increased concentration of the metal ions in the ecosystem harm various life forms and removal of these toxic contaminants from industrial effluentis one of the most important environmental issues. Zn(II), Cd(II), Pb (II) heavy metals have wide industrial utilisation. Heavy metals can be absorbed by living organisms. Heavy metal removal from inorganic effluent can be achieved by conventional treatment process such as chemical precipitation, ion exchange, and electro- chemical removal, ultra filtration, reverse osmosis, carbon adsorption, and phytoremediation. These methods have some drawbacks like more costly, less efficiency, etc. Various studies have reported on soil adsorbent for removal of heavy metal ions from synthetic waste water and industrial effluents to develop a non-conventional use of soil as lowcost adsorbent. In this study the competative adsorption of heavy metal ions from synthetic waste water by using white soil (Collected from Gangolihat, Uttarakhand) as an adsorbent with various parameters are performed and found various results.

Nano Composite Synthesis Of Essential Oil Extraction of Chicorium Intybus Leaves And Their Anti-Bacterial Activity

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ABSTRACT

Natural product is organic substance produced by living organism found in the nature. It can be in form of primary and secondary metabolites. These have pharmacological activity which is beneficial various kinds of diseases. Natural products have been an important source for drug development over the years as more than 70% of the currently available drugs are either directly from natural sources or semi-synthetic analogues of natural products or molecules developed inspired by natural products. This study delves into the therapeutic potential of essential oils and Ag/MgO nanocomposites (NCs) derived from C.intybus (common chicory) leaves, with a particular phasis on their antibacterial property. Essential oils were obtained through steam distillation, while methanolic extracts were acquired through Soxhlet extraction and qualitative estimation of its pharmacological profilehas been done. Additionally, Ag/MgO-NCs were synthesized via an eco-friendly method.

Catalytic Direct A-Functionalization of Aliphatic Carboxylic Acid Derivatives

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ABSTRACT

In the present investigation, we have effectively synthesised zirconium doped iron-oxide nanocomposite using co-precipitation approach. The synthesized nanocomposite was subsequently subjected to TEM, SEM-EDX, FT-IR, TGA, BET surface area analysis, and Zeta potential measurement analyses. To put it briefly, zirconium oxychloride and ferric chloride solutions were combined and heated to around 60°C. Until the pH of this heated mixture reached 10, it was progressively treated with a sodium hydroxide solution while being continuously agitated. The resulting precipitate was further washed, dried, and crushed into very small particles. Atomic absorption spectroscopy was used to ascertain the Mn2+ content following adsorption, which was carried out utilizing a batch adsorption approach on synthesized nanocomposite. The Mn2+ adsorption data on synthesized nanocomposite were fitted using the Langmuir, Freundlich, and Temkin adsorption models; under ideal circumstances of pH, Mn2+ concentration, adsorbent quantity, duration, and temperature, the Langmuir model showed the best agreement with the data. The study's findings demonstrate that Mn2+ may be effectively removed from aqueous solutions using synthesized nanocomposite as an adsorbent. Reducing garbage and using it as an adsorbent is a useful and sustainable method.

Clay Catalysed, Solvent-Free, Green and Selective Amination Of 1,4- Naphthoquinones Under Microwave Irradiation

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ABSTRACT

The quinonoid chemistry has been of considerable interest for a long time to the chemists due to itsextensive use in medicine, dye industry and agriculture. During recent years, 2- Amino-1,4- naphthoquinones have attracted considerable attention due to their wide spectrum of pharmaceutical activities such as antitumor, antibacterial, antifungal and antimalarial properties. They are important as the building blocks for the synthesis of many natural products and other biologically active compounds. In the past they have been synthesized by two major approaches: one approach is the nucleophilic substitution of halo-derivatives of naphthoquinones with amines thereby giving 2-Amino-1,4- naphthoquinones whereas the second one involves the 1,4-type addition of amines to naphthoquinones under acidic conditions. But both these synthetic approaches suffer from the drawbacks such as low product yield, longer reaction periods, many by-products, use of strong acidic and vigorous reaction conditions. Considering these limitations, a novel and green method has been developed for the amination of 1,4-naphthoquinones by utilizing the concept of surface - mediated organic reactions as it is environment friendly. So a facile, direct amination of 1,4-naphthoquinones was carried out with amines and Montmorillonite KSF as a reusable heterogeneous catalyst under microwave irradiation thereby giving selectively 2-amino-1,4-naphthoquinones. This method has a broad substrate scope and product extraction is easy. It is low-cost, requires mild and sustainable reaction conditions and results in moderate to excellent yields.

Review On Comparative Study of Volatile Constituents of Bupleurum Lanceolatum, Bupleurum Falcatum and Bupleurum Hemiltonii Balak from Kumaun Region of Uttarakhand

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ABSTRACT

The chemical composition of volatiles from the leaves of three different Bupleurum species has been studied. The fresh leaves of Bupleurum lanceolatum and flowering aerial part of Bupleurum hemiltonii Balak and Bupleurum falcatum Family Apiaceae (Umbellifereae) were steam distilled, extracted with n-hexane and dichloromethane and analyzed by GC and GC-MS.13 compounds were detected in the essential oil of Bupleurum lanceolatum representing 95.4% of the oil content, 27 compounds were identified in the oil of Bupleurum Hemiltonii Balak representing 92.7% of total oil content and 14 compounds were detected in the oil of Bupleurum falcatum representing 85.6% of total. The oil was rich in sesquiterpene hydrocarbons, germacrene-D, β-caryophyllene, farnesene, humulene and ocimene.

To Formulate and Evaluate the Mucoadhesive Film of Terbutaline Sulphate For Soft Palate Drug Delivery

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ABSTRACT

Bioadhesion, particularly mucoadhesion, offers a promising approach for improving drug delivery by the adhesive properties of biological membranes. In this study, we aimed to develop and evaluate bio adhesive oral film for the enhanced delivery of Terbutaline Sulphate through the soft palate, thereby bypassing the first-pass metabolism and improving bioavailability. The formulations were prepared using the solvent casting method, incorporating film-forming and mucoadhesive polymers such as Hydroxypropyl methylcellulose (HPMC) K15 , Eudragit RL100, and Carbopol were used.. Eight formulations (F1-F8) were formulated with varying concentrations of mucoadhesive polymers while keeping the concentration of HPMC K15 constant. In vitro drug release studies demonstrated that formulations containing Eudragit RL100 with HPMC K15 (F1- F4) exhibited drug release ranging from 92.157% to 95.026% within 12 hours. Formulations incorporating a combination of HPMC and Carbopol 934 (F5-F8) showed faster drug release compared to those with HPMC and Eudragit RL-100. Drug release from formulations F5 to F8 ranged from 86.256%to 94.767% within 10 hours, with formulations F2 and F3 demonstrating uniform and controlled drug release (92.157% and 95.026% in 12 hours, respectively). This innovative formulation offers the advantage of delivering a lower dose of Terbutaline sulphate, yet sufficient for therapeutic action, by bypassing the first- pass metabolism. The modified combination of mucoadhesive polymers provides controlled and sustained drug release, potentially enhancing patient compliance and therapeutic efficacy. Further optimization and evaluation of these formulations may pave the way for their clinical application in improving the delivery of Terbutaline sulphate and other drugs via the oral mucosa.

Uranium Distribution, Quality Assessment & Characterization Of Drinking Water Sources in Champawat District Using Water Quality Index And Multivariate Statistical Techniques

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ABSTRACT

A systematic study was carried out for statistical physico-chemical parameters and uranium concentration in the groundwater/ spring water samples collected from Champawat district. A totalof forty- two samples were selected for this study. Various other parameters pH, Total dissolved solids (TDS), electrical conductance (EC), temperature, uranium (U), oxidation-reduction potential(ORP), salinity etc. were assessed for the study. The uranium concentration of the collected water samples varies from 0.02 to 10.37 µg/L during pre- monsoon (PRM) and 0.02 to 4.6 µg/L during post-monsoon (POM). Spatial distribution of some selected parameters and statistical analysis, including, correlation, principal component analysis was performed. Results show the presence of high nitrate concentration in few of the sampling sites. Correlation analysis indicates the positive correlation of TDS with EC, Salinity, sulphate, total hardness, Mg, Nitrate, etc. Water quality indexresults shows that 49% of water samples were in excellent category. Principal component analysis was showing five major factors with a total variance of 80.05%.

Adsorptive & Efficient Removal of Rose Bengal Dye from Wastewater by Biomass-Based Adsorbent

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ABSTRACT

Water is an essential element of our lives; the quality of water is reduced due to industrialization and urbanization. Dyes are among the most common pollutants of water resources around the world. The carcinogenic and toxicological effects of dyes from industrial wastewater pose a serious hazardto ecosystem as well as human health. Various technologies are adopted by the researchers to remove these dyes from wastewater; among which adsorption is widely used technology because of its simple, cost-effective, eco-friendly and commercially viable nature. In this study, we have used the Raw Saccharum munja, as a potential low-cost and biodegradable biosorbent to remove the Rose Bengal dye from aqueous solution. The physicochemical properties of adsorbent were analyzed with different characterization techniques. Effect of different parameters on the adsorption efficiency of the as-prepared biosorbent was studied by carrying out batch adsorption studies. Further, the kinetics, equilibrium and thermodynamics of adsorption process was checked with various models. Moreover, the spent adsorbent was regenerated by using the mixture of acetone and hot water which makes the whole process as economically viable for practical purpose.

Adsorptive Removal of Eosin Yellow Dye from Aqueous Solutions Using Pennisetum Glaucum as a Low-Cost and Green Biosorbent

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ABSTRACT

Acting as a key element for the survival of human and nature, clean water also contributes tremendously to the ever-growing industries in a country. However, the supply of clean water had led to a decrease as pollutants such as dyes had caused a major negative impact on pure and clean main water bodies. In recent years, Biomass waste, which is abundantly available, has been studiedas low cost biosorbent for dye sequestration from waste water. The use of biomass waste adsorbents is economically feasible, environmental healthy and found to have outstanding removal capacity of dyes. Eosin yellow is widely used for coloring in various applications, despite its already proved toxicity and carcinogenicity. The plant waste Pennisetum glaucum were applied as potential adsorbent for the removal of Eosin yellow from aqueous solutions. Different characterization approaches were used to investigate the physicochemical properties of adsorbents. Batch adsorption experiments were conducted using synthetic aqueous solutions and the effects of initial dye concentration, initial pH of solution, adsorbent dose and temperature were investigated. With the use of several models, the kinetics, equilibrium, and thermodynamics of the adsorption process were also analysed.

Synergistic Interactions of Vitex agnus-castus L., and Vitex negundo L. Essential Oils on Nematicidal Activity

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ABSTRACT

Root-knot nematodes are the most economically detrimental group of plant parasitic nematodes inducing significant changes in the roots of their host, and affecting field crops. Vitex negundo commonly known as Nirgundi, possesses antioxidant, insecticidal, and antibacterial properties. Moreover, Vitex agnus-castus is a deciduous shrub. This study focused on the phytochemical analysis and possible synergistic interactions of EOs from Vitex negundo, and Vitex agnus-castus on nematicidal activity. The EOs of V. negundo (VNAO) and V. agnus-castus (VACAO) aerial parts were extracted through hydro- distillation. The recovered EOs were blended in binary mixturesat equal ratios to analyze their synergistic interactions on nematicidal activity. The nematicidal activity of the individual EOs and their combinations were assessed against M. incognita at different concentrations (0.25, 0.5, 1.0 µL/mL). Furthermore, a molecular docking study was conducted on the major compounds of the EOs to investigate their interactions with the AChE target protein receptor of M. incognita, in comparison with their standard inhibitor. The GC-MS analysis of VNAO and VACAO identified 97 and 47 compounds constituting 98.8%, and 99.8% of the total EOs, respectively. In VNAO, β-caryophyllene (10.3%) was identified as the major compound, while in VACAO (E)-β-ocimene (10.5%), was found as the main compound. The results of nematicidal activity revealed significant synergism when these two EOs were blended. The molecular docking study suggested the significant interaction of major chemical constituents of essential oils with the targeted nematode proteins suggesting the possible mode of action of major chemical constituents of EOs. These findings confirm synergistic interactions among the tested EOs, which could affect sustainable agriculture and the development of natural products with pesticide properties.

Ag/MgO- NCs synthesis and Essential Oil Extraction from Ocimum tenuiflorum Leaves for Antibacterial and Antioxidant Activities

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ABSTRACT

This study delves into the therapeutic potential of essential oils and Ag/MgO nanocomposi tes (NCs) derived from Ocimumtenuiflorum) leaves, with a particular phasis on their antib acterial and antioxidant properties. Essential oils were obtained through steam distillation, while methanolic extracts were acquired through

soxhlet extraction and qualitative estimati on of its pharmacological profile has been done. Additionally, Ag/MgO-NCs weresynthesized via a eco-friendly method.The research evaluated the antimicrobial eficacy of essential oils and methanolic extracts against specific bacterial strains, alongside the antioxidant capabilities of these natural extracts via H2O2 radical scavenging assays. Gas chromatography-mass spectrometry (GC- MS) analysis identified the bioactive compounds within the extracts. Through comprehensi ve characterization techniques like X- ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FT-IR), Ultraviolet- Visible Spectroscopy (UV-Vis), and Transmission Electron Microscopy (TEM), we gained profound insights into the atomic, electronic, and chemical properties of the materials. The antioxidant potential of the Ag/MgO nanocomposites was assessed through comprehensive assays including DPPH (2,2- diphenyl-1-picrylhydrazyl) scavenging activity, exhibiting notable free radical scavenging capabilities. Moreover, the nanocomposites displayed significant antibacterial activity against a spectrum of bacterial strains, as demonstrated by zone of inhibition assays and minimum inhibitory concentration (MIC) values. This study signifies the potential of these green-synthesized nanocomposites as multifunctional materials for diverse biomedical, environmental, and industrial applications.

Phytochemical Analysis and Synergistic Pest Control Potential of Artemisia Scoparia And Centratherum Punctatum

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ABSTRACT

The present study involves the phytochemical examination and to check the possible synergistic interaction of essential oils against pests. The plant materials were collected from Kumaon region of Uttarakhand. The essential oils (EOs) were obtained through hydro distillation from different parts of the plants (aerial part of Artemisia scoparia (ASAO), root part of Artemisia scoparia (ASRO) and aerial part of Centratherum punctatum (CPAO). The percent yield was 0.5 to 0.1% (v/w). The GC-MS analysis revealed the presence of 35, 43, and 49 compounds, constituting 99.2%,98.34%, and 99.93% in ASAO, ASRO, and CPAO, respectively. Capillene was identified as the dominant compound both in ASAO and ASRO, but in variable amounts. Caryophyllene oxide (36.4%) was identified as the major component of CPAO. Pure EOs was blended in binary and ternary mixtures at ratios to analyze their synergistic effect against pests. Experiment was performed using standard protocol. The nematicidal activity (percent mortality and egg hatchabilityagainst Meloidogyne incognita) at different concentrations was evaluated. The blending of EOs resulted in synergistic effects, enhancing their efficacy. These findings revealed the potential of A.scoparia and C. punctatum essential oils as natural alternatives for nematode control in agriculture.

Adsorption Behavior of Dyes onto Pennisetum Glaucum in Wastewater Effluent

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ABSTRACT

Improved understanding of human health risks, environmental persistence, and widespread dispersion of organic and inorganic contaminants has driven ongoing development of stringent regulations for these compounds in water. One of the promising methods of removing of contaminants from the waste water is adsorption. Agricultural waste or by- products can be used as low-cost adsorbents for contaminants removal. Low-cost adsorbents provide particular economic and environmental advantages. Herein, Pennisetum glaucum was used for the adsorptive removal of Erythrosine B dye from aqueous solutions for the first time. The prepared biosorbent was analyzed with different characterization techniques to investigate the surface morphologies, functional groups and thermal stability. Batch adsorption studies were conducted to study the effectof different parameters such as contact time, initial dye concentration, biosorbent dosage and pH on the removal efficiency. Further, the kinetics, equilibrium and thermodynamics of the adsorption process were evaluated with the help of various models. Moreover, the results depicted excellent reusability of the biomass for repeated adsorption cycles, making the process economically viable.

Development of Methyl Blue Dyed Electroactive Cellulose Fabric: An Approach for Dyeing Using Green Methods

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The traditional aqueous dyeing of textiles is a water-intensive process. The textile business frequently involves wet processing and finishing methods to improve the aesthetics and utility of textile fabrics, which have a high-water usage. According to estimates, 1 kilogramme of fabric requires between 100 and 150 litres of water to be coloured. As a result, over 280,000 tonnes of textile dyes are thrown in industrial effluents every year, endangering both human health and aquatic life. Present study demonstrates the development of a series of green methodologies pertaining to dyeing of cellulose fabrics (CFs) with methyl blue (MYB, 200μL), due to disposal ofhazardous carcinogenic dye effluent into the water bodies as well as high energy expenditure involved in traditional aqueous dyeing methods. Green procedures of dyeing were conducted overCFs (1 inch2) followed by either of hot air drying (10 min), MW irradiation (3 min) and SCC treatment (3hr), each at 70oC. The produced dyed fabrics (DFs) were investigated for their DC conductivity (σDC) through four probe arrangement in coherence with cyclic Voltammetry (CV). The performance of DFs towards detection and quantification of MYB dye was investigated through square wave voltammetry (SWV) in KCl (0.1M). SWV reveals that the DFs derived fromCFs with 200 μL of MYB has rendered highest limits of detection and quantification of MYB (10−3 mg/L) up to 4.10 and 12.60.

Utilizing Low-Molecular-Weight Organic Acids for The Extraction Of Heavy Metals From CETP Sludge: A Batch Study

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ABSTRACT

The industrial sector in India has expanded significantly with the industrial revolution, leading to afour-fold increase in waste generation. The sludge produced in this process contains toxic organic and inorganic compounds, hazardous substances, and disease- causing pathogens. Direct use of thissludge is not possible, so it is essential to find an eco- friendly, efficient, and low-cost method to extract the heavy metals from it, from both an environmental protection and human health perspective. In this study, we used low molecular weight organic acids, which have two advantages:they can be used under mild acidic conditions, and they can be easily degraded by micro-organismspresent in the sludge. We conducted several batch scale studies using three different organic acids - acetic acid, citric acid, and oxalic acid - to extract heavy metals such as chromium, lead, iron, manganese, nickel, zinc, copper, and magnesium from CETP sludge samples. We pre- conditionedthe sludge to reduce unwanted components and improve the performance of the leaching process. We optimized the process parameters, such as size fractions, pulp densities, pH, and organic acid concentrations, to achieve maximum metal removal. Our investigation revealed that oxalic acid wasthe most effective extracting agent. It resulted in a chromium solubilization rate is the highest among the three acids, while citric acid showed high solubilization rates for iron and zinc within 48hours at a pH of 2.0. We found that the highest leaching recoveries for all metals were achieved with a lower size fraction (355 µ) than other size fractions (420µ and 710µ). This was because a smaller particle size increases the surface area, providing more sites for the attack of protons and resulting in better solubilization of metals. We compared our results with those of inorganic acids and other complexing agents but found them to be impractical due to cost and the negative impact caused by the generation of by-products. We believe that organic acids could extract metals by forming strong complexes with heavy metal ions and efficiently remove them from the solution by precipitation. Therefore, the use of organic acids showed good potential compared to other leaching agents.

Environmentally Friendly Polymers

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ABSTRACT

In the present scenario there is much requirement of eco-friendly polymers. Due to dependence of polymers on conventional fuels and the sustainability problems related to plastic waste. Here it is important to concentrate in the food packaging industry due to high volume of a waste is going to generate. Presently biopolymers are considered as most promising material to solve ecological problems. But these still exhibit inferior performance regarding both process ability and their application. Combining current represents a very cost effective strategy to enhance the ductility and impact resistance of biopolymers. Different lingo-cellulosic materials can be used as reinforcing filters in polymer materials for improving the overall properties, lower the environmental impact and also reduce the cost. The use of essential oils, waste derived liquids and some vegetable oils can be used as natural plasticizers, reactive compatibilizers or active additives for the development of new polymer formulation to increase performance and improved sustainability.

Commercially Important Artemisia species of Uttarakhand Himalaya and their Sustainable Use in the Development of Uttarakhand

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Abstract: In spite of vast investment in synthetic drugs, there is a large amount of interest in plats as a source of therapeutic agents. Several drugs are based on natural products as such or their derivatives. During recent years the attention of the pharmaceutical industry has switched once more to the natural words. In India about 300 million people are solely dependent and about 200 million are partially dependent on Ayurveda drugs. The Artemisia (Asteraceae) popularly Known as 'Sagebrush' or 'Wormwood' is a source of valuable drugs and essential oils. Artemisia is represented by more than 20 species in Uttarakhand. Because of Medicinal importance and intricate chemical composition of several varieties and chemotypes, we made our attention on Himalayan Artemisia species viz. Artemisia wallichiana, Artemisia mariantha var. pleiocephala, Artemisia eligantissima pamp.var. Kumaunensis, Artemisia roxburghiana var. hypoleuca, Artemisia indica var. indica and Artemisia indica Willd. Artemisia species from different origins, show a dominant presence of 1,8-cineol specially use for the treatment of respiratory diseases and Cardiovascular etc, germacrene D shows antibacterial and antifungal activities. One or two of these compounds are generally dominant to the exclusion other compounds. The important anti- malarial sesquiterpene lactone artemisinin and derivatives were isolated from Chinese herb A. annua. However, there are very few reports on biological activity of Himalayan Artemisia species viz. vulgarone B is bearing molluscicidal activity, thujone are specially used for active ingredient of wormwood oil and some other herbal medicines, and davanone obtained from davana oil shows antifungal, antispasmodic and antibacterial properties.

Enhanced Adsorptive-Removal Of Mn2+ Using Zirconium Doped Iron-Oxide Nanocomposite: A Green Chemistry Approach

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Abstract: In the present investigation, we have effectively synthesised zirconium doped iron- oxide nanocomposite using co-precipitation approach. The synthesized nanocomposite was subsequently subjected to TEM, SEM-EDX, FT-IR, TGA, BET surface area analysis, and Zeta potential measurement analyses. To put it briefly, zirconium oxychloride and ferric chloride solutions were combined and heated to around 60°C. Until the pH of this heated mixture reached 10, it was progressively treated with a sodium hydroxide solution while being continuously agitated. The resulting precipitate was further washed, dried, and crushed into very small particles. Atomic absorption spectroscopy was used to ascertain the Mn2+ content following adsorption, which was carried out utilising a batch adsorption approach on synthesized nanocomposite. The Mn2+ adsorption data on synthesized nanocomposite were fitted using the Langmuir, Freundlich, and Temkin adsorption models; under ideal circumstances of pH, Mn2+ concentration, adsorbent quantity, duration, and temperature, the Langmuir model showed the best agreement with the data. The study's findings demonstrate that Mn2+ may be effectively removed from aqueous solutions using synthesized nanocomposite as an adsorbent. Reducing garbage and using it as an adsorbent is a useful and sustainable method.

Luminescence Dating

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Abstract: A collection of numerical-age methods known as luminescence dating is one of the most important tools for chronology currently utilized in Quaternary research. This paper momentarily audits the vital verifiable improvements in radiance dating, from its foundations in thermoluminescence dating of warmed minerals to the advancement of optical dating techniques for daylight uncovered dregs. We portray the standards and reasonable items of the different strategies usually utilized in glow dating, including various aliquot, single-aliquot and single-grain systems, and we examine probably the furthest down the line ways to deal with perceiving and limiting expected blunders in age assessment (e.g., through part examination and portion dispersion techniques in optical, Recent advances include a)optical excitement units in view of new-age strong blue light(470 nm) discharging diodes giving up to 28 mW/cm2 for OSL estimations; b)an infrared laser diode unit with an output of up to 400 mW/cm2 for stimulating feldspars (830 nm) lastly (c) an optical feeling connection in view of an engaged strong state green (532 nm) laser for fast OSL estimations of individual sand-sized single grains of an example.

Pure & Applied Physics

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Spectroscopic Study Of Tb3+ Doped Borate Glasses For Visible Luminescent Device Applications

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ABSTRACT

Borate glasses doped with different terbium (Tb3+) ions concentration were synthesized via melt quenching method. The XRD spectrum was performed to confirmthe amorphous nature while FTIRwas performed to confirm the presence of functional groups in the as-prepared glasses. By correlating absorption and emission profiles, the Judd-Ofelt (J-O) intensity parameters evaluated. The J-O parameters were further used to evaluate branching ratios, transition probabilities, radiative lifetimes for all glasses. It is observed that the green emission increases with increase in Tb3+ ions concentration up to a certain concentration and decreases beyond. Further, from the emission spectra CIE color coordinates were evaluated and observed to fall in intense green region. From the aforementioned results, it is concluded that the as-prepared glasses are suitable for visible luminescent device applications.

Study of Geomagnetic Storms with Respect to Interplanetary Parameters and their Product Function for Solar Cycle 23-24

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ABSTRACT

In this paper we study a long-term correlation investigation employing in hour temporal resolutionaverages of solar wind parameters (such as solar wind speed, plasma proton temperature, and IMF Bz, Ey components), interplanetary parameters, interplanetary product functions, and geomagnetic activity indices for the studied period of 2010-2017 (solar cycle 24). The analysis technique used in this study is the superposed epoch method. The main goal of the current study is to comprehendhow long-term hourly averages of these parameters are impacted by differences in solar wind structures caused by solar cycle fluctuations. We analyse storms of different intensities that happened over an extended period spanning nearly two solar cycles. In this investigation, a geomagnetic storm was identified via the Dst index. Strong association is obtained via a statistical correlative analysis using the superposed epoch approach to examine the Dst index with various solar wind parameters, interplanetary parameters and interplanetary fields components Bz and Ey. The correlation coefficient that our study yielded strongly implies that the origin of geomagnetic storms is significantly influenced by solar wind speed, plasma proton temperature, and southward interplanetary magnetic field IMF Bz and Ey.

A Comparative Study of Moderate, Intense and Severe Geomagnetic Storms in Relation To Solar Wind Speed For Solar Cycle 20

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ABSTRACT

This research paper uses the hourly mean averages of geomagnetic activity index and solar wind speed to conduct a correlation investigation between solar wind speed and geomagnetic activity index for the studied period of 1964-1975 by the incorporation of the analysis technique by the superposed epoch method. A prime motivation of the present study is to understand the storms of all sizes which occurred over a given period. In the present study, we used the Dst index as a sign of a geomagnetic storm. A statistical correlative study of the Dst index with solar wind parametersby the superposed epoch method yields good correlations. The correlation coefficient, we obtainedfrom our research work strongly suggests that solar wind speed, have a strong impact on the cause of geomagnetic storms. The outcome of the current analysis indicates that solar wind speed is a geo-effective parameters and act as reliable indicators for predicting the strength of geomagnetic storms.

Variation of Cosmic Ray Intensity and Interplanetary Magnetic Field with Solar Wind Speed for Solar Cycles 23

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ABSTRACT

In this study, we examine how the interplanetary magnetic field (IMF) and cosmic ray intensity (CRI) vary for SC 23 in relation to high- and slow-speed solar wind streams (HSSWS and SSSWS, respectively). We observed an inverse relationship between CRI and SSSWS and HSSWS. The coefficient of correlation for HSSWS is higher than that of SSSWS, indicating that HSSWS are more capable of causing a decrease in CRI than SSSWS. Overall, our study shows that, for solar cycle 23, there is very low correlation between CRI, IMF, and the product of solar wind speed and IMF (V.B).

Evaluation of morphological characteristics of brown flaxseeds to assess their behaviors amid production operations.

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ABSTRACT

Flaxseeds, which come from the flax plant, have been farmed for thousands of years and are prized for their adaptability and range of uses. Scientifically referred to as ‘Linum usitatissimum’, flaxseeds have attracted a lot of attention lately because of their exceptional nutritional profile and possible health advantages. These

small seeds, also known as linseeds, are a great source of lignans, omega-3 fatty acids, majorly Alpha-linolenic acid (ALA), dietary fiber, protein and other important vitamins and minerals. Flaxseeds have long been used in industry, medicine, and cooking; their applications range from the production of textiles to dietary supplements. The purpose of this study is to determine the physical properties of flaxseeds in order to design and select the methods and procedures of their processing, storage, handling etc. These properties mainly include their dimensions, aspect ratio, equivalent diameter, sphericity, bulk density, true density, porosity, thousand seed weight and the angle of repose. Understanding the physical characteristics of flaxseeds is critical to maximizing nutritional value, optimizing product development, supporting storage and handling, assuring quality control, and enhancing processing efficiency.

Teleportation of Multiparticle Entangled States

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ABSTRACT

The ability of instantly transferring a living being or thing from one place to another is known as teleportation, and it is purely imaginary. It frequently involves the living being or object breaking down at a specific location and then reforming at a different location. Although it is currently impossible, teleportation is frequently portrayed in science fiction films and anime. An example of this kind of technology was seen in the Doraemon anime series "Anywhere Door" (Japanese: Dok demo Dao). One of Doraemon's devices lets the user to travel any area instantaneously by only opening the door and saying where they would like to go. Entangled particles are subatomic particles, such as electrons or photons, whose characteristics are correlated enough that, regardless of their distance from one another, the state of a specific particle instantaneously affects the state of another particle. One of the primary components of quantum physics is the phenomena known as quantum entanglement, which has been repeatedly verified experimentally. Based on the phenomena of quantum entanglement, quantum teleportation is a method that enables the exchange of quantum information from a specific location to a different location without affecting the actual movement of particles. A particle's quantum state, such as its spin or polarization, can be entangled with another particle across a distance to perform quantum teleportation. The quantum configuration of the original particle can be replicated on a faraway particle by measuring the entangled particle and transferring the measurement results together via classical channel, therefore "teleporting" the quantum information. Through this procedure, the original particle is destroyed, but its quantum state is conserved. One of the schemes for teleporting an unknown quantum state of many particles will be covered in this paper: the Entanglement swapping methodology. In simple terms, this method works by arranging the sharing of an ERR pair of particles as electrons or protons prior to each time. Our approach is the result of expanding Bennett et al.'s (1993) quantum teleportation scheme to the multiparticle event. It is of the utmost importance to have an idea about how to execute a multiparticle quantum teleportation since it may be very helpful in quantum computation and quantum communication.

Study Of Properties of Pure and Nanoparticle Doped Cholesteric Liquid Crystal

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ABSTRACT

This paper examines the effect of silver nanoparticles on optical behavior and acoustical parameters of Cholesteryl Pelargonate. The ultrasonic attenuation and relaxation time is evaluated by measuring velocity of sound passing through samples at 1MHz with an ultrasonic interferometer at various temperatures. The wavelength dependence of birefringence of Cholesteric liquid crystal andits nanocomposites is determined with hollow prism method at room temperature. The phase transition temperatures and clearing temperatures are determined with an optical polarising microscope. In order to understand their molecular dynamics and optical transmission capabilities, the acoustical parameters were measured. A small weight percent of silver nanoparticles has significantly increased the ultrasonic attenuation, relaxation time and birefringence of LC material. The ultrasonic attenuation and relaxation time of nanoparticle doped cholesteric liquid crystals decreases with the increase in the concentration of nanoparticles in it. The blue phase temperature range of LC material is broadened with the dispersion of silver nanoparticles.

Analyzing the Decoherence on Biphoton and Schrödinger Cat States through Wigner Function.

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ABSTRACT

This study delves into the phenomenon of decoherence in biphoton states and Schrödinger cat states, employing a comprehensive analysis based on the Wigner function. The primary focus is on deriving the Wigner function to gain insights into the decoherence processes affecting these quantum states. By examining the behavior of the coincidence rate associated with the considered states, we aim to uncover the intricate dynamics of decoherence. A crucial aspect of our investigation involves a comparative analysis between biphoton states and Schrödinger cat states sharing the same spatial modes. This comparative study provides valuable insights into the distinct decoherence patterns exhibited by these quantum states under similar conditions. By considering the influence of an external environment, we further extend our exploration of decoherence, aiming to understand how environmental factors impact the stability and coherence of these quantum states. Keywords: Hong-Ou-Mandel interferometer, Wigner function, Decoherence, Entanglement.

Dark Matter's Classification using Octonions Analysis

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ABSTRACT

An analysis of the function of octonions in the several unified field theories related to dark matter and dyons has been attempted. We have covered the octonionic unified gauge formulation for SU(2) × U(1) electroweak theory and SU(3) × SU(2) × U(1) grand unified theory, beginning with the split octonion algebra and its properties. We have reexamined the unified picture of EM-G space in terms of octonionic split formulation, characterizing the octonion eight-dimensional space as the combination of two quaternionic spaces (namely associated with the electromagnetic interaction (EM-space) and linear gravitational interaction (G-space) in a constant manner. Thus, for unified gravi- electromagnetic interactions, we have found the different field equations. Additionally, using split octonions, we have recreated the field equations for both hot and cold dark matter. It is demonstrated that the octonion hotdark matter's (OHDM) velocities wipe out structure on small scales, making the difference between octonion cold dark matter (OCDM) and octonion hot dark matter (OHDM) important in the formulationof these two types' structures.

Ehrenfest's Theorem for Two Potential Field Theory of Gravito-Dyons

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ABSTRACT

The Hamiltonian of Dirac fields in presence of gravito - dyons (particle carrying simultaneously the gravitational and heavisidian charge) we have discussed the validity of Ehrenfest's theorem for gravitational and heavisidian charge. The equation of motion of gravito-dyons may be visualized as thegeneralization of Ehrenfest's theorem for gravito-dyons moving in generalized gravito-heavisidian fields. The Lagrangian formulation for the gravito-heavisidian fields in a minimum coupled source which justifies the conserved Dirac current for gravito-dyons. Applying the Gupta subsidiary condition,we have also reproduced the classical equation of motion and the validity of Ehrenfest's theorem to abelian quantum field theory and the quantum equation of motion reproduces the classical equation of motion which is the generalized form of the Ehrenfest's theorem in quantum field theory for gravito-dyons.

Dual Z-Scheme based Photoactive CdO : TiO_2 : ZnO : g-C_3N_4 Nano Composites for Advance Oxidation Process

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In the present work, dual Z-scheme-based non-metal g-C3N4 and metal oxides [(CdO0.50:0.50TiO2):ZnO1.00] nanocomposites (NCs) were synthesized by sol-gel precipitation and thermal polycondensation methods, respectively. The quandary [(CdO0.50:0.50TiO2):ZnO1.00]:g-C3N4] NCs were used for the advanced oxidation process under visible light exposure. Microscopic FE-SEMimages confirmed the morphology, which varied from a compact crystal-like structure to mesoporous and then to a compact sheet-type structure for samples CTZG0 - CTZG4. XRD patterns revealed that polycrystallinity was observed for all samples except g-C3N4. Moreover, g-C3N4 interacts with Zn+2 and Cd+2 extensively while not for Ti+4, resulting in significant changes observed in the lattice site of ZnO,CdTiO3, ZnTiO3, and CdO only. The optical study was carried out with the help of UV spectrophotometer. Dual z- scheme based NCs show excellent catalytic activity under the visible exposure. Sample CTZG4 shows the maximum degradation efficiency of 99.7%, 99.8 %, and 99.9 % for methylene blue (MB), methyle green (MG), and methyle orange (MO), respectively, in visible illumination. Despite this, g-C3N4 embroiled with [(CdO0.50:0.50TiO2):ZnO1.00], resulting in a more active area would be obtained for the catalytic reaction by breaking the aromatic ring from their central.Mineralized factors: chemical oxygen demand (COD) and biochemical oxygen demand (BOD) achieved the maximum removal efficiencies of 89.4% and 88.9% for sample g-C3N4.

Advance Deposition Techniques for Thin Film preparation and Characterization

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The advance thin films deposition techniques has a great impact on the modern era of technology. Thin films are considered as backbone for advanced applications in the various fields such as optical devices, environmental applications, telecommunications devices, energy storage devices, and so on. The crucial issue for all applications of thin films depends on their morphology and the stability, that can be controlled by applying the various advance synthesis processes. The morphology of the thin films strongly hinges on the deposition techniques. Thin films can be deposited by the physical and chemical routes. In this research papers, we discuss some advance techniques and principles of thin film depositions. The vacuum thermal evaporation technique, pulsed-layer deposition, sputtering, and chemical route deposition systems discussed in detail.

Identical Band Spectra and Level Spin Study in Super Deformed Nuclei for A~130 Mass Region

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ABSTRACT

We have conducted a comprehensive analysis of all available Super deformed (SD) bands within the A-130 mass region, utilizing the modified Variable Moment of Inertia (VMI) model to investigate level spins. In cases where experimental spin data are lacking, we estimate the band- head spin. Our approach yields quantitatively robust results for both the γ-energies and spins across all bands. Additionally, we scrutinize the ratio of transition energies over spin (Eγ/2I, RTEOS) to validate the correctness of band-head spins and level spins using the VMI equation. Notably, the calculated transition energies closely align with observed values. As a significant outcome of our study, we report the band-head spin alongside level spins and identify identical bands within the A~130 mass region of Super deformed bands. We successfully resolve the tentative nature of level spins and identical bands, offering insights crucial for future investigations in this field. These findings serve as valuable resources for advancing future studies in this area.

Time Dependent Magnetic Field on Strange Quark Matter

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ABSTRACT

This study delves into the behavior of strange quark matter when subjected to time-dependent magnetic fields (TDMF). The interaction between magnetic fields and quark matter represents a complex and relatively unexplored realm of research, holding potential implications for fundamental particle physics and astrophysics alike. Leveraging theoretical models, our research endeavors to unravel the effects of TDMF on strange quark matter. We scrutinize how these fields impact various properties of strange quark matter, including its equation of state and other pertinent parameters. Through our findings, we illuminate the intricate interplay between magnetic fields and strange quark matter, providing valuable insights into the behavior of matter under extreme conditions. Furthermore, our results offer practical utility in scenarios involving TDMF, paving the path for future investigations that may unveil novel phenomena and applications pertaining to the unique properties of strange quark matter in the presence of dynamic magnetic fields.

A Theoretical Study Of Level Spin In A~130 Super Deformed Nuclei

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Our analysis is centered on the Super deformed (SD) bands within the A~130 mass region, employing the modified Variable Moment of Inertia (VMI) model for a comprehensive examination of level spins.Where experimental spin data are lacking, we deduce the band-head spin. Utilizing the modified VMImodel consistently yields robust quantitative results for both γ-energies and spins across all observed bands. To validate the accuracy of band-head and level spins, we scrutinize the Ratio of Transition Energies over Spin (RTEOS), calculated using the VMI equation. Remarkably, there is strong agreement between calculated and observed transition energies. A significant outcome of our study is the elucidation of band-head spins, level spins, and the identification of identical bands within the A~130 mass region's Super deformed bands. These findings play a crucial role in clarifying the tentativenature of level spins and identical bands, thereby providing valuable insights for future studies in this field.

Effect Of Magnetic Field on Strange Quark Matter

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ABSTRACT

In this paper, we endeavor to calculate the thermodynamic observables of strange quark matter under the influence of a magnetic field employing a quasiparticle approach. We adopt a thermal quark mass which offers potential benefits in computing the equation of state for strange quark matter in the presence of strong magnetic fields. Utilizing this quasiparticle methodology, we probe the equation ofstate to examine diverse properties of strange quark stars under varying magnetic field strengths, adjusting for appropriate factors.

Evolution Of Early Universe of Quark Gluon Plasma With Chemical Potential

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ABSTRACT

We study on intriguing properties of the early universe featuring quark-gluon plasma (QGP). Employing a quasiparticle model, we ascertain the equation of state of QGP using the Friedmann equation. Understanding the behavior of QGP at finite values of chemical potential during the early stages of the universe presents a significant challenge. In this endeavor, we thoroughly explore temperature alongside other thermodynamic observables, employing fitting parameters where necessary. The inclusion of chemical potential proves pivotal in elucidating the variation of thermodynamic variables over time. This study yields valuable insights into comprehending the behavior of QGP during the formation of the early universe, particularly in the presence of chemical potential.

Electromagnetic Radiation of Quark Gluon Plasma at Finite Chemical Potential

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We investigate the electromagnetic signal in the presence of chemical potential utilizing a quasi-particleapproach. Our calculations consider a finite quark mass along with a small chemical potential, pertinentto highly dense and hot systems of quark-gluon plasma (QGP). Our findings reveal a notable enhancement in the production rate of diphotons within QGP when subjected to a chemical potential. These outcomes are systematically compared with existing research. Such results hold significance incorroborating the state of QGP observed at RHIC and LHC experiments. Keywords - Quark Gluon plasma, chemical potential, electromagnetic radiations, quantum chromodynamics.

Pure & Applied Mathematics

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A Study of Proximity Points in Different Settings of Contraction

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ABSTRACT

This talk presents a new proof of the best proximity point theorem by utilizing a Suzuki type setting, which extends Banach's contraction principle to the scenario of non-self-mappings. Actually, given a non-self-mapping $T : A \rightarrow B$, it is not guaranteed that there will always exist a fixed point. Therefore, it is customary to search for an element x that is in some sense closest to T x. Theorems on best approximation and best proximity points are applicable in this context. However, on one hand where the best approximation theorems ensure the existence of approximate solutions, it is possible that these outcomes do not necessarily provide optimal solutions. On the other hand, the best proximity point theorems offer sufficient conditions which ensure the existence of approximate solutions that are also optimal. For a non-self- mapping $T : A \rightarrow B$, the best proximity point is an optimal approximate solution of the equation $T x = x$ which satisfies the condition $d(x, T x) = d(A, B)$. Furthermore, it is evident that best proximity points theorems arise as a logical extension of fixed-point theorems, because best proximity point is essentially a fixed point when the mapping being considered is a self-mapping. Numerous best proximities point theorems for various types of contraction shave been studied in references Furthermore, our results define the completeness of the metric space with some different sufficient conditions.

Mathematical Modeling and its Applications in Biological System

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ABSTRACT

Mathematical modeling is the process of creating mathematical representations of real-world systems or phenomena. The purpose of these models is to describe, predict, and understand the behavior of complex systems by using mathematical equations, rules, or algorithms. Mathematical models can be conceptual or computational and are widely used across various disciplines, including physics, engineering, economics, and biology. Mathematical modeling serves as a critical tool in understanding the complex dynamics of biological systems. Biofluid dynamics, the study of fluid flow phenomena in biological systems, presents unique challenges and opportunities for mathematical modeling. Mathematical models, including computational fluid dynamics simulations, analytical and numerical solutions, provide insights into the complex relationship between fluid mechanics and physiological functions. Through the integration of fluid dynamics simulations, biomechanics, and computational methods, mathematical models enable researchers to explain flow patterns, quantify hemodynamic parameters, and predict the effects of pathological conditions and therapeutic interventions. This paper explores the diverse applications of mathematical modeling in biomechanics.

Mathematics in Vedic Hymns: Significance and an Application

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ABSTRACT

We will discuss some Vedic hymns which show the existence of decimal system of counting during or before the Vedic Era. We also discuss the significance hymns in Yajurved which contain odd numbers and multiples of four. Further, we discuss an application of a Fibonacci sequence motivated by the relationship between the odd numbers and multiples of four. Fibonacci numbers were used more than 2200 years ago by Grammarian Pingal in enumerating patterns of Sanskrit poetry.

A focus on Mathematics Teaching and Learning using Technology

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ABSTRACT

Over the years we experienced an increasing number of students at universities. At the University of KwaZulu-Natal, Durban, South Africa the increase in student numbers for mathematics was not accompanied by an increase in the number of teaching staff. Further, we found that the incoming students were underprepared to study university mathematics. This presentation will focus on how we exploited the use of technology to cope with the increasing number of incoming underprepared mathematics students without reducing our standards. The resarch will focus on:

- e-learning
- Overall strategy
- Example of a module website
- Use of PC tablet
- Online diagnostics
- Pre-calculus
- Undergraduate mathematics
- Students working
- Examples of available online resources
- Online assessment plan from 2018 onwards

A Computational Method to Sun Spot Number Data based on Intuitionistic Fuzzy Set

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ABSTRACT

Recently, to handle non-probabilistic uncertainty and non-determinism in the system, intuitionistic fuzzy set (IFS) has proven to be a more effective tool than fuzzy set. The current study suggests a computational solution based on IFS to handle the nondeterminism problem in time series forecasting. The proposed IFS-based forecasting approach forecasts without the use of complicated computations by applying intuitionistic fuzzy logical relations. Sun Spot Number are projected in order to evaluate the suggested method's effectiveness for forecasting. In the study, root mean square error and average forecasting error tools are implemented to enhance the superior performance of the suggested IFS- based computational forecasting technique and represented in terms of graph.

A Fractional Integral Operator Associated with a Variant of Multivariate Mittag-Leffler Function

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ABSTRACT

This paper aims to study the generalized fractional integral operator and its connection with a generalized Mittag-Leffler function. The composition formulas involving the pathway fractional integral operator and a variant of multivariate Mittag-Leffler's function are evaluated. The images of a variant of multivariate Mittag-Leffler's function under the classical Riemann- Liouville fractional integral operator and the Laplace integral transform are emphasized as special cases of the image of the function under the pathway fractional integral operator.

A Survey on Generalization of Contractive Maps and Discontinuity at Fixed Point

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ABSTRACT

This paper provides a comprehensive survey on the generalization of contractive maps and the phenomenon of discontinuity at fixed points. Various definitions and results pertaining to generalized contractive maps are discussed, offering insights into the diverse approaches taken by researchers in this field. Additionally, the work of different scholars regarding discontinuity at fixed points is examined, shedding light on the intricacies of this phenomenon. Through an exploration of continuous mappings, fixed point theorems, completeness, and contractive conditions, this survey contributes to a deeper understanding of the theoretical foundations and practical implications of generalizations of contractive maps. The study is classified under the 2020 Mathematics Subject Classification, with primary emphasis on 47H10 and secondary focus on 54H25. This analysis aims to enrich mathematical analysis and provide valuable insights for further research.

The Significance of Vedic Mathematics in the Field of Mathematics

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ABSTRACT

Vedic mathematics offers a unique method of solving mathematical puzzles and comes from the Vedas, an ancient collection of Indian literature. The present abstract delves into the relevance of Vedic mathematics within the wider field of mathematics, emphasizing its influence on conventional techniques, mental operations, and the philosophical foundations of mathematical reasoning. Vedic mathematics' primary value is found in the alternate approaches it offers. Vedic mathematics challenges conventional methods by providing non-traditional methods for basic arithmetic operations including addition, subtraction, multiplication, and division. This variety of approaches not only improves computational efficiency but also encourages mathematicians to think more creatively and adaptably. Vedic mathematics emphasizes simplicity and efficiency, which is in line with the elegance desired in abstract mathematical reasoning. The simplified methods promote a deeper comprehension of mathematical ideas in addition to making mental computations easier. This simplicity supports a holistic approach that emphasizes the connections between various mathematical concepts. Finding patterns and investigating the connections between numbers are important aspects of Vedic mathematics. Since the capacity to identify and understand patterns is a prerequisite for sophisticated mathematical reasoning, this emphasis on patterns improves abstract mathematical thinking.

Advancement of Super Prime in Cryptography

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ABSTRACT

This article introduces the use of "super primes" in cryptography, proposing an algorithm for data encryption and decryption based on RSA Algorithm. The utilization of super primes enhances security in communication protocols. Additionally, a Java program is developed for generating encryption and decryption keys. Keywords include prime number, super prime, RSA algorithm, and cryptography. The Mathematics Subject Classification (MSC2020) for this work is 11T71, highlighting its relevance in number theory and cryptographic applications. This advancement offers promising prospects for bolstering security measures in data transmission and storage.

Analyzing Unsteady Magnetohydrodynamic Free Convective Flow of Casson Fluid Past a Vertically Oscillating Plate Through Porous Medium using FDM with Heat Source Influence.

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ABSTRACT

In this research, we explore the dynamics of unsteady magnetohydrodynamic (MHD) flow involving a caisson fluid interacting with a vertically oscillating plate. The vertical plate maintains a constant wall temperature and heat source throughout the study. The fluids involved are conductive and flow through porous media, and we utilize partial differential equations with specified initial and boundary conditions to model this complex phenomenon. To simplify the mathematical representation, we introduce dimensionless variables. The finite difference method (FDM) is employed to solve the consistent set of dimensionless equations along with the prescribed conditions. The energy and momentum equations are precisely addressed. Furthermore, we derive expressions for the Nusselt number and skin friction. The calculated results are meticulously analyzed in terms of emerging flow parameters. Additionally, we provide a thorough explanation of the impact of skin friction and Nusselt numbers, presenting the findings in tabulated form. It is noteworthy that an increase in the heat source size corresponds to elevated temperature and fluid speed.

Dea and its Application in Banking System

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ABSTRACT

Data envelopment analysis (DEA) is a linear-programming-based method for assessing the performance of homogeneous organizational units and is increasingly being used in banking. The unit of assessment is normally the bank branch. Studies are mostly centered on deriving a summary measure of the efficiency of each unit, on estimating targets of performance for the unit, and on identifying role-model units of good operating practice. Additional uses for DEA in banking include the measurement of efficiency in light of resource and output prices, the estimation of operating budgets that are conducive to efficiency, the assessment of financial risk at bank-branch level, and the measurement of the impact of managerial change initiatives on productivity. This article takes 80 branches of a certain bank in Uttarakhand India in 2021 as the research subject and introduces data envelopment analysis (DEA) to evaluate the operating performances of business units of this bank to provide the reference for a bank's managers in determining operation strategies. The result indicates that, in overall technical efficiency (OTE), the case bank has many inefficient branches distinctly; the average overall technical efficiency of branches is 54.8% and the average pure technical efficiency (PTE) of branches is 67%, which is probably because of lower loan-to-deposit ratio, leading to excessive input waste. The average scale efficiency (SE) of the case bank during the sample period is 80%.

Study of the Fundamental Statistical Research Using the Tools for Data Analysis

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ABSTRACT

A study's planning, design, data collection, analysis, meaningful interpretation, and publication of its findings are all done using statistical methods. The statistical analysis gives the life into a set of lifeless data by providing meaning to otherwise meaningless figures. Only when appropriate statistical tests are applied will the findings and conclusions be accurate. An overview of the factors, knowledge of both quantitative and qualitative variables, and measures of central tendency are all covered in this article. A general understanding of power analysis, statistical mistakes, and sample size estimation is provided. A summary of the parametric and non-parametric tests utilized in data analysis is provided at the end.

Climatic Dynamics of Lahaul and Spiti, Himachal Pradesh: A 102-Year Analysis of Precipitation and Temperature Trends

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ABSTRACT

Himachal Pradesh, known for its diverse flora, fauna, and climate zones, undergoes annual variations in temperature and precipitation across its regions. This study zooms in on the Lahaul and Spite district, spanning a 102-year period (1901-2002), to comprehensively analyze weather parameters, with a focus on precipitation, maximum, and minimum temperatures. Utilizing Microsoft Excel and IBM SPSS, the research employs statistical measures to evaluate trends at annual, seasonal, and monthly scales, testing for normality, and identifying non-normal distribution. The comparative analysis involves fitting trend lines using the least squares method, uncovering both significant and insignificant trends in winter and monsoon precipitation. Distinct trends emerge in pre-monsoon and post-monsoon seasons, while annual and monthly precipitation display statistically insignificant increases. Temperature trends, on the other hand, showcase significant increases in pre-monsoon seasons and decreases in winter, monsoon, and post-monsoon periods. Notably, there are significant upward trends in both annual and monthly maximum and minimum temperatures. The study underscores the climatic intricacies of Himachal Pradesh, shedding light on the nuanced variations observed over the past century. The findings contribute to a better understanding of the region's climate dynamics, providing valuable insights for climate researchers, policymakers, and environmental stakeholders in Himachal Pradesh.

Fuzzy Multi Criteria Decision Making (FMCDM) In Dairy Selection Products

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ABSTRACT

Multiple criteria decision making (MCDM) is a modeling and methodological tool for dealing with complex engineering and mathematical problems. Decision makers face many problems with incomplete and vague information. In recent years the fuzzy set theory along with MCDM criteria is best modelling tool for solving various complex systems. The goal of MCDM is to help the decision maker (DM) to make a choice among a finite number of alternatives or to sort or rank a finite set of alternatives in terms of multiple criteria. In this research paper, Dairy product-milk components are considered for choosing the best one across Uttarakhand. TOPSIS is one of the selection procedure techniques which provide a base for decision making processes where there is limited number of choices, but each has large number of attributes. With the help of MCDM methods we are getting more sensitive, concrete, and realistic results. Fuzzy TOPSIS method is used to obtain the best result in a decision-making problem. Finally, the best alternative is obtained which maximizes the resources and enhance the local benefits.

A Holistic Approach to Eco-Friendly Perishable Supply Chains

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ABSTRACT
In response to the dynamic business landscape and evolving customer demands, effective supply chain management (SCM) has become increasingly crucial. This significance is particularly evident for companies facing challenges such as shorter product life cycles and changing customer expectations, with a heightened focus on sustainability. The unique challenges presented by perishable goods in inventory management due to their limited shelf life underscore the necessity for specialized inventory strategies. Efficient energy consumption, particularly within refrigeration systems, emerges as a critical factor for preserving the quality and safety of perishable goods. The study delves into the intricate challenges associated with transportation activities, emphasizing the concept of a green supply chain to minimize environmental pollution, energy consumption, and carbon emissions. The research addresses physiological stress indicators in perishable products (PPs), highlighting the need to manage respiration rates to extend shelf life without compromising product quality.

A Brief Survey on fixed point theory in b-Metric spaces

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ABSTRACT
Fixed point theory plays an important role in analyzing the existence, uniqueness, and stability of solutions to various types of equations and mapping. In 1989, Backhtin first proposed the idea of b-metric space as a generalization of metric space. In b-metric space, the distance function satisfies properties similar to those of a metric space but with a modified triangle inequality or s-relaxed triangular inequality i.e., $d(x,z) \leq s[d(x,y)+d(y,z)]$ (where $s \geq 1$). The class of b-metric spaces is larger than the class of metric spaces and also this concept is weaker than that of a metric space. When $s = 1$, the concept of b-metric spaces coincides with the concept of metric space. The generalization of triangle inequality in b-metric space allows for the exploration of more complex geometrical structures, leading to a deeper understanding of analytical properties and topological phenomena. b-Metric space has several applications in mathematics. One important application is in fixed point theory, where b-metric space provides a more flexible framework for studying the existence and uniqueness of fixed points. Czerwik first presented a generalization of the Banach fixed point theorem in b-metric space. He states that if a function satisfies a specific contraction condition in a b-metric space, then it has a unique fixed point. There are several more generalizations of other fixed-point theorems in b-metric space, and some of them will be discussed in the presentation.

Analysis of Inventory Models with Fuzzy Inference Systems

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ABSTRACT

In today's world, Intelligent Systems (IS) have been in use to reduce the uncertainty in real life complex problems. In Recent years, several inventory models have been developed based on intelligent systems such as artificial intelligence, machine learning, natural language processing, artificial neural network. In Inventory, Economic Order Quantity (EOQ) model plays an important role as it is used to determine optimal order quantities for purchasing and manufacturing. In this paper we have used fuzzy inference systems techniques to analyze and improve the efficiency of EOQ model under various fuzzy environment. Sensitivity analysis, graphical illustrations are made to validate the model.

Optimizing Sustainable Reverse Logistics: A Two Facilities Storage Model with Linear And Weibull Deterioration For Environmental Resilience

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ABSTRACT

Reverse logistics have grown more essential in recent years to preserve the sustainability of the environment along with human advancement. Many efforts have been made to effectively manage the processes involved in reverse logistics. This article develops a sustainable inventory model for reverse logistics considering both the manufacturing and remanufacturing of instantaneously deteriorating items. In this model, the remanufactured and freshly produced items are initially held in owned warehouses (OW) having constrained storage capacity, and the freshly made products are then placed in rented warehouses with greater holding costs than the owned warehouses. Depending on the types of goods and storage facilities available, this model addresses deterioration occurring in two forms; linear and Weibull deterioration, and demand is considered stock-dependent with a finite replenishment rate. The model aims to recognize the best production and manufacturing strategies to minimize the total costs of the inventory systems. A solution procedure for determining the optimal quantity of the manufactured and produced materials is developed. Numerical analysis has been illustrated considering examples for each; linear and Weibull deterioration. The theoretical findings present some interesting sustainable development and the sensitivity analysis validates the characteristics of the model.

A Survey of Metric Fixed Point Theory

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ABSTRACT

Fixed point theory plays a vital role in pure and applied mathematics. It is divided into three major areas, among which metric fixed point theory is one. Metric fixed point theory encompasses the branch of fixed point theory where metric conditions on underlining space/mappings play a fundamental role. In 1922, the Polish mathematician Stephen Banach established a remarkable fixed point theorem known as the "Banach Contraction Principle," one of the most essential analysis results and is considered the primary source of metric fixed point theory. It guarantees the existence and uniqueness of fixed points of certain self-maps of metric space and provides a contractive method to find those fixed points. Banach Contraction Principle has become a very popular tool in solving existence problems in many branches of mathematical analysis and applied sciences. Meanwhile, Kannan's work refined the concept of Banach contraction mapping by introducing a new contraction known as Kannan Contraction. Kannan contraction is essential because its theorem characterizes metric completeness, but the Banach contraction principle does not. In 2008, Suzuki introduced a new class of contraction mapping where the contraction condition holds on some aspects of the underlying space. He presented a remarkable generalization of the Banach contraction principle, which also characterizes the completeness of the metric spaces. Fixed points of function depend heavily on the considered spaces defined using the intuitive axioms. Different spaces result in different types of fixed point theorems. In generalizations of the Banach contraction principle, the conclusion is obtained under mild modified conditions, which plays a vital role in developing metric fixed point theory. There are larger classes of mappings for which fixed point theorems have been studied. It includes contractive mappings, contraction of various order mappings, asymptotically regular, densifying, etc. The study of the existence of fixed points falls within several domains, such as classical analysis, functional analysis, operator theory, and general and algebraic topology.

Fixed Points for the Family of Mappings

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ABSTRACT

In this paper we proved the fixed point theorems for the family of contractive self-mappings, of a complete metric space or a complete b - metric space and our findings are the generalization of the results A. Pant, R. P. Pant and M. C. Joshi, Caristi Type and Meir-Keeler Type Fixed Point Theorems, Filomat 31(12)(2019), 3711-3721 and A. Pant, R. P. Pant, M. C. Joshi and V. Rakocevic, Fixed points of a family of mappings and equivalent characterizations, Filomat 37(5)2023, 1391-1397. Here We obtain fixed points for family of mappings and under the contractive condition which is mentioned in the research paper of Pant [R. P. Pant, Discontinuity and fixed points, J. Math. Anal. Appl. 240(1999), 284-289], that condition is general than Meir- Keeler type contractive condition. The concept of weakly orbitally continuous are also using for finding the fixed point.

A Fixed-Point Result in Controlled Metric Space

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ABSTRACT

In this paper, we obtain a fixed-point result for -contraction via -admissible mapping in the controlled metric space. Our result generalizes and rectifies some recent results. An example is also given to illustrate the significance of the main result. This paper presents a fixed-point result for λ-contraction via λ-admissible mapping in controlled metric spaces. Our result extends and corrects recent findings, offering a broader theoretical framework. An illustrative example demonstrates the practical relevance of our main result. Keywords include fixed point result, λ-contraction, λ-admissible, and controlled metric space. This contribution enhances understanding and applications of fixed-point theory in diverse mathematical contexts.

Analysis of N-policy Machine Repair Model with Reboot and Recovery Action

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ABSTRACT

The N policy M/M/R queueing system with reboot and recovery is the subject of this study. In this research, we will investigate the use of Fault Tolerant Systems (FTS) with standby provisioning, rebooting and recovering, vacationing of servers, and the N Policy in order to implement a fault- tolerant system. For the evaluation of performance indices of an FTS supported by warm standbys, the idea of imperfect recovery, as well as the reboot process, is examined. If the operating unit fails, it can be recovered with a probability of c. If the problems in the system are not recognized successfully, FTS will reboot and reorganize itself. When the number of customers in the system meets the N (N greater than 1) criterion, the server is turned on instantly, however, server-waiting customers are temporarily inaccessible. Before beginning service, he needs the preparatory work (i.e., begin startup) to be completed. When the startup is finished, the server immediately begins serving the customers who have been waiting. When the system is no longer allocated repair duties, the idle server can go on vacation and return in case a machine fails and has to be repaired. There is an exponential distribution of failures and repairs in machining systems. We have calculated several performance characteristics. Based on the Markov process approach, differential-difference equations are presented for the queueing model. In order to calculate various system performance measures, steady-state analytic solutions are developed recursively. To obtain the joint optimal values at the maximum profit, the total expected cost function per unit of time is calculated. Finally, numerical results linked to the researched model are presented in tables and graphs.

Varahamihira: A sixth-century Indian Mathematician and Astronomer

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ABSTRACT

Varahamihira, a prominent sixth-century Indian mathematician and astronomer, made significant contributions to the field of mathematical astronomy, notably through his renowned work, the Pancha Siddhantika. This paper provides an overview of Varahamihira's contributions to mathematics, focusing on his seminal work in mathematical astronomy. Through an examination of Varahamihira's methodologies and findings, we delve into the intricacies of his mathematical techniques and their application in astronomical calculations. By analyzing Varahamihira's work, we gain insights into the mathematical sophistication and astronomical knowledge prevalent in ancient Indian civilization. This study contributes to a deeper understanding of Varahamihira's mathematical legacy and highlights the enduring relevance of his contributions to both mathematics and astronomy. Varahamihira's work serves as a testament to the rich mathematical heritage of ancient India and continues to inspire research and exploration in the field of mathematics.

Innovation & Sustainable Development

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The Government's Role in Encouraging Women to Integrate Sustainability& Innovation into their Enterprises

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ABSTRACT
This study examines the importance of governments implementing policies and programs that support the integration of sustainability and innovation in women-run businesses. The importance of sustainability and innovation in company practices for long-term profitability and social well-being hasbeen increasingly recognized in recent years but women entrepreneurs must overcome key obstacles and barriers to generate opportunities, networks and resources to develop new business models that canplay a compelling role and drive the adoption of innovation and sustainability. Research journals and examples are analyzed to highlight effective strategies and identify existing areas in need of improvement. The results emphasize the importance of tailored policy, economically, the article concludes with recommendations for legislators, practitioners and researchers to maximize the effectiveness of government performance in materials new and sustainable inclusion in women's own businesses. These strategies include compensation, initiatives to enhance productive capacity, and collaboration among stakeholders to promote sustainable development and gender equality in the business environment.

Indian Retail Logistics' Success Factors in an E-Commerce

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ABSTRACT
The rapid growth of e-commerce in India has transformed the landscape of retail logistics, presenting unique challenges and opportunities for the industry. This study aims to identify and analyze the critical success factors that contribute to the efficient functioning of retail logistics in the context of the burgeoning e-commerce sector in India. The research employs a multi-faceted approach, combining a comprehensive literature review with empirical insights gathered from interviews and surveys conducted with key stakeholders in the Indian retail and logistics ecosystem. The study delves into various dimensions of success, including the online retail technological advancements, customer centric strategies of the infrastructure development and regulatory compliance.

The Role of Fintech Innovation in Accelerating Green Finance for Sustainable Development

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ABSTRACT

This research paper addresses the role of financial technology and green finance on sustainable prosperity analytically. The analysis is predicated on Indian statistics. The study's objective is to investigate India's fintech scene as well as the potential for green financing in the country's opportunities and problems. The study will use secondary data from websites, newspaper, published reports, and related articles. The outcome demonstrates that, although green finance is still in its early years, there is a lot of promise due to digitalization. The efficiency of standards for identifying and safeguarding processes for green finance rules can be improved by fintech.

The Impact of Skill Development Program on Agriculture Entrepreneur Development

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ABSTRACT

Innovation is a key component for entrepreneurs. Entrepreneurs are those who start new businesses and innovate. "Entrepreneurs possess the capacity to tackle regional problems, and in doing so, they everage available resources such as labor, advanced technologies, and other assets, thereby generating fresh job prospects and revenue for the local economy." Consequently, a chance to establish new local businesses boosts the local economy several times over. There is an increase in value, money, and opportunities as a result of the local economy's increased supply and demand. Furthermore, the expansion and improvement of the regional economy may be aided by these new enterprises. Thus, entrepreneurs contribute to the growth of the regional economy. Skill development programs are now acknowledged as important tools and resources for fresh, creative businesses and entrepreneurs. In a supportive environment, which typically takes the form of shared, reasonable platforms and facilities, nascent entrepreneurs can thrive. These skill- development programs are frequently started by the government, often with assistance from the state or federal government, to provide chances for aspiring or current business owners. Additionally, these skill development programs are in charge of locating and generating new job opportunities. Keywords: skill development programs, agribusiness, employability

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An Empirical Study on the Investment Patterns of Female Entrepreneurs in The Himalayan Garhwal Regions of Uttarakhand, India.

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ABSTRACT

The economic development of a nation depends heavily on its female entrepreneurs, but little is known about the financial investments they make. The investment decisions made by female entrepreneurs were examined in this study, with particular attention paid to the women's financial literacy, risk tolerance, and ease of access to capital. We were interested in learning how well the female businesses in Uttarakhand's Garhwal Himalayan region handle their finances. Understanding how they were managing their money sensibly throughout life is known as financial literacy. This includes making informed choices on the purchase of a home, insurance, investments, savings, taxes, and retirement planning. Design & Methodology- We surveyed 300 women entrepreneurs in the Garhwal region of Uttarakhand. We used a questionnaire with a 5-point scale to collect responses, focusing on financial literacy (FL) in terms of knowledge, behavior, and attitude. Using SEM and SPSS, we found that these women have moderate levels of financial literacy and risk tolerance, which positively impact their investment behavior. The study discovered that the financial literacy of women business owners in Uttarakhand, India's Garhwal area aids them in making wise investment decisions. They were informed about financial concerns and have a favourable attitude towards money. Their judgments may suffer as a result, though, when their real financial conduct doesn't always match this understanding. These results hold significance for female businesses in the area, as they may utilize this data to enhance their investment choices. The study also indicates that women in Uttarakhand and other similar regions may be successful investors, which is encouraging for financial advisors and businesses. One important conclusion is that although these women were ready to take some financial risks, one of the biggest obstacles to their financial access is their shortage of resources. They were unable to invest as much as they would want because of this restriction. The goal of this study is to better understand women's investing mindsets so that investment managers can advise clients on where to place their money. Additionally, it will assist businesses in developing training courses for consultants who deal with female clients. Additionally, it will provide policymakers with information to assist lower dangers and raise possibilities for women in the Uttarakhand Himalayan Region, therefore promoting equality and women's empowerment.

Dynamic Role of Self Help Group in Strengthening Economic Status of Rural Women In Uttarakhand

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ABSTRACT

Self-help groups are informal groups of people who come together to address their common problems. While self-help might imply a focus on the individual, one important characteristic of self-help groups is the idea of mutual support. Many studies have shown that there is a significant positive correlation between SHG membership and the social and economic empowerment of women (Reddy et al., 2009; Satish and Mehrotra, 2009) and that this is enabled by the potential of credit delivery and microfinance in helping women cope with the impact of structural modification policies and internationalization (Mayoux, 2000). Chunera and Bhardwaj (2019) revealed that weak areas of capability for maximum SHGs were microenterprise development, skill development, empowerment and influences, and networks and linkages. Both the government and private agencies must play a coordinated role with an integrated approach to making the movement for women's SHG development a success.

Open and Distance Education for sustainable development

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ABSTRACT

Sustainable development goal 4 ensures inclusive and equitable quality education and promote lifelong learning opportunities for all. Open and Distance Education system primarily focuses on inclusive and equitable quality education and promotes lifelong opportunities for marginalized section of society. Open and Distance education is an approach of education that combines online educational material and opportunities for interaction with online and physical place based classroom methods. Education is an effective means for bridging social category gaps and exclusion .Information and communication technology supports for effectiveness and efficiency of open and distance education significantly. Technological advancement and easy acess to internet including mass media enhances dissemination of quality higher education among disadvantaged section of society. Open and distance education affirms social category gaps in access ,participation and learning outcomes. This system provides access to higher education for large segments of the population, and in particular, the disadvantaged groups such as those living in remote and rural areas including working people, housewives and other adults who wish to upgrade or acquire knowledge through studies in various fields, promote acquisition of knowledge in a rapidly developing and changing society and to continually offer opportunity for upgrading knowledge, training and skills in the context or innovations, research and discovery in all fields of human endeavors, provide an innovative system of higher education, flexible and open, in regard to having access, equity, quality and relevance.

Innovations in E-Learning: A Comprehensive Review

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ABSTRACT

This research paper provides a comprehensive review of recent innovations in the field of e- learning, examining emerging trends and technologies that have significantly impacted online education. The study explores key themes such as adaptive learning, virtual reality, gamification, and artificial intelligence, highlighting their contributions to enhancing the effectiveness and engagement of e-learning platforms. Through an extensive literature review, the paper identifies the challenges and opportunities associated with these innovations, emphasizing their implications for educational institutions, instructors, and learners. The analysis reveals the evolving landscape of e-learning, with a focus on personalized learning experiences, interactive content delivery, and the integration of data analytics to inform instructional design. The synthesis of findings contributes valuable insights to educators, policymakers, and researchers seeking to navigate the dynamic landscape of e-learning and harness its full potential for fostering meaningful and effective online education.

Perception of beneficiaries towards Pradhan Mantri Krishi Sinchayee Yojana

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ABSTRACT

The essential element necessary to sustain life on earth is water. Increased population and the need for food security have led to a rise in the need of irrigation water, which could only be satisfied by wise use of the available water resources. The availability of irrigation water is dwindling. As a result, it is crucial to harvest water properly and use it effectively. The continued low yields in rain-fed regions highlight the significance of irrigation in the Nation. To address this challenge, the Pradhan Mantri Krishi Sinchayee Yojana was started with the goal of achieving convergence of investments in the irrigation sector at the field level. The programme intends to offer complete solutions for the irrigation supply chain, including farm-level applications, water sources, and distribution networks. Uttarakhand is largely rainfed despite of being a water rich resource state. Net irrigated area of the Uttarakhand was 3.22 lakh hectares in year 2018-19 that accounts for only 45 per cent of total cultivated land. Despite having a good number of beneficiaries and number of schemes running the net irrigated area and the production is not increasing significantly. Thus, a need was felt to study attitude of beneficiaries towards Pradhan Mantri Krishi Sinchayee Yojanain Garhwal region of Uttarakhand The study was conducted in Dehradun district of Uttarakhand which was selected purposively as it has the highest number of beneficiaries. Two blocks namely Doiwala and Raipur were selected randomly.

TEACHER EDUCATION & SUSTAINABLE DEVELOPMENT IN INDIA

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ABSTRACT

The importance of education as a unique investment in the present and future is immense. Recognizing the role of the teacher in the development and progress of a nation, teacher education should be given a special position. The fact that teachers are the torch-bearers of society is universally true. Sustainable means long lasting or long-term process. The ultimate goal of a future oriented society is sustainable development. Changes in the quality of educational thinking and practice are made possible by Education for Sustainable Development (ESD). There must be teacher training through relevant and effective teacher education programs by the government. Due to the changing agents, there is a solution to the sustainability of the educational institutions and the trainee teachers. The present paper discusses the teacher education and sustainable development in India. It also highlights of teacher education towards sustainable development, effective training for educators and teachers in India.

Data Analytics Applications in Development Of Sustainable Healthcare Systems

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ABSTRACT

With particular regard to SDG Goal 5 relating to health and well being, there is paucity of research evidence regarding the various macro-level systemic constituents that contribute in the development of heath systems which are sustainable. Besides limited information regarding such factors, there is further no unanimity about the monitoring, measurement and evaluation mechanisms for healthcare systems especially in context of its viability and sustainability and the dearth of related literature as well, which usually examines it with a micro-perspective. Ensuring adequate healthcare serving each member is certainly an ambitious dream for a country like ours.The apex government agency NITI Aayog is constantly tracking the performance across all seventeen SDGs for the entire country and states as well. Despite the promising trends across several indicators in some states with respect to SDG Goal 5, the overall picture is quite dismal and the healthcare policy makers are dismayed over the fact that the attainment of the targets set under Agenda 2030 for this goal might not be appropriate keeping the diversity India has. The interplay of rural-urban gap, regional heterogeneity and the public-private disparity add to the challenges of India's equitable journey towards health SDG Goal 5 achievement(niti.gov.in). The trends reveal that rural pockets demand greater policy attention. Mathematical and stochastic modelling used in conjunction with empirical data furnishes deep insights to the decision-makers helping them take informed policy decisions.

Traditional Costumes of Tribal Women of Uttarakhand: An Exploratory Study

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ABSTRACT

India is marked by its rich traditional heritage of tribal arts and culture. Since the days of remote past, the diversified art and cultural forms generated by the tribal and rural people of India have continued to evince their creative magnificence. Tribal groups of Uttarakhand contribute only 0.25 percent to the tribal population of India. Evolution of clothing throughout history of man depicts clearly on multifarious aspects of the socio cultural and technological developments that occurred from time to time. Present study was an attempt to study the traditional costumes of tribal women of Uttarakhand which was almost non-existent and has reached the verge of extinction in the name of change. The document beholds a study of traditional costumes of females of five tribes of Uttarakhand namely, Tharu, Buxa, Raji, Bhotia and Jaunsari. It is also an attempt to document culturally rich costumes of Indian tribes which hold significance in the timeline of Indian clothing. These tribal communities present a significant degree of cultural and ethnic diversity to Indian heritage. Many differences and similarities were found in the dressing pattern of the tribes. Differences in regional, socio-economic, geographical and cultural conditions were responsible for the variation in their clothes.

Advanced Techniques in Agri-Science for Sustainable Development in the Hills of Uttarakhand

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ABSTRACT

The hills of Uttarakhand, India, present unique agricultural challenges due to their rugged terrain, fragile ecosystems, and socio-economic complexities. Sustainable agricultural development in this region requires innovative approaches that address these challenges while promoting productivity, environmental conservation, and socio-economic well-being. This research paper explores advanced techniques in agri-science tailored to the context of the hills of Uttarakhand. It examines the application of precision agriculture, agroecology, biotechnology, and digital farming in this region, highlighting their potential to enhance sustainability. Drawing on case studies and empirical evidence, the paper evaluates the impacts of these techniques on resource efficiency, resilience to climate change, livelihoods, and ecosystem health. Furthermore, it discusses the opportunities and constraints for the adoption and scaling up of advanced agri-science techniques in the hills of Uttarakhand, emphasizing the need for context-specific solutions and multi-stakeholder collaboration to achieve sustainable agricultural development.

An Analysis Of Female Entrepreneur's Contributions To Innovation And Sustainability With Particular Reference To The State Of Uttarakhand

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ABSTRACT

Undoubtedly, women entrepreneurs have made a significant contribution to economic growth. Not just fortheir families, but also for the economy at large, women serve as trustees. Not only are women aware of their potential, but they also put in a lot of effort to diversify the economy and advance sustainable development by taking social and environmental issues into account in addition to economic ones. This is made possible by the strong, imaginative, and capable minds of women. They are pursuing a sustainable economic route by utilizing their business abilities. The contribution of women of Uttarakhand in attaining sustainable development and innovation is the maintopic of this study. The study's findings provide relevant information to legislators, business leaders, and stakeholders who want to promote and empower female entrepreneurs as pioneers and innovators in the sustainable domain.

Green Hrm- A Roadmap For Sustainable Growth Of Higher Education Institutions

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ABSTRACT

Today the entire higher education system is undergoing a metamorphosis and taking initiatives in designing their strategies and policies embracing the concept of sustainability as a road map for fostering growth. Sustainability has become a cornerstone of success for Higher Education Institutes as well and the transformation lies in adopting the Green HRM strategies to integrate environmental considerations into all the aspects of HR practices. By embracing GHRM the institutes can reduce their ecological footprint and also foster an environment of sustainability that resonates with all its stakeholders. At the intersection of environmental awareness and organizational development, GHRM embodies the commitment to create a greener and a more sustainable future for academia. It is essential to foster a sense of community around environmental stewardship to inspire collective action. For this the HEIs must engage staff, faculty and students in sustainability initiatives and implement eco-friendly projects on campus. This paper proposes to study the GHRM practices pertaining to higher education institutes and also its impact on the institute and the employees. Practices such as green training and development (GTD), top management commitment towards greening workforce and green recruitment and selection (GRS) will be explained along with their role in enhancing institutions resilience in the face of global environmental changes. As the effects of climate change, environmental degradation and depleting natural resources are becoming more evident the implementation of GHRM will inculcate a sense of responsibility in all the stakeholders and motivate them to adopt sustainable practices as sustainability is a commitment to the future.

A Study on Weave Designing and Development of Milk weed/ Lyocell Blended Green Fabric

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ABSTRACT
Agro based fibres like jute, cotton, hemp, ramie etc. are gaining significance in contemporary days due to environmentalist's progress throughout the world for environmental protection from pollution. Today, fiber yielding plants are regarded as most important crops after cereals. In fact, plant fibres are the raw material for many industries sustaining the economy of our nation. Despite the competition from the development of synthetic fibers, many of the plant species continued to be of commercial importance. There is an abundance of unconventional fibrous plants in Uttarakhand state, and which are neglected by local people as resource due to deficit knowledge. These natural plants can also be used for extraction of dyes so as to dye or embellish the textile material. Unfortunately, the people are still using conventional fibers for various purposes due to the lack of insight regarding the use of unconventional fibers. Currently, one of the major challenges in textile industries is related to the environmental problem. Most of the textile industries are facing great pressure to reduce pollutant emissions. This drives textile manufacturers to seek new approaches to produce environmentally friendly products. The present study is a clear indictment on the issue of environmental awareness to reduce pollution and to produce ecologically sound products by using the eco- friendly and bio-degradable fibers.

Innovation and Sustainable Development : The role of Human Resource Management

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ABSTRACT
In today's dynamic global environment, the significance of innovation for businesses extends beyond gaining a competitive edge to addressing urgent sustainability issues. This study explores the intricate relationship between innovation, sustainable development, and human resource management (HRM). Recognizing the pivotal role of HRM in fostering innovation and integrating sustainable practices within organizations, this paper delves into the methods, approaches, and challenges associated with leveraging HRM for these purposes.

Industrial Development & Regional Imbalance, Special Reference to Sudurpaschim Province of Nepal

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ABSTRACT

The process of all the natural things around us and making them useful and valuable goods is known as manufacturing. Which are entirely dependents on raw materials. All the materials used in manufacturing work are directly taken to use i.e. cotton, wood, iron etc. Similarly, the semi processed materials thread and raw iron things which are processed in the companies or industries to be used in manufacturing product or goods. All the organizations which have been working or producing these all materials are called industries. The human effort of constructing the product and services large amount is known as industries. In fact, imbalance is known as economic, social and educational imbalance between two project, two groups, two areas and two countries. The issue of imbalance of equality or equal opportunity in each sector. Economic imbalance is connected to industrial development. if there is imbalance in industrial development it affect on social and economic environment.

Daughters' as Victims of Marginalization: A Study of Mrinal Pande's Daughter's Daughter and Girls

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ABSTRACT

Mrinal Pande, a prominent Indian feminist writer, focuses on scrutinizing reality rather than entertaining her audience. The stories Daughter's Daughter and Girls have a similar structure: a mother and her three daughters are expecting a fourth child, and everyone hopes for a son. In Girls, Pande uses an unidentified narrator to highlight the lower status of girls and women in Indian homes, whereas Daughter's Daughter is told by Tinu. Both works depict the struggles and triumphs that girls face as daughters. Tinu's narrative covers two to eight years and revolves around her grandmother's house in Almora and her mama's (maternal uncle's) residence in Gorakhpur. She loves to live in her own imaginary world. She does not believe in superstitions such as one-eyed people, flying snake etc. Pande presented a young girl in unconventional ways within a standard venue. She dislikes the grandmother's orthodoxy and the elder's elitism. She rejects both Anu's superiority and Aunt's advice. Pande emphasized several difficulties, including gender disparities, differing behavioural patterns, religious sanctions for boys, lack of awareness towards the education of girls, marriage, elder hypocrisy, and the notion of stepmother. However, Pande's hopeful approach provided a fresh perspective on the story. Tinu recognizes her mother's lower status in the household from an early age. At the end of the story, she resolves to live on her own terms.

Entrepreneurship For Sustainable Development

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ABSTRACT

This research paper explores the nexus between entrepreneurship and sustainable development, examining the pivotal role entrepreneurs play in fostering environmental, social, and economic sustainability. The paper delves into the theoretical frameworks underpinning sustainable entrepreneurship, analyzing how various models contribute to the overarching goal of sustainable development. Drawing on a comprehensive literature review, the study investigates successful cases of environmentally sustainable businesses, shedding light on the challenges faced by entrepreneurs in integrating sustainable practices. Additionally, the social impact of entrepreneurship is scrutinized, emphasizing the importance of socially responsible business practices. Economic dimensions are explored, elucidating the benefits and challenges of sustainable entrepreneurship in driving economic development. The research extends to policy implications, discussing government initiatives supporting sustainable entrepreneurship and offering recommendations for policymakers. Looking towards the future, the paper examines emerging trends and innovations shaping the landscape of sustainable entrepreneurship. In conclusion, the study synthesizes key findings, emphasizing their implications for both future research and practical applications in the pursuit of sustainable development.

Education for Sustainable Development in India

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ABSTRACT

Indian education system faces many challenges for implementing new practices like NEP 2020 however all the new changes and innovations are followed by many phases to ultimately accomplish change in Indian education system. The national education policy of India 2020 is started by the union cabinet of India on 29 July 2020 this policy AIIMS to reform and rebuilt the Indian education system it also AIIMS to make Indian education system more holistic multi-disciplinary and flexible which alliance with the 2020 agenda for sustainable development. The national educational policy 2020 in India closely align with the United Nations is sustainable development goals particularly as SDG4 which focuses on quality education and SDG5 which focuses on gender equality. A digital library is a collection of digital objects, such as books, magazines, audio recordings, video recordings and other documents that are accessible electronically. A digital library, also called an online library, an internet library, a digital repository, a library without walls, or a digital collection, is an online database of digital objects that can include text, still images, audio, video, digital documents, or other digital media formats or a library accessible through the internet. The digital content may be stored locally, or accessed remotely via computer networks. These information retrieval systems are able to exchange information with each other through interoperability and sustainability.

Comparative Study of Efficiency in the Use of ICT among Teachers Working in Government & Non-Government primary Schools of Kumaon Division of Uttarakhand

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ABSTRACT

This article reports a comparative study of efficiency in the use of information and communication technology (ICT) among teachers working in government and non-government primary schools of Kumaon division of Uttarakhand state for session 2023-24. The population for the study has been selected in the form of teachers from all government and non- government primary schools located in Kumaon division of Uttarakhand state, out of which, with the help of stratified random sampling method, 150 government and 150 non-government primary schools were selected. A total of 600 teachers from 300 schools were included. In this study the researcher has used a self-made questionnaire to assess the efficiency in the use of information and communication technology (ICT) among teachers working in government and non-government primary schools and for statistical analysis of the data obtained the mean, standard deviation and t-test have been used. The findings obtained after statistical analysis show that significant difference was found in the efficiency in the use of information and communication technology (ICT) among teachers working in government and non-government primary schools of Kumaon division of Uttarakhand state.

Impact of Merger and Acquisition on Profitability of Indian Banks: A Case Study of Merger of Bank of Baroda with Vijaya Bank and Dena Bank

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ABSTRACT

With the rapidly advancing technology and an increase in competition, mergers & acquisitions (M&A) are the immediate choice and an effective strategy. Banks being the underpinning foundation of our economy, are frequently encouraged to merge in order to expand globally and create harmony, which in turn benefits the affluence of our country through enhanced flow of monies. In the present day, the Indian banking sector is growing swiftly and has altered itself into a dynamic industry. A new dimension is accelerated in the sector through M&A and has enabled banks to achieve a higher ranking tossing huge value to the shareholders. On 1st April, 2019, Bank of Baroda merged with Vijaya Bank and Dena Bank. This consolidation was a part of the Indian government's initiative to strengthen the banking sector by merging several public sector banks and was the first tripartite merger in the Indian public banking sector. The paper examines the reasons for merger, challenges after merger and impact of merger on profitability of BoB. The necessary information is gathered from secondary data.

Challenges in Integration of Innovation with Science Education in Udham Singh Nagar

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ABSTRACT

There is growing enthusiasm among school students to engage in science related activities and programs for improving their skills to apply science in real-life situations. Throughout academic session thousands of students submitted their innovative ideas/designs/modules/prototypes/projects in various scientific programs such as science exhibition, inspire award manak, children's science congress, school innovation council, Atal Tinkering Labs etc from school to national level. Due to the lack of academic connection between the programs and the subjects very few students had benefitted from these programs. In this study we have identified the conditions and major barrier of infiltration of the culture of innovation in 50 selected senior secondary schools of Udham Singh Nagar district of Uttarakhand. To strengthen this engagement schools, need a well-defined curricular connection to integrate innovation with the content as well as context. The current study focuses on explicit instruction for developing curricular strategies on inculcating scientific technological innovation practices with current science syllabus. Our study also establishes the main benefits of innovative practices in the future professional development of children. This finding indicates correlation between levels of infrastructure, material support and academic input needed in building innovative atmosphere in school campus. To investigate culture of innovation in school through scientific program, we analyzed selected students' scientific understanding and applying knowledge in innovative ideas/design/project submitted by them. Our findings also referred to the relationship between students' procedural knowledge and scientific understanding.

Green Marketing: Opportunity for Innovation and Sustainable Development

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ABSTRACT

In the time of escalating environmental concerns and growing consumer consciousness, the concept of green marketing has emerged as a vital strategy for businesses to earn profitability with sustainability. the consumers now a days are more concerned about the health and environmental protection issues. This research paper aims to focus on sustainable development and green marketing with its impact on society and its opportunity for innovation. The paper explains how green marketing strategies, product design, packaging, promotion, and distribution, not only reduces environmental impact but also promotes innovation within organizations. Moreover, it highlights the role of consumer behavior and market dynamics in shaping the adoption of green products and services.

Strategic Human Resources Management: A Contemporary Analysis

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ABSTRACT

This research paper presents a contemporary analysis of strategic human resources management (SHRM), examining its pivotal role in organizational success. The study explores key concepts such as talent acquisition, employee development, performance management, and workforce diversity within the context of evolving business environments. Through a synthesis of current literature and case studies, the paper highlights the strategic alignment of HR practices with organizational objectives and the impact on overall performance. Special emphasis is placed on emerging trends, including digital HR technologies, remote work dynamics, and the importance of employee well-being. The analysis provides insights into the challenges and opportunities faced by HR professionals, shedding light on the imperative for agile and adaptive HR strategies. The findings contribute to a deeper understanding of the strategic dimensions of HR management and offer practical implications for organizations aiming to optimize their human capital for sustained success.

Green Investment Optimization for Non-Instantaneous Deteriorating items under Shortage Regulating Carbon Emissions

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ABSTRACT

Countries have grown more eco-conscious in recent years regarding the efforts to develop and invest in technologies for sustainable growth. Several policies have been drawn out to lessen the impact of carbon emissions by the decision-makers without compromising profit in the modern economy. This article bridges the gap by permitting shortages and implementing a cap-and-trade system. Using a retailer-centric approach, this paper presents an inventory model that prioritizes investments in preservation technology for non-instantaneous deteriorating items, addressing partially backlogged shortages, and lowering carbon emissions through cap-and-trade regulations. Additionally, it takes into account two crucial concerns that must be addressed together that is, preservation and carbon emissions. The objective of the model is to determine the ideal order amount, cycle time, and preservation level that maximizes profit not only by extending the lifespan of an item but also by governing the rate of deterioration through green investment for non-instantaneously deteriorating items under shortages. The results indicate a lucrative impact on a business up to a certain level of preservation. Through numerical experiments and sensitivity analysis, the effectiveness of the proposed model in optimizing preservation technology investments is demonstrated.

A Sustainable Inventory Management: A Comprehensive Analysis of Cap and-Trade Policy and Green Technology for Perishable items in the Diabetic Healthcare Sector

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ABSTRACT

This study offers a production inventory model where demand is determined by the average amount of perishable goods consumed by the diabetic population. Perishable goods have a limited shelf life and can degrade rapidly, preservation technology is used to extend their shelf life. We use cap-and- trade regulations and green technologies to regulate carbon emissions because it is important to includecarbon emissions from the manufacturing, transportation, storage and deterioration of goods. Based onthe cap, this suggested model has looked at two distinct scenarios: Case I (in which the cap is lower than the assigned emissions) and Case II(in which the cap is higher than the assigned emissions). We analyze the total expense of this research, which takes into consideration preservation, green technology and cap-and-trade policies. The model is further supported by analysis of sensitivity and numerical examples.

NEP 2020 and Education for Sustainable Development

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ABSTRACT

Sustainable development is a visionary plan that emphasizes achieving the goals of development by integrating economic growth, social equity and environmental protection. Apart from this, the concept of sustainable development emphasizes on meeting the needs of the present while keeping in mind the problems of the future for the development of any nation. Under this there are fair values, inclusive society and all the citizens of the country. Education for sustainable development allows every human being to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future. Since basic education is a key to any nation's ability to achieve its goals for gradual development and stability. So therefore education for sustainable development includes key sustainable development issues into teaching learning process which requires participatory teaching learning methods that motivates empower learners to change their behaviour and promotes competencies like critical thinking, imagining future scenarios and making decisions in a collaborative way. Education can improve agricultural productivity, enhance the status of women, reduce population growth rates, enhance environment

protection and generally raise the standard of living but simply increasing basic literacy will not support a sustainable society. The broad focus of this research paper is on the current approaches adopted by India to contextualize Goal 4 on education of the Sustainable Development Goals (SDGs) in the Indian context by integrating them into the formulation of New Education Policy. National Education Policy (NEP) was introduced in 2020 becoming India's first education policy of the 21st Century. NEP is presented with a comprehensive perspective on education for sustainable development. It is expected that it will take the Indian education system on the main track to achieve the desired goal of education as well as quality education by providing inclusive and equitable education to all. NEP has put a special consideration on the need of structuring the entire education system of the country if India wants to timely achieve the set goals and targets. NEP 2020 has put a focus on providing comprehensive and integrated environmental education including areas such as sustainable development, science and information technology, living standards, waste management, environmental protection, biodiversity, protection of environmental and climate change etc. Thus NEP aims to make India as knowledge hub by equipping its students with skill development and upgradation including ICT as well as vocational training.

Strategic Inventory Management: A Depleted Demand Model with Constant Deterioration, Considering Lost Sales, and Partial Backordering

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ABSTRACT

This paper introduces a novel approach, a depleted demand inventory model with constant deterioration, where the rate of change of demand is considered a time-dependent function and incorporating lost sales and partial backordering. Initial non-zero demand is stimulated by advertising, with a constant advertisements cost. The study explores two replenishment strategies: one without shortages and another with shortages. The primary goal is to formulate an optimal replenishment policy that minimizes the total inventory cost. The research includes four illustrative examples, showcasing how alterations in optimal solutions arise from varying values of independent parameters used in the models. Sensitivity analysis is conducted to further understand the impact of parameter changes, and numerical illustrations are provided to validate the proposed approach. The research includes four illustrative examples, showcasing how alterations in optimal solutions arise from varying values of independent parameters used in the models. Sensitivity analysis is conducted to further understand the impact of parameter changes, and numerical illustrations are provided to validate the proposed approach.

Pricing and Green Level Competition for Substitute Green Products in Different Power Structure Using Stackelberg Game

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ABSTRACT

The integration of global markets is accelerating; marketplaces in nearly every country are becoming competitive. Knowing the nature of the rivalry between two green product makers is essential in thesesituations. This paper explores the game theoretical approach for a two- echelon green supply chain where the duopolistic manufacturers produce two substitutable green products, and they sell their products through a common retailer, and the demands for both green products are functions of the selling prices and green levels (GLs). The effects of power structures on optimal price and green level decisions and associated equilibrium decisions are examined using centralised scenarios and three- different manufacturer-led decentralised game structures- I. Manufacturer-Bertrand (MB) model: In this model, both manufacturers simultaneously work as a leader, and the retailer works as a follower. II. Manufacturer-1-Stackelberg (M1S) model: In this model, manufacturer-1 acts as a leader, and manufacturer-2 works as a follower, and the retailer works as a follower. III. Manufacturer-2-Stackelberg (M2S) model: In this model, manufacturer-2 acts as a leader, and manufacturer-1 works as a follower, and the retailer works as a follower. We conduct an analytical comparison of the optimal outcomes. Numerical examples are used to studythe impact of several important model parameters on optimum decisions and examine a few sensitivity parameters to help better understand the described mathematical models. The results show that when all members work together, the whole supply chain is profitable by reducing selling prices and increasing GL for both products. Furthermore, we show that supply chain profit increases when product quality and substitutivity levels increase.

Role of the Internet in Startup of News Media in Uttarakhand

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ABSTRACT

The communication process has undergone a shift towards the digital revolution, encompassing newspapers, magazines, news and entertainment television channels, and radio,all of which are now available in digital formats. This transformation has been made possibleby the Internet, resulting in the globalization of the entire media landscape. Worldwide, America's 'Times Magazine' was the first to go online in 1994. In India, a significant milestone was reached on 15 August 1995 with the launch of Internet service by Videsh Sanchar Nigam Limited, marking the beginning of a revolution in the field of Indian mass communication. In the same year, 'The Hindu' introduced its E-edition. This prompted the media industry to embrace the digital shift, giving rise to a new dimension in journalism known as 'web journalism.' While media organizations

transitioned to the web alongside their core industries, this movement also paved the way for startups venturing into complete digital journalism. The inception of the first Hindi news portal, 'Web Duniya', in India on September 23, 1999, marked the beginning of a proliferation of news portals. This study delves into a novel phase of news media startups, particularly focusing on those with news portals in the state of Uttarakhand. While there is no conclusive evidence regarding the first website, the Uttarakhand Information and Public Relations Department initiated the registration of news portals in 2015 and simultaneously disclosed the rates for digital advertising. In the initial years of registration, approximately 20 portals were enlisted. However, as of August 4, 2023, the number surged to 615, indicating a remarkable thirty-fold increase within nine years. This exponential growth underscores the transformative impact of internet technology and technological advancements, shaping the landscape of news media startups at the local level. Furthermore, the Uttarakhand government is actively supporting journalists by providing financial empowerment through advertisements on these portals.

Review of Marketing Strategies Adopted by Ayurvedic Medicine Industry in Almora District of Uttarakhand

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ABSTRACT

A company's overarching plan for connecting with potential clients and turning them into paying consumers for their products or services is known as its marketing strategy. A marketing plan includes the company's value proposition, key brand messaging, target consumer demographic data, and other high-level components. A thorough marketing plan addresses all four of the marketing "Ps": product, pricing, place, and promotion. A business's public relations, outreach, and advertising plans are described in a marketing strategy, along with the methodology for gauging the success of these efforts. Typically, they will adhere to the "four P's." Functions and elements of a marketing plan include market research to support pricing decisions and new market entries, tailored messaging to target demographics and geographic areas, platform selection for product and service promotion (digital, radio, Internet, trade magazines, and the combination of those platforms for each campaign), and metrics to track the effectiveness of marketing campaigns and their reporting schedules. This study aims to identify the marketing strategies employed by the ayurvedic medicine industry in the Almora district of Uttarakhand by looking at the Marketing executives of different Ayurvedic medicine companies. The data is mostly gathered through face-to-face conversations, based on a questionnaire, with a sample of 20 medical representatives at various locations throughout the Almora district. It provides instances of marketing strategies and how consumer and physician behavior is impacted by them. In this study, a questionnaire was developed for the survey of marketing executives of ayurvedic medicine companies in the Almora district of Uttarakhand.

Impact of green finance on sustainable economic growth

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ABSTRACT

Green finance plays a crucial role in supporting green growth, resulting in substantial decreases in greenhouse gas and air pollution emissions. Green finance used in different areas like agriculture, greenbuilding, Banking, insurance, investment, and other Green projects should increase for the economic development of the country. This paper reveals that green finance widely helps quality economic growth by significantly impacting finance structure environmental protection and high economic growth are the global requirements and have attracted a specific focus on researchers and policy makers.

The Role of Sustainable Human Resource Applications in furthering Sustainable Growth

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ABSTRACT

This research manuscript explores the growing awareness among organizations regarding socio-economic, moral, and environmental objectives. Particularly, the focus is on Sustainable Human Resource Management (SHRM) as a pivotal discipline for organizations striving to achieve financial, social, and ecological goals while mitigating unintended side effects. The manuscript delves into the interconnection between SHRM and the 2030 agenda for sustainable development, which comprises 17 Sustainable Development Goals (SDGs) and 169 targets. With a focus on the 5P's—People, Planet,Prosperity, Peace, and Partnership—this research investigates how SHRM contributes to establishing sustainable, innovative, and people- oriented economics. The study also identifies the challenges and opportunities associated with SHRM in achieving both organizational and global sustainability objectives.

Innovating Higher Education: A Paradigm Shift towards NEP 2020

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ABSTRACT

The National Education Policy (NEP) 2020 of India signifies a transformative shift in the country's educational landscape, particularly in the realm of higher education. This paper delves into the concept of innovation in higher education within the context of NEP 2020, elucidating its significance, challenges, and opportunities. By advocating for a holistic approach to innovation, NEP 2020 emphasizes the cultivation of creativity, multidisciplinary learning, and research-driven entrepreneurship within higher education institutions. This paper examines key pillars of innovation outlined in NEP 2020, including the promotion of flexible curricula, integration of technology, and fostering of industry-academia collaborations. Furthermore, it highlights challenges such as resource constraints, regulatory complexities, and digital disparities that impede the effective implementation of innovative practices in higher education. Despite these challenges, NEP 2020 presents a unique opportunity to revitalize higher education by fostering a culture of innovation, inclusivity, and excellence.

Empowering Tomorrow: The Role of Educational Innovations in Societal Transformation

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ABSTRACT

In this era of knowledge and science, new transformative inventions are being made in every field, which have their own dignity and importance. By assimilating new ideas and inventions that bring transformation in all spheres of society, they all get new inspiration, new form and development. New paths have been found. Those means and mediums of change which have sowed the seeds of new facts, beliefs and ideas in a person's behavior and have oriented the person towards new tendencies are called innovation. New means and methods used in the field of education to make the teaching-learning process more effective are called educational innovations. Education is a major fundamental right of our country. India's literacy rate has continuously increased after independence. Innovation is the key to the progress of our country as well as the entire world. Innovation also plays a very important role in the field of education. Our education system promotes the practice of technology. We have a balanced education system that gives equal importance to computerization, manual work and better content. It is important to make education stress-free at least up to the primary level but at the same time healthy competition must also be promoted. Education should ensure all-round development of students. Students should be appreciated for their good work and it should be ensured that they learn from their mistakes. The progress of any society depends on the people living in it. The need for education has always been accepted to give proper direction to society.

Scheduled Tribe Welfare Schemes and Tribal Development: Issues and Solutions

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ABSTRACT

Scheduled Tribes in Uttarakhand reside in remote mountainous areas, and due to illiteracy, superstitions, and customs, their issues are sufficiently complex. Due to weak economic conditions, most tribal families are debt-ridden and vulnerable. The number of Scheduled Tribes in Uttarakhand is 2,56,129, which is 0.3 percent of India's total Scheduled Tribe population and 3.0 percent of Uttarakhand's total population. The districts of Uttarkashi, Chamoli, Pithoragarh, Dehradun, and Udham Singh Nagar have a relatively higher population of Scheduled Tribes. Among the five major tribes of Uttarakhand, Tharu constitutes the highest population at 33.4 percent, followed by Jaunsari at 32.5 percent, Boksa at 18.3 percent, Bhotiyaat 14.2 percent, and Vanraj at only 0.2 percent. The Raji tribe was declared as Scheduled Tribe in 1975.Their population in India is 74. There is a lack of education among the tribes in Uttarakhand, leading to their social and economic problems becoming severe. Alcoholism, child marriage, dowry, prostitution, immoral marital relationships, and social and geographical displacement agriculture methods, forest wealth, and indebtedness are major economic problems. The Government of India has been vigilant about the welfare of tribes since independence. The Indian Constitution provides adequate provisions for their welfare. Under Article 275(1), the central government provides grants to the state government for tribal welfare. Article 16(4) and 335 provide for reservation of seats in public services and government jobs for the state's tribes. The provision for the appointment of Tribal Advisory Council is made in the Fifth Schedule, with a maximum of 20 members. Articles 342 and 244 provide special rights to governors regarding tribes. After the formation of the Uttarakhand state in 2000, a new dimension has been added to the development of the state's tribes. The state government has demanded more funds from the central government for the coordinated implementation of tribal development policies. The central government, too, has been running several welfare schemes for the development of Scheduled Tribes to meet constitutional goals.

The Role of Fintech Innovation in Accelerating Green Finance for Sustainable Development

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ABSTRACT

This research paper addresses the role of financial technology and green finance on sustainable prosperity analytically. The analysis is predicated on Indian statistics. The study’s objective is to investigate India’s fintech scene as well as the potential for green financing in the country’s opportunities and problems. The study will use secondary data from websites, news paper, published reports, and related articles. The outcome demonstrates that, although green finance is still in its early years, there is a lot of promise due to digitalization. The efficiency of standards for identifying and safeguarding processes for green finance rules can be improved by fintech.

A Study on Higher Education Faculties' Perception Towards Green HRM

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ABSTRACT

Green is a global colour which signifies the environment i.e. environmentally friendly practices. Keeping in mind the consistent exploitation of natural resources, the nation's came up with certain policies for environment protection which are inclined towards achieving sustainability goals. The Green Human resource management is one of the latest concepts of management which is being adopted by the organization for the sustainability of their resources, motivation of resources and preference of natural resources. Like other sectors, the Education sector is also contributing in saving the environment by adopting the concept of GHRM. By implementing these practices educational institutions will be able to excel in their respective field. This research paper focuses on faculties' perception towards Green HRM in addition to understanding the awareness among the faculties and the impact of concept in their productivity and to understand the current GHRM practices adopted by institutions. A defined structured questionnaire was circulated among faculties of higher education for the purpose of primary data.

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A Novel Framework for Mixed Reality–Based Control of Collaborative Robot

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ABSTRACT:
Applications of robotics in daily life are becoming essential by creating new possibilities in different fields, especially in the collaborative environment. The potential of collaborative robots are tremendous as they can work in the same workspace as humans. A framework employing top-notch technology for collaborative robots will surely be worthwhile for further research. The framework uses Unity and Unity Hub as a cross-platform gaming engine and project management tool to design the mixed reality interface and digital twin. It also uses the Windows Mixed Reality platform to show digital materials on holographic display and the Azure mixed reality services to capture and expose digital information. Eventually, it uses a holographic device (HoloLens 2) to execute the mixed Reality–based collaborative system.

Unveiling the Power of Connected Devices: The Role of IoTin Shaping the Fourth Industrial Revolution

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ABSTRACT:
This exploration looks at how data and analytics have transformed past industries, leading up to the Fourth Industrial Revolution (Industry 4.0). It discusses the factors driving the success of Industry 4.0, such as affordable hardware, connectivity, powerful programming languages, and important principles like Moore's Law and Metcalfe's Law. The concept of the Internet of Things (IoT) is introduced, along with a brief overview of the first three industrial revolutions and the key features of the fourth. The focus then shifts to Industry 4.0, examining how smart factories are changing the way things are made by increasing automation and digital processes. It also covers Cyber- Physical Systems and the core principles guiding Industry 4.0's design. Challenges in adopting this model are discussed, from technological obstacles to resistance within organizations. Despite these challenges, embracing Industry 4.0 offers substantial benefits, like improved productivity and decision-making abilities. In conclusion, the importance of early adoption in gaining a competitive advantage in the evolving landscape of Industry 4.0 is emphasized, highlighting the potential rewards for those who embrace this transformation.

Computing and Consciousness for Industry 5.0

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ABSTRACT:
In the realm of Industry 5.0, the intersection of computing and consciousness emerges as a pivotal focus. This talk delves into the multifaceted dimensions of human consciousness, exploring its implications for life management and its integration with core computing techniques essential for navigating the products and challenges of Industry 5.0. With a core emphasis on the what, why, and how of coping with Industry 5.0, attendees will gain insights into the symbiotic relationship between human cognition and technological advancement. Through an exploration of innovative approaches, this discussion aims to equip individuals and organizations with the knowledge and tools necessary to thrive in an era defined by the convergence of human ingenuity and technological progress.

A Review on Progresses in Solar Still Technology with Phase Change Material

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ABSTRACT:
The utilization of solar desalination processes using solar stills to maintain the purity of water. The purpose of this process is to remove impurities and salt from water to make it suitable for consumption. The study involves analyzing various factors that influence the conditions of the solar desalination process at different stages. Numerous researchers have attempted to enhance the efficiency and productivity of solar stills by employing different techniques. The article reviews the application of highly efficient materials and experimental endeavors in the realm of solar stills. One notable technique involves using Paraffin wax in combination with different Phase Change Materials (PCMs). This combination leads to increased productivity and thermal conductivity, ultimately enhancing the output of the solar still. In a modified solar still, the incorporation of wicksresulted in amplified distillate output and an overall improvement in productivity. Another enhancement strategy discussed is the utilization of Graphene oxide nano-particles. The incorporation of these nano-particles led to improved daily efficiency and thermal conductivity. This, in turn, raised the thermal efficiency of the solar still and augmented the yield of fresh water. The article also underscores the efficacy of collective approaches involving Phase Change Materials, reflectors, and nano-coating paint mixed with nano-particles. These combined materials resulted in a notable increase in thermal efficiency and fresh-water yield. Among the various PhaseChange Materials explored, the study concludes that paraffin wax exhibits the highest output and productivity compared to other options. In essence, the article highlights the advancements and innovations in solar desalination using solar stills. By optimizing material choices and employing techniques such as phase change materials, wicks, and nano-particles, researchers have managed to enhance the efficiency, productivity, and overall performance of the solar desalination process, ultimately contributing to the preservation of water purity.

Crop Yield Prediction Based on Machine Learning

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ABSTRACT:
Crop yield prediction is vital for agricultural decision-making and food security management. This paper presents a methodology for developing and evaluating machine learning algorithms tailored for accurate crop yield prediction. Diverse datasets covering agronomic variables are collected, including rainfall, temperature, fertilizer, pesticide, crop types, and historical yield records. Feature engineering techniques extract relevant information, while preprocessing addresses missing values and outliers. Various machine learning algorithms are trained and evaluated using cross-validation techniques. We have tested various algorithm like Decision Tree, Random Forest, KNN, SVM among which Random Forest provided us with the best accuracy i.e. 74%. We have used performance metrics such as Mean Absolute Error (MAE), Root Mean Square Error (RMSE), and coefficient of determination (R-squared) which assess model accuracy and reliability. To enhance accuracy, additional attributes contributing to yield prediction and larger datasets are employed. The proposed solution achieves the desired accuracy and RMSE score.

Security measures in Social Networking: Protection against Hackers and Cyber-attacks.

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ABSTRACT:
Network safety recognizes a passionate effort in the domain of data security. Data security has grown significantly in importance in the modern world. Digital wrongdoings, which occur on a massive scale every day, are the core issue that starts as a primary worry for network safety. To prevent these improper digital behaviors, several governing organizations and associations are taking various measures. Many people are currently quite concerned about network safety. The focus of this paper is primarily on network safety and cybercrime. The dangers to social internet been additionally presented to the long-range informal communication destinations. In informal communities' individuals will generally lessen the first ready and this makes it more straightforward for malware to spread. In this paper we concentrate on the dangers to social networks and examine the objectives what the aggressors need and the techniques how assailants play out the assaults. It discusses the vast patterns of network protection as well as the outcomes of network protection. The district of associations could lose billions of dollars as a result of the cyber-attack. The paper further defines the components of a digital hacker and their sources of inspiration. Additional case studies are provided in this study and clarifies some arrangements for digital hacker protection Keywords: Network safety, digital hacker, cyber- attack, wrongdoings, digital hacker.

LULC Mapping and Change Detection through Machine Learning Techniques using Landsat 8 OLI Data: A Case Study of Nainital District, Uttarakhand, India

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ABSTRACT:
This research work explores the dynamic shifts in Land Use Land Cover (LULC) patterns in Nainital district of Uttarakhand, by employing machine learning techniques and computational capabilities of Google Earth Engine (GEE). The study focuses on using Classification and Regression Trees (CART), Support Vector Machine (SVM) and Random Forest (RF)—three distinct supervised machine learning algorithms for the classification of multi-temporal and multispectral Landsat 8 OLI data for the purpose of detecting and analyzing changes in five different LULC categories. The research analyzes and compares the outcomes of applying aforementioned machine learning strategies and suggests best performing classifier. The study finally detects and analyzes changes in five LULC categories for the years 2014–2023.

A Review on the Amelioration of Aluminum Alloys by Cryogenic Treatment Process

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ABSTRACT:
Aluminum is a widely used material in engineering applications like aerospace, automobile, manufacturing equipment, and so on. This is because of its low cost and its unique property of less density-to-load capacity ratio and rust-free. Also, it is cheap compared to any other engineering materials. This review paper is all about the cryogenic treatment of alloys and their effect on their properties and explains the wear and hardness, microstructure changes, tensile and fatigue behavior, toughness, and other properties.

Feasible and Viable Solar Operated Portable Cold Storage for Small and Marginal Farmers of Uttarakhand to Minimize Post-harvest Losses

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ABSTRACT:
India produces a massive quantity of fruits and vegetables and contributes to about 11.36% and 14.04% of world's fruits and vegetables respectively on the global scale. Fruits and vegetables are generally considered as perishable commodities owing to limited shelf life. Total losses in fruits and vegetables are about 20-30% and 30-35% respectively due to their highly perishable nature. The major reason behind these losses is the

lack of proper post-harvest storage and effective processing facilities. In order to decrease post-harvest losses of edible items and increase the storage ability and shelf life of the agricultural products, post-harvest agricultural produce must be stored. Cold storage systems are required to preserve the perishable natured post-harvest output i.e., fruits and vegetables need low temperatures (32 to 55°F) and high relative humidity (80 to 95 per cent) to lessen respiration and to slow down metabolic and transpiration rates. Rural farmers continue to face significant obstacles to the proper and effective storage of farm products, mostly due to the high prices involved with cold storage systems. To ponder these issues, attempts are being made to develop a portable, cost-effective cold storage that runs on solar power. The cold storage system is designed for 2.5 tonne capacity and can effectively manage storage temperature of around 12ºC. The efficiently designed solar-powered portable cold storage is furnished with a solar-powered air conditioner, compressor, solar panels, cold storage structure, portable trolley, water tank, honeycomb pads, and sensors. It also employs Arduino system for the measurement of temperature, humidity and pressure inside the cold storage. The system is feasibly and viably designed for the hilly small, marginal and medium farmers for enhancing their income and thereby promoting agricultural sustainability.

Wear Pattern of Various Makes of Agricultural Discs

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ABSTRACT:
Mechanization of agriculture involves the use of different machineries in farming operation right from ploughing to marketing of produce. In underdeveloped countries like India, farmers require low- cost machinery so they generally prefer locally available equipment. The disk of make (42.1 HRC), speed 2.5 km/h and moisture content 0-2 percent were selected as optimum for sand with desirability of 0.99. The disk of make (42.1 HRC), speed 2.5 km/h and moisture content 12-14 percent were selected as optimum for silty-clay-loam with desirability of 0.998. The make of disc M4 (42.1 HRC) was selected as optimum for field soil. The weight loss, radius reduction and thickness reduction obtained at optimal condition werein good agreement with the predicted value obtained the optimization model. The life of the discs in numberof working hours was calculated by the developed model keeping minimum allowable radius up to 228.6 mm and the working life of discs M1 (36.3 HRC), M2 (38.1 HRC), M3 (41.5 HRC) and M4 (42.1 HRC) were calculated as 423.86, 585.51, 950.64 and 1329.4 hours respectively. Based on the study, the make M4 showing minimum wear and maximum working life was selected as the best suitable for farmers followed by M3, M2 and M1.

Harnessing Machine Learning for Precise Rainfall Prediction in Agricultural Planning Amidst Climate Change

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ABSTRACT:
The significance of agriculture in India's economy cannot be overstated and rainfall plays a pivotal role in agricultural productivity. However, accurate rainfall prediction has become increasingly challenging in recent times, exacerbated by the impacts of global warming on climatic conditions. Climate change manifested through rising temperatures and sea levels, has led to unpredictable weather patterns, ranging from floods to droughts, significantly affecting crop cultivation. Given these challenges, effective rainfall prediction becomes imperative for agricultural planning and risk mitigation. This study addresses the pressing need for precise rainfall forecasting, catering to diverse stakeholders such as farmers, researchers, and energy producers. By analyzing key climatic parameters including temperature, humidity, precipitation, and wind speed, the research aims to develop a comprehensive understanding of rainfall patterns. Recognizing the complexity of predicting rainfall, the study employs advanced Machine Learning techniques, leveraging a dataset from the IMD repository with multiple attributes. The primary objective of the research is to enhance the accuracy of rainfall prediction systems using Machine Learning classification algorithms. By harnessing the power of AI- driven predictive analytics, the study endeavors to provide stakeholders with reliable insights into future rainfall trends. Ultimately, the proposed rainfall prediction system seeks to empower farmers and policymakers with actionable information for informed decision-making, thereby mitigating the adverse impacts of climate variability on agriculture and the economy at large.

Leveraging IoT for Agricultural Advancement: Impact and Utilization

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ABSTRACT:
In this growing world technology is a boon part of every industry. The ratio, 70% of India’s population is indulged in agriculture which requires a lead Impact on technology also, the IT industry can soon be a major part of the agriculture industry. This research is aimed to demonstrate the major impact of the Internet of Things (IoT) on the most acquiring business in the world which is Farming. Agricultural issues have often hampered the country's progress. The only way to solve this issue is through intelligent agriculture, which will support the development of conventional farming methods into what they are today. In the sphere of agriculture, there are several benefits to using cutting-edge technologies. Due to the possibility that IoT devices could provide information about agricultural areas, smart farming is a relatively new idea. The world’s most income source field which covers the majority of the world’s income can be modernized using various sensors of IoT which can be used in the various fields of agriculture like getting the productivity of the soil, measuring the moisture of land, the requirement of waters by the crops and other various things can be implemented by the implementation of IoT.

Cryogenic Treatment: Effects On Microstructural Alteration & Correlation With Mechanical Properties

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ABSTRACT:
Cryogenic treatment has emerged as a supplementary process to conventional heat treatment methods, offering enhancements in material properties and durability through microstructural alterations. This eco-friendly and non-explosive technique has garnered attention in mechanical and manufacturing engineering, promising improved productivity in competitive markets. However, despite numerous studies discussing the benefits of cryogenic treatment, discrepancies exist regarding the correlation between microstructural changes and mechanical properties, leading to diverse approaches in cryo- processing. Recent studies, particularly in the last decade, have explored the effects of cryogenic treatment on microstructural alteration and its impact on mechanical properties. The majority of research acknowledges the positive improvements in material properties post-cryogenic treatment. However, inconsistencies and contradictions in findings have led to differing perspectives on the optimal methods for combining cryogenic treatment with pre- and post-processing techniques.

Preparation, Process Optimization & Utilization of Activated Biochar for Tractor engine Emission Control

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ABSTRACT:
The greenhouse effect, a natural phenomenon governed by atmospheric gases, highlights the importance of mitigating anthropogenic emissions to maintain Earth's atmospheric balance. This study explores the potential of activated biochar (AB) derived from biomass precursors, specifically pine needles (PN) and coconut shells (CS), for pollutant adsorption and emission control in tractor engines. Through chemical activation using phosphoric acid, the physico- chemical properties of AB were optimized for maximum yield and maximum iodine number. A full factorial (33) experimental study was conducted to analyze the effects of process parameters on AB characteristics and its application in a tractor emission control setup. Results indicate the suitability of PN and CS biomass for AB production, with distinct variations in physico-chemical properties post-activation. The activated biochar samples with maximum iodine number were utilized to fabricate the tractor engine emission control setup. The setup was found to adsorb 40-50% carbon-mono-oxide and nitrogen oxides with two sequential beds of activated biochar.

Study on the Routing Technology of Wireless Sensor Network Based on Efficient Energy Consumption

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ABSTRACT:
Wireless Sensor Networks (WSNs) play a major role in revolutionizing the world by its sensing technology. WSNs has emerged as that powerful technology which has multiple applications such as military operations, surveillance system, Intelligent Transport Systems (ITS) etc. WSNs comprises of various sensor nodes, which capture the data from the surrounding alongside monitoring the external environment. Much of the research work is focused on making the sensor network operate with minimum consumption of energy, so that it can survive for longer duration. The primary concern in the direction of saving energy has been due to the discharging of those batteries on which sensor nodes are operated. Wireless Sensor Networks (WSNs) are widely studied for their data collection and monitoring capabilities across diverse applications. However, the limited energy resources of sensor nodes present a significant challenge in extending the network's lifespan. To overcome this, we introduce Deep Learning based Grouping Model Approach (DL-GMA) that optimizes energy usage in WSNs. DL-GMA employs advanced deep learning techniques, particularly Recurrent Neural Network (RNN)with Long Short-Term Memory (LSTM), to enhance energy efficiency through effective cluster formation, Cluster Head (CH) selection, and CH maintenance.

Diabetes Prediction Using Machine Learning: A Comparative Study of Decision Tree, Gradient Boosting and Logistic Regression Models

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ABSTRACT:
This study explores the effectiveness of machine learning models in predicting diabetes, focusing on Decision Tree Classifier, Gradient Boosting Classifier, and Logistic Regression. Leveraging a dataset containing relevant health features, each algorithm is implemented and evaluated for its predictive performance. The research investigates the strengths and weaknesses of these models, considering factors such as interpretability, accuracy, and computational efficiency. Comparative analysis sheds light on their respective suitability for diabetes prediction, offering insights into which algorithm may excel under specific circumstances. The findings contribute to enhancing the understanding of machine learning applications in healthcare and guide the selection of appropriate models for diabetes prediction.

Antenna Design for Ambient Backscatter Communication with Harvested Energy

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ABSTRACT:

This research paper delves into the fusion of ambient backscatter communications and electronic harvesting, offering an examination of the utilization of integrated ambient RF signals for communication and energy harvesting purposes. The paper discusses a four-port MIMO antenna featuring CPW feeding, aimed at enhancing wireless communication data rates and spectral efficiency. By adopting CPW feeding, the antenna achieves circular polarization, enabling seamless integration with RF circuits, compact design, and favorable impedance matching. The antenna exhibits a peak gain of 6.6dBi, maintaining a gain above 3.5dB across the entire frequency band.

Design And Development of Battery Powered Onion Bulb Planter

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ABSTRACT:

Onion is one of the most important vegetable crops grown in India. Though onion is an essential vegetable used every day it is unfortunate that not much development has been made in mechanizing cultural practices in onion seed production. Major work done on onion seeder and onion transplanted but onion bulb planting for seed production is still manually done in India. The seed production aspect of onion is limitedly mechanized. As area under onion gets increased demand for onion seeds also get increased. Therefore, it is necessary to develop technology in onion seed production on a commercial basis. To bring mechanization in onion seed production project undertaken to Design develop battery powered onion bulb planter and test its performance. The developed onion bulb planter consists of feeding hopper, mainframe, handle, ridger, furrow opener, conveyor unit, battery, motor, soil bin and transmission unit. Conveyor unit consists of canvas beltand steel cups. The conveyor unit was driven by transmission unit. The power was given from BLDC motor to conveyor unit by means of chain and sprocket mechanism. Onion bulbs were fed to conveyor unit manually. A guard was provided for proper orientation of onion bulbs. The onion bulb was planted on the top of ridge. The covering device was provided for covering the bulb.

Aluminum Metal Matrix Composites from Industrial/Agricultural Waste Materials: A Short Review

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ABSTRACT:

In this paper, the authors review the current state of utilizing industrial and agricultural waste materials for developing metal-matrix composites (MMCs). This study was motivated by a desire to promote sustainable development through research. This study aimed to identify alternative materials with potential as reinforcement particles, seeking alternatives to commonly used materials such as graphite, silicon nitride, boron carbide, aluminum oxide, and similar substances. This study revealed, through multiple literature reviews, the ongoing search for industrial/agricultural materials that are less expensive and easier to procure. Thus, the objective of this systematic review is to examine how agro-based reinforcements affect the tribological and mechanical properties of metal matrix composites (AMCs) processed using various techniques. Efficient utilization of agro-waste reduces manufacturing costs and prevents environmental pollution, making it a sustainable material option. Producing cost-effective aluminum-based metal matrix composites involves utilizing environmentally friendly agricultural waste products as reinforcement materials in aluminum alloys. Literature has documented that processed agro- wastes in the form of powdery particulates exhibit significant reinforcing abilities. The latest findings show that unlike ceramic-reinforced composites, agro-based reinforcements do not lead to the formation of brittle composites. Thus, the study suggests that agro-based AMCs hold promise as substitutes for expensive and environmentally harmful ceramic-reinforced AMCs, especially in automotive applications where there is a need for higher strength-to-weight ratios, lower costs, and improved wear resistance.

Categorization of Short Text Based on Machine Learning Models

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ABSTRACT

The introductory chapter sets the stage for the research, elucidating the significance and objectives thereof. Machine Learning (ML) forms the cornerstone, empowering computers to learn without explicit programming, a capability indispensable in various computing tasks including prediction-making and spam filtering. Text mining emerges as a pivotal tool, facilitating the extraction of valuable insights from unstructured text data. Within this context, text classification assumes prominence, involving the assignment of input text objects to predefined categories. Short text classification, in particular, presents formidable challenges owing to the sparse and multidimensional nature of such data. This chapter delineates the research objectives, which encompass the development of a high-performance short text classification framework utilizing SVM, coupled with a comprehensive analysis of its efficacy.

Development And Validation of Mathematical Model for Thermal Conductivity of Woven Textile Structures

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Abstract

The estimation of thermal conductivity and thermal resistance of fabrics has been of interest for researchers in various fields. The challenges faced by limited availability of experimental setups used for direct measurement thermal conductivity of fabrics has motivated for development of innovative Methodologies. One such approach, termed as top-down approach for estimation of thermal conductivity of fabrics, has emerged as a solution for indirectly estimating the thermal conductivity of woven fabrics. This method leverages the fibre volume fraction of the fabric along with the known thermal conductivity values of the fibres and air. By employing a series/parallel resistance configuration, a mathematical formulation has been devised to model the thermal behaviour of woven fabrics. Furthermore, an advanced generalized formulation to comprehensively analyse the influence of fibre volume fraction and the thermal conductivity of fibres on the overall thermal conductivity of the fabric has also been developed. This holistic model not only offers insights into the underlying principles governing heat transfer in woven fabrics but also provides a practical framework for estimation. To validate the efficacy of the developed model, comparisons with experimental data have been conducted, ensuring its reliability and accuracy in predicting thermal properties.

Influence of Phase Interaction Intensity Factor on Numerical Modelling of Flow Boiling Heat Transfer in Electronic Cooling Applications

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ABSTRACT:

Heat sinks for heat transfer in high heat flux electronic devices (above 100 W/cm2) in data servers, cloud computing, high-end microprocessors etc., incorporate phase change of cooling fluid to take advantage of both sensible and latent heat of evaporation. Experimental research of these devices demonstrate that their efficiency depends upon several key fluid and flow properties, as well as initial boundary conditions such as mass flux, heat flux, inlet subcooling of fluid, pressure drop, boiling regimes etc.. But numerical simulation of these experiments using CFD methods faces major hurdles to replicate these experimental results, owing to high complexity in the underlying physical process of flow boiling, particularly in narrow passages. Lee model for multiphase flow is one of the most popular numerical models used to explain the complicated physics of phase interactions during flow boiling. It replicates the phase interaction process of boiling using an empirical constant called ‘phase interaction intensity factor, or mass transfer intensity factor. Present 2D numerical study for flow boiling in a hybrid heat sink regime observes the effects of variation of the empirical constant in numerical simulation of boiling process. The objective of the investigation is to present the significant impact of empirical constant in the development of numerical flow regimes.

Exploring the Potential Applications of Object Detection in the E-Commerce

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ABSTRACT:
As the number of internet users continues to grow, E-Commerce has become an increasingly important factor in the buying and selling of products. Human-computer interactions are becoming more prevalent, and there are various intelligent assistants available on E-Commerce sites that can help users interact with the platform. However, these assistants are typically text-based or speech-based and struggle with searches related to product features. A more convenient solution for users would be an application that can scan product barcodes and provide all relevant details, while also monitoring the user's budget and providing warnings if they exceed the budget margin. This application could also include a payment gateway to eliminate the need for long checkout lines at supermarkets. Supermarkets are also turning to image-based object detection as a critical tool for retail in the future. This research aims to compare and contrast the functionality and challenges of two potential solutions: Scan and Go and Real-Time Object Detection Technology.

Heat Transfer & Fluid Flow Performance Of Artificially Roughened Solar Air Heater – A Review

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ABSTRACT:
Solar air heater is a solar energy collection device for space heating, process heating and various applications in agriculture. Solar air heaters are cheap and simple device that converts solar energy to thermal energy. The use of an artificial roughness of different types and orientation on an absorber surface is an effective technique to enhance thermo hydraulic performance of a solar air heater. The heat transfer and friction characteristics of artificially roughened solar air heaters have been reviewed and reported in this article. An attempt has been made to compare the performance of solar heaters having different kinds of roughness geometry used by previous researchers based on correlations developed by them.

An Extensive Review on The Use of Nano Enhanced phase Change Materials To Improve Solar Photovoltaic Modules' Conversion Efficiency

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ABSTRACT

Exploring how phase change material enhanced by nanotechnology might be used to boost solar photovoltaic (PV) module performance and investigating the challenges posed by heat buildup in solar panels, the benefits of phase-change materials, and the state of research in this exciting area. Weather and temperature are two examples of environmental variables that can have a big impact on solar panel efficiency. However, the effect varies according to the particular type of solar cell. The absorptivity and emissivity of the absorber, the emissivity of the glass cover, the temperature of the absorber plate, the collector tilt angle, and the quantity of glass covers are the main factors influencing the performance of a solar collector. Photovoltaic solar panels are a great way to generate renewable energy. They are an excellent means of utilizing solar energy and aid in the production of electricity. Phase change materials are an excellent method for boosting efficiency. It facilitates phase-changing materials' absorption spectrum expansion. The use of nano-PCMs in smart textiles for human comfort, thermal storage systems, and microelectronic system cooling has drawn a lot of attention. It is currently of interest to see how Nano-PCM based energy systems can reduce global gas emissions and save energy. The use of nanoparticles that alter the thermo-physical properties is necessary for PCM enhancement. These nano-enhanced particles have a high release and thermal absorption capacity.

A Review Paper on Solar PV System

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ABSTRACT

Solar energy has emerged as a leading challenger in the global quest for sustainable and renewable energy sources. The energy obtained from the sun's radiation is known as solar energy. This energy can be captured and can be used to generate electricity, desalinate water and generate heat,etc. Because of its inexhaustible supply and its non-polluting character solar energy is expected to become increasingly attractive as a renewable energy source. The amount of sunlight that strikes the earth's surface in an hour and a half is enough to handle the entire world's energy consumption for a full year. Solar energy can easily draw from direct sunlight so it is very cost-effective Solar technologies convert sunlight into electrical energy either through photovoltaic (PV) panels or through mirrors that concentrate solar radiation. This energy can be used to generate electricity or be stored in batteries or thermal storage. PV technology is clean way of generating electric power directly from solar radiation.

Study on Enhanced Techniques to Analyze & Classify Diseases in Plant Leaves

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ABSTRACT:
Deep learning sets up an on-going, present day framework for image preparing and information investigation that guarantees results and enormous potential. This permits bigger learning capacities and along these lines better and exactness. As deep learning has been decidedly applied in different spaces, it has newly entered additionally the area of horticulture. In this paper, we completed an audit of different research endeavours that work on deep learning strategies, applied to different plant diseases and nourishment generation errands. We investigate different plant diseases, the careful calculations and structures utilized the datasets, nature and pre-handling of information utilized. Also, we study assessments of deep learning with other existing well known procedures, as for order execution. Our discoveries show that deep learning gives high precision, beating existing generally utilized image handling methods.

Preparation method of carbon paste for HTL-free perovskite-based PV devices

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ABSTRACT:
Nowadays, perovskite-based solar cells have attracted the attention of researchers due to their lower cost and comparable photovoltaic performance to silicon-based solar cells. Perovskite-based solar cells have shown fast improvement in power conversion efficiency (PCE) from 3.8 % in 2009 to 26.1 % in 2023. In highly efficient perovskite-based solar cells expensive hole transport material (HTM) (spiro-OMeTAD) and counter electrode (Au) are used. To replace these expensive materials, a carbon electrode is a very good option that works both as a hole transport layer (HTL) and a counter electrode. But most of the solvents used to prepare carbon paste damage the perovskite layer hence is not useful for perovskite-based devices. We have prepared low-cost carbon paste and used it in CsPbBr3 perovskite-based PV devices. Fabricated HTL-free devices with FTO/TiO2/CsPbBr3/Carbon structure show power conversion efficiency (PCE) of 1.0 % and open circuit voltage (VOC) of 1.1 V. All the work has been performed in an ambient-air environment.

Extreme Heat Protective Clothing

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ABSTRACT:
The safety of firefighters and industrial workers, which are working in dangerous environments, is the primary concern, and these people are exposed to varying degrees of heat and flame while on their job. To survive in such circumstances, special type of thermal protective clothing is essential. However, current thermal protective clothing is heavy and only provides adequate protection in flashover situations for a short period of time. Therefore, it is necessary to reduce the weight of these special purpose garments and enhance their protective ability. The design of this fully indigenous, low-cost and light weight (approx. less than 2 kilograms) structural fire protective suit is multi-layered, with a shell fabric, moisture barrier, thermal liner and face fabric. Honeycomb meta-aramid woven fabric at the outer shell provides high flame retardancy, heat resistance, high breaking strength, high tear strength and durability. PU coated PTFE laminated meta-aramid nonwoven fabric is used as moisture barrier and meta-aramid needle punched multi- layered nonwoven fabric is used as thermal liner. A face fabricmade up of woven cotton fabric is also placed after thermal liner order to provide tactile comfort to the wearer. The design is optimized through in-house developed and validated software simulation tool. According to NFPA standards, the thermal protective performance rating of indigenous jacket is greater than 35 cal/cm2 ×sec.

Review on effectiveness of mulching materials for modifying soil Properties

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ABSTRACT:
The significant impact of climate change on global temperatures and its subsequent effects on water and energy consumption in agriculture. Focusing on mulching practices as a crucial mitigation strategy, the study delves into the diverse effects of various mulching materials and methods on soil and environmental factors influencing crop productivity. Plastic mulching emerges as particularly effective in controlling soil conditions and enhancing crop yield, while organic alternatives prove cost-effective and environmentally friendly. The selection of an appropriate mulching material is contingent upon factors such as crop type, management practices, and climate. The paper emphasizes the need for future research on the influence of low- cost biodegradable mulching materials on microclimate modifications, fertility, and overall crop performance. The alteration of soil hydrothermal regimes by diverse mulching materials plays a pivotal role in shaping the soil environment essential for plant growth. Despite the water-saving benefits offered by mulching, considerations such as material availability, durability, and cost are crucial in selecting the most suitable option for specific situations.

Business Implications of Ml-Enhanced Stroke Risk Prediction using ECG & PPG Signals: Healthcare Analytics & Risk Management Perspectives

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ABSTRACT:
Stroke is a disease that can result in death or major disability; therefore, it's important to catch the warning signals early. Ischemic and hemorrhagic strokes are distinguished clinically, with the latter requiring prompt intervention with thrombolytic or coagulant therapy. First, it's crucial to recognize the immediate warning signals of a stroke, which can vary from person to person and require the intervention of a specialist and a hospital. However, past studies have not concentrated on preventing stroke but rather on treating it after the fact. Researchers have increasingly relied on image processing, particularly MRI and CT scans, to detect and predict prognostic markers in stroke patients in recent studies. It is difficult to discover such processes inreal time, and there are expenses and time delays associated with evaluating them. In this study, we present a multi-modal bio- alert system that uses photoplethysmography (PPG) and electrocardiogram (ECG) data to diagnose and cognitively interpret stroke prognostic markers inthe elderly. We developed a stroke illness prediction device with an ensemble structure that integrates regression algorithms, allowing it to forecast stroke infections in real time while the user is out for a stroll. The elderly can easily carry bio-signal sensing devices thanks to the careful machine, which records bio- indicators while walking at a sampling quantity of one,000 Hz in relation to 2d from either the 3 conductors of the ECG or the forefinger for PPG. Real-time analysis of senior stroke patients confirmed the exact prediction's performance and efficiency.

A Image Processing-Based Approach for Identifying Fake Fish and Original Fish

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ABSTRACT:
India holds a significant position in the global fish-exporting arena, ranking among the top five nations. Fish and fish products form a substantial portion, constituting approximately 17% of its agricultural exports. However, ensuring the authenticity of fish species presents a formidable challenge. The conventional method of species identification relies on morph metric forms, requiring extensive human labour and time, which can disrupt normal fish behavior. In response to this challenge, our study focuses on developing a mobile application integrating image processing techniques with a machine learning framework. This innovative

approach revolutionizes the process of distinguishing between genuine and counterfeit fish species, offering remarkable advantages in terms of efficiency and cost-effectiveness. Through the utilization of machine learning algorithms, the application will undergo training to accurately recognize distinct features and patterns in fish images. This empowers users to make informed decisions regarding the authenticity of encountered species. The adoption of this technology not only expedites the identification process but also enhances accuracy, minimizing the risk of misclassification. Moreover, the mobile application boasts a user-friendly interface, catering to adiverse range of stakeholders, including consumers, fisheries authorities, and seafood industry professionals. By leveraging modern technological advancements, our research contributes to the development of efficient tools aimed at ensuring the integrity and transparency of the fish supply chain.

Advancing Solar PV Efficiency Through Advance Water Spraying Technique

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ABSTRACT:
This abstract delves into the burgeoning domain of employing water spraying techniques for the augmentation of solar photovoltaic (PV) module efficiency. It provides an extensive review of current research endeavours, methodological approaches, empirical discoveries, and prospective trajectories within this specialized field. Water spraying emerges as a promising avenue for ameliorating the performance of PV modules by counteracting temperature escalation, mitigating dust accretion, and alleviating surface contamination, thereby enhancing overall efficiency. Empirical investigations reveal notable enhancements in energy yield, conversion efficiency, and thermal regulation consequent to water spraying interventions. Despite encountered challenges such as water resource availability and system upkeep, the methodology presents itself as a cost- efficient and practical solution suitable for both utility-scale and decentralized solar installations. Future research directions ought to concentrate on fine-tuning spraying parameters through computational modelling, integrating sophisticated control algorithms, and devising robust sensor technologies. Interdisciplinary collaborations amongst researchers, industry stakeholders, and policy influencers are imperative to overcome technical intricacies, economic constraints, and regulatory impediments, thereby facilitating widespread adoption and maximal exploitation of water spraying augmentation strategies in advancing the frontiers of sustainable energy deployment.

Exploring Convergence of International Classification of Diseases (ICD11) Via Technological Innovations

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ABSTRACT:

Concerned with the unprecedented speed of the COVID-19 pandemic, governments, health institutions, and tech professionals worldwide realized the critical need for statistics on tips via digital modes for the number and cause of deaths in the era of pandemics. ICD11 endorsed by WHO, equipped with digital capability founded on reliable taxonomic and scientific assumptions stepped in, to establish the International standards for advanced health information systems. Recent technological innovations in the past 30 years and the adoption of ICD11 in May 2019 by the World Health Organization (WHO) not only served the statistical data needs on death causes and morbidity but emerged as a versatile tool for International Classification of Diseases (Hirsch et al., 2024). With its robust framework, ICD has been translated into 43 languages and is used in at least 120 countries worldwide for a variety of purposes.

Impact Of Multiple Sheath Layers on Hybrid High Performance Yarn

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One of the main indicators of a hybrid yarn suitability as a high-performance material is its strength. The performance of the individual yarn that make up the hybrid yarn determines its tensile qualities. Because of this, scientists are always interested in learning more about the best yarn types and wrapping methods for creating hybrid yarn. Hybrid yarn must also be used to create cut- resistant apparel, necessitating the selection of unique fiber kinds that are specifically intended to withstand cuts. In keeping with that, HPPE and polyester yarn were chosen for the hybrid yarn's sheath layer, while stainless steel and glass fiber were chosen for the core layer. The ultimate performance of the hybrid yarn was considered while choosing the twist direction of the sheath layers and the linear density of the polyester, glass, HPPE, and stainless-steel yarns. The investigation of performance differences was conducted after an evaluation of the tensile performance of several varieties of HPPE. Ultimately, it was discovered that glass fibers exhibited a propensity for repeated cracks before failure and that stainless steel yarn with HPPE and polyester in different twist orientations performed better than yarns with the same twist direction.

3D Response Surface Analysis of the Material Content and Microclimate Thickness on the Heat Protective Performance of Fire Fighters' Clothing

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ABSTRACT

Fire accidents occur worldwide and can be categorized into proximity, structural, emergency, and response. Firefighters must confront these situations and protect themselves from thermal hazards. Fire protective clothing comprises three layers, with the outer layer being the most crucial. The outer layer of the turnout suit, manufactured from a combination of meta-aramid and para-aramid, was the focus of this study. The regular honeycomb weave structure was also analyzed due to its unique and excellent performance. The content of para-aramid varied from 0 to 100 percent. Additionally, three different microclimate thicknesses 0 mm, 6 mm, and 12 mm were considered during the experiment. A 3D response surface of heat protective performance (HPP) was analyzed using design expert software at various microclimate thicknesses. A mathematical equation was derived from the model, and the predicted protection time was compared with the actual protection time. An appropriate correlation between the actual and predicted values of protection time was observed. Finally, the response surface analysis revealed the suitable para-aramid content percentage and the effect of microclimate thickness on the outer layer of firefighter suits.

A Comparative Analysis of Time Series Forecasting Techniques For Energy Consumption Predictions

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ABSTRACT

Energy is the priority of many of the Sustainable Development Goals. SDG Goal 7 (Affordable and Clean Energy) aims to "Ensure access to affordable, reliable, sustainable and modern energy for all." The rapid expansion of high-density cities as accompanied by commercial and industrial development results in an increase in energy consumption, especially in the form of electricity. With the sudden surge in smart grids development, short term, medium term and long-term power consumption forecasting has gained cultivated interest in it. So, concerning reducing the energy footprint energy prediction is an important concern to enhance energy management strategies for buildings. To reduce the negative impact of high energy consumption, there is a need to implement energy-efficient technologies and practices in buildings and industries. Although after starting usage of smart meters created possibilities for energy monitoring as well as for sensor-based energy forecasting, but machine learning algorithms are still lacking in the interpretation of the time dimensionality of a signal. So, Recurrent Neural Networks (RNN) based on sample generation and Sequence- to- Sequence (S2S) deep learning algorithm (LSTM) are used to capture time dependencies and result in energy load forecasting methodology. The techniques will be used to handle missing data like Mean value Imputation, Last observation carried forward, etc. to handle missing data as otherwise, it would lead to biased estimation. Models are trained and tested on an electrical consumption dataset, with five-minute, 30 minutes, 1 hour and 24 hours incremental data.

Effect of Areal Density on Mechanical & Comfort Behavior of Cut Protective Workwear Fabric

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ABSTRACT

In order to increase production and efficiency, there is a rising need for lightweight, comfortable cut protection gear in the glass, metal, protective, and automotive sectors. In this study, the impact of areal density on the mechanical and comfort properties of cut protective workwear was investigated. The cut protective garment was prepared using several high-performance fibres. Para-aramids, HPPE, stainless steel, glass, and polyester high-performance fibres were used to create two different wrap-spun compositeyarns with linear densities of 15, 7, 6, and 5 Ne. Clothes with plain and 4-end satin weaving designs werecreated on a rapier loom machine in three distinct area weights of 175,250, and 350 g/m2. According to thedifferent standards, mechanical and comfort characteristics of cut protective workwear were evaluated. After analyzing the results, it was revealed that the mechanical and comfort attributes of cut protective workwear were improved with higher areal density.

Performance Analysis of AI Based Algorithm for Data Security In Cloud Environment

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ABSTRACT

Cloud computing has emerged as a new tool to pool and offer multiple computing resources in the ICT industry. Most organizations are now adopting cloud computing due to the availability of large-scale cloud facilities at low cost, such as Paytm, in India. Data security is a major concern as user data is always stored on remote cloud locations. Data owners are using firewalls and Virtual Private Networks (VPNs) to ensure data security at the end point. Data security is also a major concern when data owners store sensitive data on cloud servers and users are accessing required data from remote cloud machines. Data security in the cloud is one of the most popular research areas in the cloud data protection domain. Encryption algorithms are the most popular approach for ensuring data security in today's rapidly changing cloud computing environment. For the purpose of this research, we have examined and compared the performance of some widely used symmetrical key encryption algorithms: AES (Advanced Encryption Standards), ECC (Elliptic- Curve cryptography) and Blowfish (Cryptographic Encryption). We found that AES outperforms ECC when security flaws were considered. However, AES requires a higher amount of processing power compared to ECC. While tested by simulation we found that AES outperforms Blowfish when security flaws are put into consideration. However, AES requires more processing power compared to ECC. After analyzing all the results, we have proposed MKP as an efficient hybrid security algorithm that will combine the benefits of both approaches to provide better data security in cloud based systems. Our performance analysis test proved that the proposed hybrid approach named MKP will be an excellent solution for encrypting and decrypting files in cloud environment even on large block sizes and longer key with very high level of security.

Detecting High-Risk Pregnancies & Premature Births: A Comprehensive Survey

Mohit Sah

Abstract:

High-risk pregnancy detection is important for maternal and fetal health in regions having limited access to medical resources. Our solution presents identification for resource-limited settings using Artificial neural networks ANNs for predicting high-risk pregnancies early and precisely. Which enables improved health outcomes and timely intervention. ANN model design, implementation, evaluation, and addressing healthcare challenges with resource limitation. High-risk pregnancy may cause several issues including lifelong health disabilities. We aim to diminish the consequences of high-risk pregnancies and test systems for their reliability and accuracy. Expert ANN system and backpropagation algorithm which showsresults with a 0.98 accuracy rate. We utilized a dataset comprising 172 medical records from patients, featuring 17 input parameters, and encompassing 5 distinct output classes. These classes included normal early pregnancy as well as four categories denoting various pregnancy disorders. Through a rigorous training and testing process, our experiment demonstrated the feasibility of applying an Artificial Neural Network (ANN) to predict pregnancy disorders. Notably, our model achieved an accuracy rate of approximately 78.248\%. This achievement was attained through meticulous parameter tuning: a learning rate of 0.1, input layers with 17 neurons, 5 neurons at the output layer, layers that are hidden with multiple neurons i.e., 50, and an error value of 0.01.

Innovative IoT Solution for Enhancing Fruit quality in The India Using Machine Learning

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Abstract

According to the Ministry of Commerce and Industry, GOI, India significantly contributes to the global fruit market. In the fiscal year 2022-23, the country exported 674,291.70 metric tonnes of fresh fruits, encompassing grapes and mangoes, valued at Rs. 2,736.99 crore. However, maintaining fruit quality throughout the supply chain poses a considerable challenge. Key parameters such as internal quality, weather conditions, and gas composition play crucial roles in quality control. Various technologies, including laboratory methods, destructive & non-destructive devices, are utilized for quality assessment, depending on the specific parameter under consideration. In this study, we propose the development of an IoT & ML based device designed to assess fruit freshness based on gas analysis within storage environments and packaging. The device focuses on monitoring three critical gases—ethylene, carbon dioxide, and oxygen— using sensors such as MQ3 and MQ135. Additionally, it incorporates the detection of gas emissions from deteriorating fruits, odor detection levels through sample analysis, and the quality training of a device using Machine Learning. This innovative model aims to optimize fruit distribution by providing insights into freshness levels and determining optimal storage durations.

Effect of Crack Angle And Thickness On T-Stress using Finite Element Method Inclination

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ABSTRACT

This paper addresses the critical issue of pre-existing cracks in structural components, which are frequently exposed to variable stress, including tensile stress, shear, or a combination of stresses. The presence of such cracks poses a significant threat to the integrity of structures, leading to serious failure problems and potential failure. To mitigate this risk, a thorough investigation of pre-existing cracks is imperative. There are limited studies in mode III loading as compared to mode I. In the present study, a modified CT specimen is developed in which mode III loading is also present and it depends upon crack inclination angle and thickness of the specimen. To understand this mechanism better, dependency of T-stress is noticed on these parameters. Results indicates that an increase in the crack inclination angle (0°, 15°, 30°, 45°, and 60°) corresponds to an elevation in T- stress, while an increase in component thickness (6, 8 10 and 12 mm) leads to a noticeable decrement. The findings contribute valuable insights into optimizing structural designs for enhanced failure resistance in mechanical components.

Life Science

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Role of Alstonia Scholar is Leaf Extract in Modulating the CNS and in its Anticancer Protection

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ABSTRACT

Due to its potential therapeutic properties in the prevention and treatment of various disorders, the Alstonia scholaris leaves extract has been designated as an anticancer and central nervous system (CNS) modulating agent. The leaves of this Plant have a variety of activities related to their constituents, which was observed by Extraction using various types of Solvent according to their polarities, various literature and research article reported the presence of most of the constituent, and here 2,3-secernate was selected as an active constituent in treatment of Cancer of various cell line (A549, HeLa, HepG2, HL60, and KB), respectively. In this activity, it was seen against Breast cell lines MCF-7 and T47D in Breast Carcinoma, and pyridine was used as a CNS Modulating agent in Swiss albino mice with a body weight of between 20 and 25 grams. The activity was measured by locomotor and rotarod activity. MTT-Assay was used to conduct in vitro cytotoxicity research on a 69-year-old female organism of the species Homo sapiens. Inactive mitochondria prevent even recently dead cells from efficiently cleaving MTT. Live cells create a dark blue formazan from MTT [3-(4,5-dimethyl thiazole-2-yl)-2,5-diphenyl tetrasodium bromide], a light-yellow substrate. Thus, calorimetrically assessing MTT cleavage may quantify the number of living cells. The percentage of growth inhibition also increased with increasing concentrations (in g/ml) of the ethanolic extract of Alstoniascholaris, which included the separated component C. This shows that the extract is very effective against cancer. Swiss albino mice weighing 20–25 grams were exposed to a chemical called pyridine, which alteredtheir behavior. At doses of 50 and 100 milligrams, both the aqueous and ethanolic extracts showed CNS depressive effects, as measured by a decrease in locomotor activity counts and a delay in rotarod activity decrease.

Deciphering the Molecular Mechanisms Underlying the Anti-Aging Properties of Rosmarinus officinalis L. through Network Pharmacology Analysis

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ABSTRACT

Rosemary, known for its therapeutic properties, particularly its antioxidant and anti-inflammatory effects attributed to Carnosic and Ursolic acids, is utilized in folk medicine, pharmaceuticals, and cosmetics. It has

shown promise in treating inflammatory diseases, skin cancer, mycoses, and wound healing. Additionally, it has potential uses in cosmetics for alopecia, cellulite, UV damage, and aging (de Macedo et al., 2020; Ghasemzadeh Rahbardar and Hosseinzadeh, 2020; Li Pomi et al., 2023). Targeting aging processes is crucial for preventing age-related diseases, and network pharmacology provides a pathway for understanding the relationship between compounds and diseases (Keshavarz et al., 2023; Ye et al., 2022). Employing network pharmacology, this study predicts the potential targets and signaling pathways of Rosmarinus officinalis for addressing anti-aging disorders, laying the groundwork for further research into its mechanisms (Chandran et al., 2017).

Diversity Of Ept (Ephemeroptera, Plecoptera, Trichoptera) Along Drinking Surface Water Sources in Pithoragarh City, Uttarakhand, India

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ABSTRACT

Macroinvertebrates are significant indicators for a variety of stressors in streams and rivers because they are vital to the food webs in these environments (Ollis et al. 2006; Masese et al. 2013). Additionally, they are extensively dispersed, comparatively static, and simple to sample and identify down to the family level (Merritt and Cummins 1996). Because the orders Ephemeroptera, Plecoptera, and Trichoptera—often shortened to EPT—are susceptible to a variety of stressors, bioassessment programmes frequently employthem. Consequently, despite being vulnerable to pollution in temperate streams and rivers, these organisms have been extensively employed in biomonitoring initiatives worldwide (Ollis et al. 2006; Herman and Nejadhashemi 2015). According to Herman and Nejadhashemi (2015), the majority of EPT taxa are intolerant of water pollution and will be among the first macroinvertebrate species to respond to environmental changes. The aim of the current study is to evaluate the ecological health of drinking surface water sources in and around Pithoragarh, Uttarakhand, by conducting a thorough biological analysis of the diversity of macroinvertebrates belonging to the orders of ephemeroptera, plecoptera, and trichoptera.

Biochemical Analysis and Microbial Characterization of Biogas Slurry

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ABSTRACT: The conversion of lignocellulosic agro-wastes into bioenergy presents a sustainable solution to energy needs while addressing environmental concerns. Lignocellulosic biomass, derived from agricultural residues, comprises complex polymers like cellulose, hemicellulose, and lignin. However, the recalcitrant nature of lignocellulosic biomass poses obstacles to efficient bioconversion (Wu et al, 2021). Anaerobic digestion emerges as a viable bioprocess for valorizing these biomass resources, where lignocellulosic agro-wastes serve as substrates for microbial fermentation. Biogas plant slurry, a byproduct of anaerobic digestion, stands out as a source for microbial communities and enzymatic activities capable of degrading complex lignocellulosic substrates (Manyi-Loh & Leus, 2023). The microbial diversity within biogas slurry harbors a suite of lignocellulolytic enzymes, including cellulases and hemicelluloses, crucial for breaking down cellulose and hemicellulose polymers into fermentable sugars. This microbial consortium also participates in the partial degradation of lignin, enhancing substrate accessibility. This study aims to explores the biochemical analysis and microbial characterization of biogas plant slurry, emphasizing its role as a reservoir of microbes and microbial enzymes for lignocellulosic biomass degradation. Understanding these interactions provides insights into harnessing biogas slurry's natural biocatalytic potential, contributing to the cost-effective and sustainable bioconversion of lignocellulosic agro-wastes into bioenergy production.

Antibacterial potential of Psidium guajava and Ricinus communis plant extracts against honeybee pathogen Paenibacillus larvae subsp. pulvifaciens (MTCC 2904)

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ABSTRACT: American foulbrood (AFB) is the most threatening disease caused by the bacteria Paenibacillus larvaewhich is distributed worldwide. The long and irrational use of antibiotics to counter AFB can result the emergence of antibiotic-resistant bacterial strains and its residues in honey. In order to dodge and regulate AFB, alternative ways need to be explored for AFB management. It is known that the plant extracts can reduce or inhibit the development of bacteria and other microbes. In the present investigation the hydraulic and ethanolic extracts of Psidium guajava (Guava) and Ricinus communis (Castor) plant leaves were tested for their antibacterial potential against Paenibacillus larval subsp. pulvifaciens (MTCC 2904). The flavonoid content, phenolic content and free radical scavenging activity of the prepared extracts were also evaluated. The ethanolic extract of Ricinus communis was found to be the most promising with an IC50 value of 1.0065 µg/ml, followed by ethanolic extract of Psidium guajava having IC50 value of 2.778 µg/ml. The activity of the extracts, against the bacteria was evaluated by the minimum inhibitory concentration (MIC) test and disk diffusion method. P. larvae subsp. pulvifaciens (MTCC 2904) was intermediate to susceptible for the tested crude extract of both Psidium guajava (Guava) and Ricinus communis (Castor). The findings of the study are encouraging, and these plant extracts can be further characterized and used as an effective alternative of various antibiotics used in mitigating AFB disease.

Exploring The Rhizosphere Microbiomes Associated with Bamboo Species Encompassing Plant Growth Properties

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ABSTRACT:

Bamboo, a member of the Poaceae family and Bambusoideae subfamily, is the most economically important forest plant as well as one of the most numerous and diversified grasses, withover 1500 species in 90 genera. These woody-stemmed grass species are identified as superior herbs due to their special characteristics: rapid reproduction, fast growth, high biomass, rich microbial diversity, and high commercial interest. Plant-microorganism interactions found in bamboo rhizosphere, exhibit diverse microbial populations. Such soil microorganisms are essential for maintaining soil fertility, promoting plant growth, and thus play an important role in the availability and cycle of nutrients. These functionally diverse microbes in the bamboo rhizosphere play an important role in increasing plant growth and are known as Plant Growth Promoting Rhizobacteria (PGPR). Moreover, factors that influence the suppressive soil mechanism include soil physicochemical parameters such as, pH, organic matter concentration, and the overall population and activity of soil microorganisms. The amount of IAA in soil extract reflects the number of bacteria in the bamboo rhizosphere. Greater IAA level indicated the existence of higher number of microbial communities in the rhizosphere. Total bacterial and fungal populations in bamboo rhizosphere soils were greater than in non-bamboo rhizosphere soils.

Floristic Composition in Auli Gorson Alpine Meadow of Garhwal Himalayas, Uttarakhand, India

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ABSTRACT:

A natural vegetation develops in response to the environmental conditions of a region. Common Indian vegetation types include tropical rainforest, tropical deciduous forest and temperate forest. Vegetation regulates the flow of biogeochemical cycles, soil characteristics, wildlife habitat and source of energy for consumers. Timberline represents the area above which trees exists as bushes known as 'Krummholz'. The climate above timberline is harsh and it is usually covered by snow for almost six months in a year. Alpine grasslands are locally called 'Bugyals' in Grahwal and 'mergs' in Kashmir. The plants family that dominate alpine meadows are Asteraceae, Cyperaceae, Poaceae, Rosaceae etc.

Effect of Gamma Irradiation on Nutritional, Antioxidants & Antinutritional Factors of Wheat Varieties

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ABSTRACT: Cereals constitute a large part of human balanced diet, since it satisfies all the requirements and are main source of nutrients. One of the most significant cereal crops and the primary source of cereal protein in human nutrition is Wheat (Triticum aestivum). The quality of flour during storage gets deteriorated by change in the temperature conditions, moisture, fungus development, pest infestations and many other variables. Gamma rays have been used to avoid food deterioration. The present study was undertaken to evaluate the quality of flour after exposing it at different dose of gamma radiation. The effect of gamma irradiation doses (1, 2, 5, 7 and 10 kGy) on quality of wheat flour was studied. The nutritional, antioxidant and antinutritional parameters like crude protein content, total starch content, amylose, amylopectin content, amylose to amylopectin ratio, resistant starch, total phenol, flavonoid, total antioxidant content, tannin and phytic acid content in non irradiated wheat varieties ranged from 11.15%-13.14% , 61.39-67.08 gm/100g, 17.62-22.62 gm/100g, 82.38-77.38 gm/100g, 0.21-0.29, 0.50-0.74 gm/100g , 1.19-1.38mg GAE/g, 0.22-0.36 mg QE/g, 12.44-16.22 µmole of vit C/gm, 8.48-6.03 mg TAE/g and 280.48-253.65 mg/100g, respectively. After exposure to gamma radiations, no significant difference was observed in crude protein and total starch content, whereas amylose, resistant starch, phenol, flavonoid and total antioxidant content were increased significantly ($p \leq 0.05$) in wheat with increasing doses. This reduce many chronic diseases such as heart diseases, obesity and certain cancers. Moreover, it reduces the antinutritional factors which interferes with absorption of minerals, proteins etc. by humans. Tannin, phytic acid and amylopectin content were found to decrease on exposure of irradiation. It may be inferred that gamma irradiation doses does not deteriorate the quality of wheat flour however, it may improve the quality by decreasing the antinutritional contents and increasing the antioxidants.

AI tools in integrated pest and plant diseases management in Organic farming

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ABSTRACT: Organic farming is gaining remarkable importance throughout the world. This shift from the conventional to non-conventional is due to the adverse effects of pesticides to control pest population from harming the crops. Indiscriminate use of pesticides to control insect pest population have serious impact on human health and also have adverse effect on environment. But question arises if we will not use pesticides and other chemicals to control pest population and plant diseases than how can we save are crops from insect pests and plant diseases? The answer is through the use of Artificial Intelligence (AI) in insect pests and plant disease management practices. This ground breaking technology has brought significant changes in agriculture from pre-harvest to post-harvest, where insect pests and disease management are one of the

important aspects. Earlier Geographic Information System (GIS), Global Positioning System (GPS) and Remote Sensing (RS) were used to monitor insect pests and plant diseases but were beyond the reach of small farmers with small land holdings due to their cost. With advancement in the technology over the time period AI- driven sensor fusion techniques are surpassing the GPS and Remote Sensing based approaches. AI- powered cameras and sensors fitted on Drones can be employed by farmers to monitor fields for pests and crop diseases and nutritional deficiencies by scanning the plant for insect pests, plant diseases and their visible symptoms of infestation and incidence. AI models like GraphCast is used to predict weather that can be helpful for the farmers to decide planting schedule. ContraMoth which is areal time sensor detects insects at all the stages. It is capable of sensing pheromones and semiochemicals released by adult and larvae respectively. The continuous wave LiDAR system is used to monitor and identify insects. LiDAR is a remote sensing method that uses pulse from a laserto survey crop fields with high level accuracy with the help of a laser, scanner and GPS receiver. In case of plant disease AI technologies like Machine learning (ML) algorithms c4.5 classifier, tree bagger and linear support vector machines make use of digital images to identify plant diseases. CNN(Convoluted Neural network) algorithms detect diseases in plant leaves with high accuracy. Plantix and CheckiT are AI applications that identify the nutrient deficiencies of the soil, pests and diseases. AI driven precision farming techniques like sensors and drones equipped with AI technology help the organic farmers to take timely decisions and actions without any much efforts regarding the use of organic fertilizers to meet soil nutritional deficiencies, Biocontol agents like insect parasites and predators to manage insect population below thresh hold level and plant diseases by avoiding it through crop rotation, intercropping, early or late sowing, use of botanicals and finally following good agricultural practices. Thus, AI have the potential to make precision farming including organic farming more economical and ecofriendly.

Regeneration Status and Seed Maturity Indices of D. butyracea Roxb. a Promising Oilseeds Producing Tree Species of Uttarakhand, India

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ABSTRACT: The great diversity and richness of the vegetation of Himalayan has drawn enough consideration, the main emphasis having been on some economic aspects and the other enormously vital parameters. In the long scope of the whole Himalaya, Uttarakhand is situated centrally. In Uttarakhand there are several trees species seeds of which contain high level of oil, used for several purposes commonly called tree borne oilseeds (TBO's). These species are severely over exploited for the available fruits and seeds, hence facing serious problem of regeneration. In view of this context the present study focused on promising tree borne oilseed species Diploknema butyracea (Cheura), seeds of which yield edible oil. In the present study the regeneration status and fruit/seed maturation time have been extensively studied for the D.

butyracea. Similarly we have also tried to identify the potential areas of the species in the region between 300-1500m from sea level in the region. A thorough survey was conducted and 10 sites were selected for the study in Uttarakhand. However, to study the seed maturity indices 03 site were selected as fruits/seeds were collected in short time intervals and brought to the laboratory within 3-4 hours. Phytosociological analysis was carried out by placing 20 quadrats of 10×10m size and population structures were developed to know the regeneration status. Physical parameters of fruits and seeds were studied along with seed maturity indices and germination. Across all the studied sites the density of D. butyracea ranged between 40 and 95 indi/ha which was generally low and regeneration was poor. The change in fruit colour was good indicator of maturity and became mature in the last week of June to July. Seeds germination across all sites increased with decrease in moisture content. The mean seed germination was ranged from 12.0±2.1 to 77.33±3.5%. The study shows that the regeneration status of the studied species was poor as the fruits are over exploited for the extraction of oil in the region. To conclude it is evident that very few studies on regeneration status and fruits/seeds maturation time of Tree Borne Oilseeds species TBO's) have been carried out in India. The present study can play a vital role in scientific understanding for the better management and conservation of the species. The study also recommend that the species can be promoted on wastelands, village commons and agricultural field bunds and may play an imperative role in self-sufficiency of edible oils production in near future.

Aedes aegypti container preference for oviposition and its vector surveillance and disease prevention in Udham Singh Nagar (Uttarakhand)

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ABSTRACT: The present study provides a rationale for using clay containers as a possible surveillance (ovitraps) or vector control tool. The household larval survey in 50 localities showed that 48 % of 200 water–holding containers in 500 houses were plastic, followed by house coolers (13.12%), and house water tanks (23.23%). The highest probability of breeding habits occurs in clay pots (9.3%), metallic containers (8.3%), and solid waste (6.9%). The laboratory-based study showed that clay containers (79.05%) compared to other (plastic, paper, metal, and glass). Vector surveillance is an important toolfor understanding the strategies for control of A. aegypti. It is an important tool for the identification of breeding sites and the selection of vector mosquitoes, a vital component of its control. In these studies, A. aegypti breeds indiscriminately in different types of habitats, and their oviposition affects different biotic and abiotic factors. In these studies was found that A. aegypti demonstrated that the color and material of the containers were important for oviposition. The color preferences were helpful in insect survivorship and species fitness of A. aegypti. The suppression of A. aegypti is a practical method for controlling urban dengue, yellow fever, and chikungunya viruses.

Seasonal Variation in Drosophila Species in Srinagar Garhwal

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ABSTRACT: In this study we report the seasonal variation in the Drosophilids species in Srinagar Garhwal becauseseasonality play a significant role in population dynamics of insects in the tropical regions. The sample of Drosophila flies were accumulated in the period February 2021 to March 2022 around Srinagar Garhwal Uttarakhand. We have adopted only bottle trapping method to collect all the flies. A total 1310 flies under different genera viz., Drosophila, Stegana, Zaprionus, Dettopsomyia, Lordiphosa, Hypselothyrea, and Mycodrosophila were counted. We have evaluated the influences of seasonality on the richness, abundance and diversity of Drosophila Species. We have taken four seasons winter, summer, monsoon and post-monsoon to exhibit the abundance and richness, and, the Simpson (D), Shannon-Wiener (H) and Berger-Parker (1/d) indices have taken to obtain the abundance and species diversity. We have found that the significant abundance occurred in dry season and the diversity index D is low and both H and 1/d are high, which shows the prominent diversity in Srinagar.

Bridging Health Gaps: Understanding Socio-demographic Factors in Child Immunization among Delhi's Khatik Population

Kriti Sharma

In India, the Expanded Program on Immunization (EPI) was instituted in 1978 and later rebranded as the Universal Immunization Programme (UIP) in 1985, with the primary goal of immunizing a minimum of 85% of new-borns. Understanding and addressing local immunization barriers is crucial for enhancing infant mortality and health outcomes in India and other low- and middle-income countries (LMICs). This study adopted a community-based cross-sectional approach, focusing on the Khatik population in North-East Delhi. The research encompassed all women of childbearing age, with data collected from 387 mothers.

The findings indicated a higher illiteracy rate among women (18.3%) compared to men (7.1%). Despite this, a substantial proportion of children (98.7%) were immunized. Statistical analysis using the chi-square test revealed no significant association between socio-demographic variables and the immunization status of children (p-value > 0.05). However, a noteworthy observation was that both mothers and fathers with higher and intermediate levels of education were more inclined to immunizetheir children compared to those with illiterate, primary, and middle-level education. Emphasizing maternal education could be instrumental in reducing the prevalence of non-immunized children.

Biodiversity, Threats & Conservation of Fern & Lycophytes of Pindari Glacier Region, Uttarakhand

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ABSTRACT: Floral research has not been extensively conducted in the Western Himalayan high elevation regions. Pteridophyte diversity, distribution, threat, and conservation status have not yet been well studied in the higher altitude sections of the Pindari glacier regions. That's why the current investigation is focused onthis area. In year 2022, a field survey was conducted; fifty different species of ferns were discovered from high elevation of Pindari Glacier regions. During field observations several pteridophyte species were seen to either graze or cut along with grasses, deforestation, frequent forest fires that have occurred over the past several years, which harm both terrestrial and epiphytic pteridophyte species, are another reason to be worried. This is a tale of a threat to biodiversity in temperate and tropical regions. A wide range of habitats and organisms have been affected by the fast climate change that has occurred during last two decades.(Diaz & Bradley, 1997; IPCC, 2001; Thuiller, Lavorel, Arau´jo, Sykes, & Prentice, 2005). Higher altitudes, such as sub-alpine and alpine zones, are more susceptible to rising temperature of earth's surface, Due to the fact that ferns and lycophytes are cold-loving plants, global warming is the most serious threat to fern diversity. The habitat fragmentation caused by natural disasters is another major threat to biodiversity. Since global warming is a global concern, solving it will need global cooperation.

Research comparing the Hepatosomatic indices of diploids and triploids Schizothorax richardsonii

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ABSTRACT: Snow trout (Schizothorax richardsonii), locally known as "Asela," is an endemic fish species found inUttarakhand, India. Asela holds significant commercial importance as a food fish in the Himalayan region. Despite its substantial presence in the wild, this species has not been considered suitable for coldwater aquaculture due to its limited growth in captivity. Triploidy, characterized by having three sets of homologous chromosomes, is a prevalent form of polyploidy in animals or cells. In aquaculture and fisheries management, inducing triploidy is a commonly employed technique to render fish sterile. In the conducted study, triploidy was induced in S. richardsonii by subjecting fertilized eggs to pressure shock. The control group comprising diploids exhibited a final Hepatosomatic Index (HSI) ranging from 1.00±0.12 to 1.22±0.14, while the treated triploids showed values ranging from 1.07±0.14 to 1.25±0.15. The observed data revealed a statistically significant difference ($p < 0.05$) between the two groups. Overall, the results indicate that triploid fish exhibited higher HSI compared to diploids, possibly due to poor gonadal development or absence of vitellogenesis. This study sheds light on the potential of inducing triploidy in S. richardsonii for aquaculture purposes, suggesting that triploid individuals may offer advantages over diploids in termsof certain physiological parameters. Further research in this area could provide valuable insights into the viability of utilizing triploid snow trout in aquaculture and fisheries management practices.

Evaluation of Promising Activity of Rubus Ellepticus by in-vitro and targeting DEAD Box RNA Helicase of Leishmania Donovani by in-silico Approaches

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ABSTRACT: Uttarakhand is regarded as an herbal state of India, as it is home to a number of medicinal plants. The medicinal flora of Uttarakhand plays a substantial role in traditional healing methods, Ayurveda, and contemporary pharmacological research. Rubus ellepticus, commonly known as Yellow Himalayan Raspberry, has been utilized in traditional medicine to treat various diseases. Despite the absence of an effective vaccine, visceral leishmaniasis (VL), also known as Kala-azar, caused by the protozoan parasite Leishmania, remains a lethal disease in various countries if left untreated. Presently, chemotherapy is the primary treatment for this disease, but its use is associated with severe side effects and the development of drug resistance. Therefore, natural drugs present a promising alternative to combat leishmaniasis. In this study, leaves and stems of R. ellepticus were collected from Uttarakhand and utilized to prepare extracts employing the Soxhlet extraction technique, using ethanol and hexane solvents for extraction. Prepared extracts exhibited antileishmanial activity against both promastigote and amastigote forms of L. donovani through an in-vitro approach. The extracts also showed less toxicity against the human THP-1 cell line. The GC-MS profiling of the above-mentioned extracts provided 45 compounds with a wide range of % composition, out of which 18 compounds showed specific binding to the DEAD-box RNA helicase of L. donovani (LdHel-67) through molecular docking, using an in-silico approach. Based on their binding energy, the best 8 compounds were studied for ADMET analysis and toxicity prediction. Hence, this study contributes to the exploration of herbal-based target-specific drug development against VL and concludes that R. ellepticus contains antileishmanial properties, which can play a significant role in anti-leishmanial drug discovery."

Zebrafish Model: Aripiprazole's Role in Autism-Like Behavior

Aditi Giri

Autism, often known as autism spectrum disorder (ASD), is a developmental condition that impairs communication, social interaction, and behavior. It is known as a spectrum disorder since it has awide range of symptoms and severity levels. Our study aims to validate MK-801 induced autism like behaviour in adult zebrafish. MK-801 or [(+)5-methyl-10,11-dihydro-5H- dibenzo-[a,d]cyclo-hepten- 5,10-imine maleate], is a non-competitive glutamatergic antagonist that interacts with the NMDA receptor. The use of mouse models in ASD research is invaluable, as it is helping to uncover the underlying genetic underpinnings of the

condition. Zebrafish have recently been recognised as a helpful model for neurodevelopmental diseases in terms of genetics, pharmacology, and behaviour. Zebrafish exposed to MK-801 exhibit stereotypic behaviors, as do rodents (e.g., circular swimming, hyperlocomotion, loss of social preference, and cognitive deficits). Importantly, the expression of NMDA-related genes and excitatory amino acid transporters has previously been studied in zebrafish, confirming the glutamatergic system's evolutionarily conserved significance in assessing the mechanisms underlying learning and memory. In current research we employed various neurobehavioural and neurochemical parameters to further assess deficits caused by MK-801. Thus, because MK-801 is a pharmacological model for eliciting autism-like symptoms, and aripiprazole is a promising and standard drug used in autism. So, we wanted to see if aripiprazole protects MK- 801- induced memory impairment and hyperlocomotion in zebrafish.

Healthcare

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Sustainable Food Practices

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ABSTRACT:

Sustainable food practices are increasingly recognized as vital strategies to tackle the multifaceted challenges confronting our global food systems, spanning environmental degradation, food insecurity, and social disparities. This abstract offers an extensive examination of sustainable food practices, detailing fundamental principles, methodologies, and efforts aimed at building resilience, equity, and environmental stewardship across food production, distribution, consumption, and waste management. The significance of incorporating ecological, economic, and social aspects throughout the whole food supply chain is highlighted by sustainable food practices. This includes practices such as organic farming, agroecology, and regenerative agriculture, which prioritize soil health, biodiversity conservation, and ecosystem resilience. Additionally, sustainable food practices promote local and seasonal eating, reducing food miles and supporting regional economies while fostering community connections and cultural diversity.

Plant-based diets play a crucial role in sustainable food systems by reducing the environmental footprint of food production, conserving water and land resources, and mitigating greenhouse gas emissions. Reducing food waste is a fundamental component of sustainable food practices, which include efforts to reduce waste production, donate excess food to underprivileged areas, and set up composting and recycling programmes to reduce environmental impact. Integral to sustainable food systems are educational campaigns, awareness-building efforts, and empowerment initiatives aimed at enabling individuals to make conscientious choices that resonate with their principles and foster favourable social and environmental effects.

Mind In Motion: Understanding the Cognitive Effects of Physical Activity

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ABSTRACT:

This lecture will delve into the fascinating relationship between physical exercise and cognitive function, exploring how regular exercise influences brain health and cognition across the lifespan. Drawing from neuroscience, psychology, and exercise science, we will examine the scientific evidence

supporting the cognitive benefits of exercise and discuss practical implications for individuals seeking to optimize cognitive performance and promote brain health.

Key Points:

- Introduction to Exercise and Cognition: Define cognition and provide an overview of the cognitive domains influenced by exercise, including attention, memory, executive function, and processing speed.
- Neurobiological Mechanisms: Explore the underlying neurobiological mechanisms through which exercise exerts its effects on brain health and cognition, such as neurogenesis, synaptogenesis, neuroplasticity, and the release of neurotrophic factors.
- Exercise Modalities and Cognitive Outcomes: Discuss the impact of different types of exercise modalities (e.g., aerobic exercise, resistance training, yoga) on cognitive function, highlighting the unique benefits and mechanisms associated with each.
- Exercise and Brain Structure: Review neuroimaging studies elucidating the structural changes in the brain associated with exercise, including alterations in gray matter volume, white matter integrity, and functional connectivity within neural networks supporting cognition.
- Psychological and Socio-Emotional Benefits: Discuss the psychological and socio-emotional benefits of exercise on cognitive function, including mood regulation, stress reduction, self-esteem enhancement, and social engagement.
- Practical Applications and Recommendations: Provide practical recommendations for incorporating exercise into daily routines to enhance cognitive function and promote brain health, considering factors such as exercise intensity, duration, frequency, and individual preferences.
- Future Directions and Research Frontiers: Highlight ongoing research efforts and emerging trends in the field of exercise neuroscience, including personalized exercise prescriptions, novel interventions (e.g., exergaming, virtual reality), and interdisciplinary collaborations bridging neuroscience, exercise science, and technology.

This lecture will underscore the profound impact of exercise on cognitive function and brain health, emphasizing the importance of incorporating regular physical activity into lifestyle habits for optimal cognitive performance and well-being. By understanding the mechanisms underlying the cognitive benefits of exercise and implementing evidence-based strategies, individuals can empower themselves to enhance their cognitive vitality and promote lifelong brain health.

Review of Marketing Strategies Adopted by Ayurvedic Medicine Industry in Almora District of Uttarakhand

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ABSTRACT:

A company's overarching plan for connecting with potential clients and turning them into paying consumers for their products or services is known as its marketing strategy. A marketing plan includes the company's value proposition, key brand messaging, target consumer demographic data, and other high-level components. A thorough marketing plan addresses all four of the marketing "Ps": product, pricing, place, and promotion. A business's public relations, outreach, and advertising plans are described in a marketing strategy, along with the methodology for gauging the success of these efforts. Typically, they will adhere to the "four P's." Functions and elements of a marketing plan include market research to support pricing decisions and new market entries, tailored messaging to target demographics and geographic areas, platform selection for product and service promotion (digital, radio, Internet, trade magazines, and the combination of those platforms for each campaign), and metrics to track the effectiveness of marketing campaigns and their reporting schedules. This study aims to identify the marketing strategies employed by the ayurvedic medicine industry in the Almora district of Uttarakhand by looking at the Marketing executives of different Ayurvedic medicine companies. The data is mostly gathered through face-to-face conversations, based on a questionnaire, with a sample of 20 medical representatives at various locations throughout the Almora district. It provides instances of marketing strategies and how consumer and physician behavior is impacted by them. In this study, a questionnaire was developed for the survey of marketing executives of ayurvedic medicine companies in the Almora district of Uttarakhand.

Research Paper Unveiling the Interplay of Human Microflora In The Realm Of Ionizing Radiation

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ABSTRACT

Radiation therapy continues to play a pivotal role in cancer treatment, with heightened effectiveness achieved through precise delivery and the synergistic integration of immunotherapy.The intricate interplay among gut microbiota, bacteria, fungi, and their impact on the response to radiation therapy highlights the complex relationship between cancer biology and the immune system. Recent experiments indicate that an abundance of fungi, rather than a decrease in bacteria, hinders the efficacy of radiation therapy. Profiling a patient's microbiome, encompassing both bacterial and fungal elements, holds promise in predicting their prognosis and response to various cancer treatments, including radiation therapy, chemotherapy, or immunotherapy.

Virtual Screening of Promising Curcumin-Serine Bioconjugate In Glycosylation Pathway Targeting Breast Cancer Stem Cells

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ABSTRACT

Curcumin (CUR), from Curcuma longa, holds potential as a chemo preventive agent due to its diverse pharmacological effects. However, its low bioavailability limits efficacy in cancer therapy (1). Cancer stem cells (CSCs) pose challenges in treatment due to chemotherapy resistance and recurrence. CUR-bioconjugates offer a solution by inhibiting CSCs and improving bioavailability. This research targets enzymes involved in aberrant glycan structures on CSC surfaces, crucial for cancer progression. Understanding glycan- mediated interactions is vital as they influence tumor characteristics (2). Enzymes like ppGalNAcTs and ST6GalNAc1 play key roles in O-glycosylation, impacting glycan patterns and protein functions, contributing to cancer development (3). The study designs CUR- bioconjugates with serine as starting points, aiming to inhibit glycosylation enzymes through computational techniques like molecular docking and ADME analysis. These interventions could lead to innovative natural bioconjugate-based anticancer agents.

Social, Physical and Mental Impact Of E- Learning Among Nursing Students in Selected Nursing College.

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ABSTRACT

E-Learning consist of teaching can be based in or out of the Classrooms, the use of computers and the Internet. E-Learning is the process of sharing knowledge through various channels such as e-books, CDs, webinars and more. It has revolutionized the conventional method of chalk and board style of learning imparted to the students. Unlike this, e-Learning education makes giving and receiving simpler, prolific, and productive. Tutors apply the method of teaching purely through the latest technology. We define E Learning as Courses which are specifically delivered through the internet everywhere Other than the traditional classroom where the teacher is teaching. Thus, teaching and learning both become simpler, easier, and more effective.

Comparison Of Proprioceptive Neuromuscular Facilitation Stretching And Myofascial Release Technique In Improving Flexibility Of Calf Muscle In Sedentary Housewives: A Randomised Control Trail

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ABSTRACT

Gastrocnemius and soleus (together known as calf muscle) are powerful plantar flexors at ankle joint which play a crucial role in walking and running.1 Contraction of these muscles while standingprevents the ankle joint from forwarding tipping caused by gravity. Both the gait cycle and posturecontrol rely heavily on calf muscle. In both men and women, natural aging is accompanied by a shorter calf muscle-tendon unit (MTU) which impacts many aspects of function and balance. Flexibility refers to the full range of motion of a joint or joints, as well as the length of muscles thatspan the joint. It is influenced by a variety of factors, including intrinsic elements such as training management, heredity, muscular strength, endurance and age. Additionally, extrinsic factors such as weather conditions, walking surface, and footwear choice can also impact flexibility.2 Consequences of calf tightness could be leg deformation due to compensatory movement at ankle, difficulty in walking, running, jumping and stair climbing due to abnormal heel push and disturbed balance due to poor ankle strategy.3 Any therapeutic manoeuvre aimed at elongating pathologically shortened soft tissue strains and enhance range of motion is referred as stretching.

Study On Malnutrition Related Problems Among The Children Aged 6 To 8 Living in A Rural Area of Nainital District- "Bhatelia"

Mrs. Monika Dwivedi, Astt. Professor, UOU

Mrs. Yogita Negi Mehra, Chanderbani, Dehradun.

ABSTRACT

For mankind, food is related to its environment, without food it is impossible to maintain physicalfitness because food is the fundamental part of human fitness. One Proper diet is not only for maintaining the body but also for development and reproduction. When food is eaten or drunk, it ismetabolized by the body. Later on absorption occurs and in this process energy is produced, physical growth and repairing of tissue takes place. Chemical components of food that perform these functions Produced by them are called nutrients. Nutrients include proteins, fats, carbohydrates, minerals, vitamins, minerals and water, which are necessary for life and physical growth. When there is a deficiency in the ratio and quantity of nutrients in the body or there are notenough of them in the body or nutrients are not supplied through diet or the supply of nutrients in the body is more or less than normal, if this happens then this condition is called malnutrition.

Uses Of Natural Remedy in Treatment of Hemorrhoid's Among Post Natel Period .

Lalita Bisht 1,

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ABSTRACT

Treating common ailments with ingredients available in the natural is known as natural remedies. Many of the remedies are having years ofhistory, which might have developed by trial and error method and passed through generations. Even though many natural remedies will give ambient relief in emergency situation, the practice is merely taking medicine without knowing the underlying pathology, there is a possibility to cause any harmful effect. In this era it is better to have a knowledge on the scientific explanation regarding the drugs we areusing including its effectiveness in the specific condition, side effect and mode of action.In this article commonly used ½ glass of milk , lemoan juice are reviewed to evaluate its scientific basis in usage as natural remedies. The drug selection was made on the basis of its availability in every Indian natural. All are proved to be effective in the treatment of the specific condition which acts by the virtue of its specific active ingredients in the drugs.

Social Dilemma: Does It Have A Role in Spreading Of Corona Virus Infections

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ABSTRACT

Social Dilemma- the tendency of individuals to act in self-interest at the cost of well- being of the larger community, despite eventually having to suffer its damaging consequences just like other members of the community - has been the bane of policy makers. People keep using plastics despite ban, evade taxes, use water, fuel and electricity in a wasteful manner & litter. The Corona pandemic, which engulfed the whole globe, offered a unique opportunity to test whether Social Dilemma may also have a role in spread of infections. More specifically, do people follow the medical advice and not interact closely with somebody under Home Quarantine and thus help the society contain the spread of infection? Or the selfish urge to satisfy their social needs causes themto interact without any inhibition with such Home Quarantined acquaintances risking their own safety as well as community health & well-being?

A Study To Assess The Effectiveness Of Structured Teaching program On Knowledge Regarding Medico Legal Aspects In Health Care Delivery Among Nursing Students

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ABSTRACT: To assess the knowledge regarding medico legal aspects in health care delivery among nursing students, To evaluate the effectiveness of structured teaching program on knowledge regarding medico legal aspects in health care delivery among nursing students and to determine the association between pre-test knowledge score regarding medico legal aspects and selected demographic variables. Method: This study was conducted among 140 samples (nursing students) in quantitative approach, pre experimental one group pre test post test design , sample selection was done by simple random technique. Pre-existing knowledge was assessed by using structured questionnaires. After the pretest, structured teaching program administered regarding medico legal aspects in health care delivery. After 7 days post test was conducted by using same tool. The collected data was organized in master data sheet and analysed using descriptive and inferential statistics as per objectives of the study, using SPSS version 20. The result shows in post test after administrating structured teaching program, nursing students were gained in posttest among the nursing students 8 (5.7) are having moderate knowledge (range 11-20) and 132(94.3) having good knowledge (range 21-30) regarding medico legal aspects and the mean difference was 1.410 by using paired “t” test.The 't' value obtained was 36.61 and $p<0.05$. It shows that there was a significant difference between pretest knowledge and post test knowledge.

Computational Simulation Of Curcumin-Ferulic Acid Conjugates Targeting Cancer Stem Cells: Implications For Breast Cancer Prevention And Treatment

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ABSTRACT: A shift in our understanding highlights the pivotal role of cancer stem cells in the initiation, recurrence, and resistance to radio and chemotherapy, influencing prognosis and treatment outcomes. ALDH1A1 emerges as a critical biomarker of stemness in breast cancer stem cells, contributing to drug resistance during chemotherapy. Targeting ALDH1A1 represents a promising strategy for combating breast cancer. Natural products, renowned for their health-promoting properties, hold potential for intervention. Curcumin, a polyphenol extracted from turmeric, has demonstrated efficacy in inhibiting the proliferation of various cancers, including breast cancer stem cells. However, the clinical application of curcumin is hindered by its limited bioavailability, attributed to poor absorption, rapid metabolism, and swift systemic elimination through glucuronidation and sulfation of free phenolics. Strategies involving specifically designed curcumin analogs, formulated to inhibit free phenolics, have shown improved bioavailability, suggesting their potential as novel delivery systems for preventive and therapeutic interventions against breast cancer. Novel curcumin conjugates with other appropriate ligands, have been synthesized to address this limitation. This in-silico study investigates the interaction between curcumin and its conjugates, specifically with ferulic acid, targeting ALDH1A1.

Exploring Curcumin-Para Coumaric Acid Conjugates Through In-Silico Molecular Docking Analysis For Breast Cancer Prevention And Therapy

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ABSTRACT: Cancer, a pathological condition characterized by the unregulated proliferation of cells, persists asa pressing global health issue, primarily due to its high frequency of occurrence, recurrence, and fatality. Conventional chemotherapeutic approaches employed in cancer treatment mainly focus on curtailing the growth of rapidly dividing cells that exhibit neoplastic alterations (Rich & Bao, 2007). Aldehyde dehydrogenase (ALDH1A1) emerges as a critical biomarker of stemness in breast cancer stem cells, contributing to drug resistance during chemotherapy. Targeting ALDH1A1 represents a promising strategy for combating breast cancer. Natural products, renowned for their health-promoting properties, hold potential for intervention (Li & Zhang, 2014). According to reports, curcumin increases effectiveness and exhibits synergistic effects with cancer-curing medications. However, the poor bioavailability of curcumin is one of the major obstacles to researching it for therapeutic applications because of its poor absorption, rapid metabolism, and rapid systemic elimination (Vareed et al., 2008). A breakthrough in drug delivery technology is therefore anticipated in order to successfully utilize curcumin for medical purposes. By implementing computational modeling and molecular simulation docking investigations of the binding of curcumin bioconjugates to ALDH1A1 the study aims at synthesizing the curcumin-para coumaric acid bioconjugates with the intention of modifying curcumin chemically or conjugating it with biomolecules of interest using prodrug-based approaches for targeted distribution with increased bioavailability. This in-silico study investigates the interaction between curcumin and its conjugates, specifically with para coumaric acid, targeting ALDH1A1.

Nutritional Status And Pattern of Junk Food Consumption Among Children And Adolescents

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ABSTRACT: Junk foods which are usually high in calories, sugars, saturated fats and salt content and poor in nutrients are detrimental for health. The health concern is high for school going children as they geteasily attracted towards junk food at their prime developmental stage and diverge from healthy and balanced diet which eventually has an adverse impact on their health. The present study is an attempt to assess the nutritional status of children and understand the pattern of junk food consumption across the age. School-going children who were at the various stages of development viz. early childhood, late childhood and early adolescent were selected for the study. The study revealed that undernourishment increased with an increase in age. Almost all the children (96.66%)consumed junk food, however the frequency of daily junk food consumption was high during late childhood stage and taste of junk food was the key influencing factor for all the age groups. Majority of respondents were provided junk food at home by the family and junk food act as a substitute for healthy evening snacks. Hence, there is a need for nutritional counseling of children as well as the parents for improving the eating habits and venture into the field of developing healthy and tasty snack items for children.

To Assess the Status of Menstrual Hygiene Management (MHM) Among Adolescent Girls: With Special Reference To Lohaghat Block Of Champawat District, Uttarakhand, India

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ABSTRACT: Menstruation is a normal physiological phenomena that women and adolescent girls experience every months. Menstrual hygiene management (MHM) refers to ways women themselves keep clean and healthy during menstruation and how they acquire, use and dispose of blood absorbing materials. The objectives of this study is to study the status of menstrual hygiene management among adolescent girls of Lohaghat block, Champawat district with special reference.This descriptive study was carried out from July to September 2021. This study was done among 80 adolescent girls of three age group i.e. (13-15) (16-18) (19-21). Self admired schedule was usedto obtain information from adolescent girls. The result analyzed by central tendency and percentagemethod. Result of this study was 97.5% respondents had fair knowledge and 31.25% respondent had good knowledge on menstruation, however, out of 80 adolescent respondent, only 43 (53.75%)were engaged in good menstrual hygiene practices. Thus it can be concluded that there was good hygiene management followed by the adolescent girls but they had poor knowledge about menstrual education.

Newborn Care In Primipara Mothers and in View to Develop and Administer Information Booklet In Selected Hospital Haldwani, Uttarakhand".

Ms. Divya Mishra, MIET Kumaon College of Nursing, Haldwani

ABSTRACT: "Today's children are tomorrow citizen". The state of one's health is reflective of an individual's ability to meet life's challenges and maintain his/her capacity of optimal functioning. This require the various aspects of one's makeup i.e. mental, physical, and biochemical, to maintain a level of functioning that has a positive influence and support for one another, where health is defined by the World Health Organization as "A state of complete physical, mental and social well- being and not merely theabsence of disease or infirmity". Women's health refers to the health of women, which differs from that of men in many unique ways. Women's health is an example of population health. Often treated as simply women's reproductive health, many groups argue for a broader definition pertaining to the overall health of women, better expressed as "The health of women".i Newborn care is the care which occurred within the first 24 hours after birth. Essential Newborn Care (ENC) is care that every newborn baby needs regardless of where it is born or its size. ENC should be applied immediately after the baby is born and continue for at least the 7days after birth.Many ENC interventions are simple and can be provided by a Skilled Birth Attendant (SBA) or a Trained Community Health Workers (CHW) or Traditional Birth Attendants (TBA) or by a familymember supporting the mother in a health facility or at home. Many of these deaths occurs in babiesborn too early or too small, babies with infection, or babies asphyxiated around the time of delivery.

Study On The Nutritional Awareness, Health Problems And Lifestyle Of Menopausal Women In Garur Block Of Bageshwar District

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ABSTRACT

The development sequence of human life passes through different stages like infancy, childhood, adolescence, youth, adulthood and old age respectively. Each stage of life has different nutritionalneeds and lifestyle challenges. Among all these stages, adolescence is the stage in which the sexual organs develop completelyand menstruation starts due to some hormones estrogen and progesterone present in the body.

Around the age between 45-50 years these hormones gradually start decreasing in the body andovulation stops completely with the end of menstruation. This stage is called menopause. Normally menopause occurs only after the age of 45 to 55 years. But sometimes it can happen before and after also. In medical science, the average age of menopause is considered to be 51 years. But it varies by 2 or 3 years depending on the race and country. For example, it is 45 to 47years for Asian women, 48 to 51 years for African women and 44 years for American and European women. Every woman experiences different symptoms during menopause. The common symptoms identified are emotional problems (depression, irritability and irritation), hot flashes, headache, laziness, burning sensation and increased frequency of urination, forgetfulness and muscle weakness. Joint and muscle pain, headache, emotional problems and sex related problems are mainly seen in women under the age of 50 years. In addition to this type 2 diabetes, osteoporosis, obesity, hypertension, hypothyroidism, insomnia can be seen in women after menopause.

A Descriptive Study to explore the Impact Of Peer Support on the well-Being Among Nursing Students Of Miet Kumaon College Of Nursing, Haldwani, Uttarakhand

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ABSTRACT: The relevance of nursing students' mental health understanding and well-being has drawn more attention in recent years from the academic, medical, and general populations. Nursing students confront particular stresses and challenges that can have a big influence on their mental health andgeneral well-being as future frontline carers. Comprehending and resolving these concerns is crucial for the students' individual well-being as well as the calibre of healthcare services they will offer in the profession. Global concern over the frequency of mental health problems among nursing students is rising. Research has repeatedly demonstrated that this cohort has higher levels of stress, anxiety, despair,and burnout than their counterparts in other academic fields. These elevated levels of psychological discomfort are a result of the hard nature of nursing school, the obligations ofclinical placements, and the emotional strain of patient care.

A Study To Assess The Level Of Knowledge Regarding Rights of Mentally Ill Patient Among Care Givers Attending Psychiatric OPD at Selected Hospital, of Haldwani, Uttarakhand

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ABSTRACT

Mental illness raises many human rights issues. People with mental disorders are exposedtoawiderangeofhumanrightsviolationbothwithinandoutsidethehealth care context. People with mental illness and their families don't exercise their rights, lack of knowledge about how to effectively assert their rights, and lack of confidence inasserting their rights. The most important factor in ensuring patient's rights is the knowledge, attitude and commitment of the mental health professionals.

A Study To Assess The Level of Academic Stress And Academic Performance Of B.Sc Nursing Students In A Selected Nursing College At Haldwani

Priyanka Joshi, MIET Kumaon College of Nursing, Haldwani

ABSTRACT

College life is one of the most scintillating and memorable experiences in an adolescent's life. It is in college that an adolescent enjoys the vibrant environment, the company of friends and the various academic and co-curricular activities, which enriches nurtures and henceforth prepare the adolescent for adulthood. Looking from a closer perspective, the college student's encounters a number of challenges in his day-to-day life, therefore the whole idea of an exciting and vibrant college life is unveiled by these challenges which in turn contribute to stress and if not dealt with, can only escalate and hamper their academic performance, emotional and social well-being. Current competitive environment for students is expected to perform multiple roles with efficiency and effectiveness.

Deciphering Tuberculosis: Insights From IS6110 and MPB64 Gene Analysis

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ABSTRACT: Tuberculosis, a disease with historical significance dating back to antiquity, has persisted throughout human civilization. While mycobacteria are estimated to have existed for approximately 150 million years, Mycobacterium tuberculosis, the causative agent of tuberculosis, is comparatively young, estimated to be around 150,000 years old according to Kapur et al. (1994).

A Descriptive Study To Assess The Level Of Knowledge And Prevention Regarding Of Anemia Among Adolescent Girls 14-17 Years In Selected Area.

Ranjana Bora , MIET KUMAON COLLEGE OF NURSING Lamachaur Haldwani.

ABSTRACT :

The aim of this study to assess the level of knowledge about anemia and prevention of anemia among adolescent girls 14-17 years.The objective of the study assess the level of knowledge regarding prevention of anemia among adolescent girls,to associate the level of knowledge regarding prevention of anemia with selected demo-graphical variable. A quantitative research approach with descriptive design was used to achieve the objectives. The target population of study is students of Swastyayan Sr. Sec. School Lamachaur, Haldwani, Uttarakhand. Sample size is 40. Data analysis is done by based on objective and hypothesis by using Descriptive method. The result of the study level of knowledge regarding anemia among adolescents girls.

COMBATING LIFESTYLE DISEASES WITH SUSTAINABLE DIET

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ABSTRACT

Lifestyle diseases, such as obesity, type 2 diabetes, cardiovascular diseases, and certain types of cancer, are often linked to poor dietary habits and sedentary lifestyles. A sustainable diet can playa crucial role in combating these chronic diseases by promoting long-term health and well-being (Willet et al 2006).

A Study Of Health Problems of Salt Workers in Sambhar Lake In Rajasthan

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ABSTRACT: The salt workers are exposed to adversities of environmental conditions as well assalt in the environment. There is a lack of information about their occupational health problems. The occupational hazards faced by salt workers during their occupation are multiple, there are lack of basic amenities at their workplace and lack of awareness regarding usage of personal protection equipment. This present study was carried out among 250 salt workers to assess their health problems.. Data was collected using pre-designed questionnaire and interviews were conducted among 250 salt workers. Majority of the salt worker (92%) were suffering from headache, followed by gastro- intestinal i.e. 54 percent, skin diseases (39 %) and respiratory disease (26 %) being other significant health problems. The qualitative aspect of the study revealed that the felt needs were improvement of their working conditions and more social support from the Government and the employers. There was very little awareness among the workers regarding use of PPE and some of them were using conventional PPEs including hat, boots and goggles.

To Study the Effect of Telerehabilitation in Various Neurological Condition: A Review

Shefali Kapoor, MIET Kumaon College of Paramedical Sciences

ABSTRACT: Neurological condition pose significant challenge to health care system worldwide. These conditions can severely impact an individuals quality of life, leading to physical, emotional and cognitive impairment. (1) The most recent estimates show that neurological disorder included in Global burden of diseases(GBD) studies are Alzheimer's , dementia, parkinson's disease, multiplesclerosis, epilepsy and headache disorders(migrane, tension type headache, medication overuse headache) represent 3% of worldwide burden of disease. Although this is seemingly small overall percentage, dementia, epilepsy, migrane and stroke rank in top 50 causes of disability. (2)Managingneurological disorders often requires specialized care, including access to medical experts, various diagnostic tools and complicated treatment option.

Effect Of Exercise and Nutrition An Bone Remodeling

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ABSTRACT

Bone and skeletal muscle are the main components of the musculoskeletal system that functions as one unit to give the body shape, support, and movement. The maintenance of adequate bone health depends on a multitude of factors on the top of genetics, including nutritional factors, especially calcium, vitamin D, and proteins, in addition to regular physical activity, particularly weight- bearing exercises and parathyroid hormone. these factors are most effective in building peak bone mass and strength during childhood and adolescence and these effects are maintained into adult life and beyond, this review will discuss how exercise and the main nutritional components perform their function in maintaining bone health, bone mineral density, and strength.

INNOVATION IN GLOBAL HEALTH

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ABSTRACT:

Wrapping up with the way the COVID-19 pandemic exemplifies why health innovators' creativity and problem-solving skills are pivotal to making health and social care more equitableand sustainable, we summarize in this last chapter our aims of writing this book. We also invite health innovators to fully embrace their role as influential "care-makers." By leveraging the multiple yet currently scattered Responsible Innovation in Health (RIH) drivers described in Chap. 10, health innovators and their allies can deliver meaningful as well as impactful twenty- first-century solutions. RIH is, after all, a practice as well as a vector of transformational change.

Bridging Health Gaps: Understanding Socio- Demographic Factors In Child Immunization Among Delhi's Khatik Population

Kriti sharma

ABSTRACT:

In India, the Expanded Program on Immunization (EPI) was instituted in 1978 and later rebranded as the Universal Immunization Programme (UIP) in 1985, with the primary goal of immunizing a minimum of 85% of new-borns. Understanding and addressing local immunizationbarriers is crucial for enhancing infant mortality and health outcomes in India and other low- andmiddle-income countries (LMICs). This study adopted a community-based cross-sectional approach, focusing on the Khatik population in North- East Delhi. The research encompassed all women of childbearing age, with data collected from 387 mothers. The findings indicated a higher illiteracy rate among women (18.3%) compared to men (7.1%). Despite this, a substantial proportion of children (98.7%) were immunized. Statistical analysis using the chi-square test revealed no significant association between socio-demographic variablesand the immunization status of children (p-value > 0.05). However, a noteworthy observation wasthat both mothers and fathers with higher and intermediate levels of education were more inclinedto immunize their children compared to those with illiterate, primary, and middle-level education. Emphasizing maternal education could be instrumental in reducing the prevalence of non- immunized children.

Association Between Headache and Insomnia In Young Professionals

Tammna Arya

ABSTRACT

Insomnia is the most common sleep complaint. It occurs when you have trouble falling asleep or staying asleep even though you had the opportunity to get a full night ofsleep. Insomnia involves both a sleep disturbance and daytime symptoms. Sleep deprivation andexcessive sleep leads to headache. Common sleep disorders include insomnia, sleep apnea, and tooth decay. Sleep headaches include: weather headaches and hypnotic headaches, headache andsleep disorders tend to be treated separately, by different subspecialties of neurology. The headache disorders and their relationship to sleep, the commonalities of headache and sleep pathophysiology, and headache disorders that are particularly susceptible to sleep modulation (and vice versa) are reviewed. Practical management advice for sleep-modulated headaches is provided. Similar territories and synthetics in the mind influence rest, cerebral pain and temperament; Therefore, poor or helpless rest expands the danger of migraines and emotional episodes. For instance, individuals with headaches, who additionally experience the ill effects of a sleeping disorder, regularly experience the ill effects of nervousness or wretchedness, which are likewise normal comorbidities of headache.

Recent Advancements in Herbal Bioactive- Based Nano-Formulations for the Treatment of Psoriasis

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ABSTRACT: Psoriasis, a complex inflammatory skin condition, is characterized by T-cell activation, excessive skin cell growth, and abnormal keratinocyte differentiation. Recently, natural bioactive compounds derived from plants like Psoralea corylifolia, Nigella sativa, Curcuma longa, Capsicum annum, Smilax china, and Woodfordia fructicosa have garnered attention for their potential to alleviate psoriasis symptoms. However, their clinical effectiveness is often hindered by challenges such as poor drug absorption, non-specific drug release, and unintended skin reactions. Recent advancements leverage nanostructured systems like liposomes and ethosomes to encapsulate these herbal bioactives, enhancing their solubility, skin penetration, and therapeutic efficacy. These nano-formulations overcome limitations associated with traditional treatments by providing targeted drug delivery and minimizing systemic side effects. Moreover, surface modification techniques enable precise targeting of psoriatic lesions, further enhancing treatment outcomes. By improving drug delivery efficiency and bioavailability while minimizing adverse effects, these herbal bioactive-based nano-formulations offer a promising therapeutic approach for managing psoriasis. Further research and clinical studies are warranted to optimize formulations, evaluate long-term safety, and validate clinical efficacy in larger patient populations. Nano- formulations offer a promising solution to these challenges by enhancing the pharmacodynamic properties of these bioactive agents. Nanostructured systems like liposomes, ethosomes, and lipospheres have been explored to improve the solubility, skin penetration, bioavailability, and activity of plant extracts while minimizing adverse effects. These advancements pave the way for the development of herbal nano- formulations with enhanced therapeutic efficacy in managing psoriasis.

Efficacy Of Wobble Board as a Therapeutic Tool in Diabetic Peripheral Neuropathy Patients: A Review Study

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Abstract: Diabetic neuropathy (DN) is a prevalent condition characterised by peripheral nervedysfunction signs and symptoms in a patient with diabetes DM. Peripheral neuropathy progresses in a distal-to-proximal direction, thus the impacts on strength and balance should become noticeable in the ankle and foot, where vast, myelinated neurons containing motor and sensory units terminate.A wealth of research has demonstrated the positive effects of exercise training and physical in people with diabetes. A wobble board is one tool that may be used to test balance, it is a platform that is placed on an unsteady surface. So the objective of this study is to find out the effectiveness of wobble board training in diabetic peripheral neuropathy patients. An electronic database, title and abstract search was conducted between 2010 and 2022 using Google Scholar, PubMed, Physiotherapy Evidence Database (PEDro) and Cochrane databases. Studies were double-checked and only full-text articles were used in the review. A total of 14 studies were selected that demonstrated the effectiveness of wobble board exercise in patients with DPN. These studies are explored narratively. According to available research, exercise therapy, which includes wobble board training, is safe, doable, and beneficial for individuals with diabetic peripheral neuropathy. Particular exercise regimens, such as range of motion, muscular strengthening, circuit training, stretching, gait, and balance exercises using a wobble board, can help diabetics with peripheral neuropathy with their gait, balance, posture, and other issues.

Efficacy And Effectiveness of Mckenzie Exercises in Chronic Low Back Pain Management: A Comprehensive Review

Author: Geeta, Ph.D. Scholar, Faculty of Physiotherapy, BMU University, Rohtak.

Abstract : Introduction: Chronic low back pain (CLBP) is a prevalent musculoskeletal condition with significant societal and economic implications. The McKenzie Method, developed by RobinMcKenzie, is emerging as a promising intervention for CLBP management, emphasizing mechanical diagnosis and therapy techniques. This comprehensive review aims to evaluate the efficacy and effectiveness of McKenzie exercises in managing mechanical low back pain. A systematic literature search was conducted across various databases, including PubMed, Google Scholar, and Cochrane Library, spanning the years 2016 to 2024. Inclusion criteria encompassed randomized controlled trials assessing the McKenzie Method in adults with CLBP, with exclusion criteria comprising observational studies, case reports, and articles lacking full-text availability. The search yielded a total of twelve relevant studies meeting the eligibility criteria. Key outcomes assessed included pain intensity, disability, quality of life, and functional improvement. The reviewed studies consistently demonstrate the effectiveness of the McKenzie Method in managing chronic low back pain (CLBP).

Formulate and Evaluate the Mucoadhesive Film of Terbutaline Sulphate for Soft Palate Drug Delivery

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Abstract

Bioadhesion, particularly mucoadhesion, offers a promising approach for improving drug delivery by the adhesive properties of biological membranes. In this study, we aimed to develop and evaluate bio adhesive oral film for the enhanced delivery of Terbutaline Sulphate through the soft palate, thereby bypassing the first-pass metabolism and improving bioavailability. The formulations were prepared using the solvent casting method, incorporating film-forming and mucoadhesive polymers such as Hydroxypropyl methylcellulose (HPMC) K15 , Eudragit RL100, and Carbopol were used.. Eight formulations (F1-F8) were formulated with varying concentrations of mucoadhesive polymers while keeping the concentration of HPMC K15 constant. In vitro drug release studies demonstrated that formulations containing Eudragit RL100 with HPMC K15 (F1- F4) exhibited drug release ranging from 92.157% to 95.026% within 12 hours. Formulations incorporating a combination of HPMC and Carbopol 934 (F5-F8) showed faster drug release compared to those with HPMC and Eudragit RL-100. Drug release from formulations F5 to F8 ranged from 86.256%to 94.767% within 10 hours, with formulations F2 and F3 demonstrating uniform and controlled drug release (92.157% and 95.026% in 12 hours, respectively). This innovative formulation offersthe advantage of delivering a lower dose of Terbutaline sulphate, yet sufficient for therapeutic action, by bypassing the first- pass metabolism. The modified combination of mucoadhesive polymers provides controlled and sustained drug release, potentially enhancing patient compliance and therapeutic efficacy. Further optimization and evaluation of these formulations may pave the way for their clinical application in improving the delivery of Terbutaline sulphate and other drugs via the oral mucosa.

Flavonoids As Target Molecules for The Treatment of Alzheimer's Disease

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Abstract: Alzheimer's disease (AD) is a prevalent neurodegenerative disorder marked by progressive cognitive decline and behavioral disturbances. Despite its significant impact, AD often goes undiagnosed and untreated until advanced stages, placing a considerable burden on individuals and society. This underscores the urgent need to identify reliable biological markers and develop targeted pharmacological interventions. Our study uses a validated model i.e. PPI (Proton-pump inhibitors) induced Alzheimer's disease in rodents. Current research also investigates flavonoid, amolecule with neuroprotective properties and various multiple functions. Flavonoids has beneficial effects in various diseases, including Alzheimer's, Parkinson's, and depression, indicating its potential efficacy in treating Alzheimer's disease. In the present study, we employeddifferent doses of flavonoid, demonstrating a dose-dependent effect on Alzheimer's -induced alterations in rats. Current research indicates the restoration of neurobehavioural and neurochemical measurements on various biological samples (brain homogenates and blood plasma) as well as morphological and histological analyses. In addition, the current research seeks to increase understanding of Alzheimer's disease and investigate potential new treatment strategies. Therefore, it is evident from the aforementioned research that the neuroprotective effect of flavonoid can serve as a strong basis for developing a new treatment for Alzheimer's disease.

A Study to Compare the Effects of Lumbar Paraspinal Muscles strengthening Exercises & Hip External Rotators Muscles Strengthening Exercises in Patients with Chronic Mechanicallow Back Pain

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ABSTRACT: Repetitive trauma and overuse are common causes of chronic mechanical low back pain, which is often secondary to work place injury. The symptoms of mechanical low back pain are normally aggravated by physical activity specially bending, extending, twisting and lifting. Various exercise, such as lumber stabilization exercise motor control exercises, core exercises, lumber flexion exercises, walking exercises and bracing exercises, have been proposed to mitigatechronic Low Back Pain. Effectiveness of the hip rotators strengthening exercises, is most strong and flexible can reduce the risk of injury during workouts or everyday tasks. Various researches showed that paraspinal muscles strengthening exercises have beneficial effects in patient with chronic mechanical low back pain. But there is limited data available in literature that compare theeffects of hip external rotators strengthening and paraspinal muscle strengthening exercises in patients with low back pain. Hence, need of study to find out which is more beneficial to reduce pain and improve daily functional activities of the patient with chronic mechanical low back pain. Acomparative study was done with 60 patients divided in the two groups. Patient ingroup A & roup B were assessed and informed consent were taken. Patients in group A were givenconventional physiotherapy & hip external rotators strengthening exercises & group B were given conventional physiotherapy & lumbarparaspinal muscles strenthening exercises. Treatment was givenfor 3 days

/ week for 6 weeks for 25 mins. Data wascollectedby means of VAS, Oswestry scale,functional activity scale. Two readings were taken at specific intervals. The study concluded that when we compared the effect of lumbar paraspinal strengthening exercises and hip external rotators strengthening exercises, both are equally significant in improving core stability and gait in chronic stroke patients.

Study The Effect Of Kinetic Control Versus Pilates Exercises On Core Stability And Gait of Chronic Stroke Patients

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ABSTRACT:

This study aimed to investigate the effect of kinetic control versus pilates exercises on core stability and gait of chronic stroke patients. A comparative study was done with 30 patients divided in the two groups. Patient in group A & group B were assessed and informed consent were taken. Patients in group A were given pilates exercises & group B were given kinetic control exercises. Treatment was given for 3 days / week for 8 weeks. Data was collected by means of Wisconsin gait scale, Trunk impairment scale Three reading were taken at specific intervals. The study concluded that when we compared the effect of kinetic control retraining and Pilates exercises, both are equally significant in improving core stability and gait in chronic stroke patients.

Effectiveness Of Computer Assisted Instruction On Knowledge And Practice Regarding Dengue Fever Among The Mothersof School Going Children At Selected Villages, Haldwani

By Jyoti Kharayat Miet Kumaon College Of Nursing

ABSTRACT

This quasi-experimental study investigates the efficacy of computer-assisted instruction (CAI) in enhancing knowledge and practices related to dengue fever among mothers of school-going children in selected villages of Haldwani. The research objectives include assessing pre-CAI levelsof knowledge and practices, evaluating the impact of CAI, and exploring correlations between knowledge and practices. Hypotheses were formulated and tested to determine significant differences in pre-CAI knowledge and practices, correlations between post-CAI scores, and associations with demographic variables. Operational definitions were established for effectiveness, CAI, knowledge, practices, and dengue fever. Assumptions include insufficient knowledge and preventive measures among mothers, with CAI expected to improve these aspects. Limitations include focusing on mothers of children aged 6-12 years and a restricted study duration. Anticipated outcomes involve heightened knowledge and improved preventive practices among mothers, contributing to dengue fever management and prevention. The introduction underscores the importance of health promotion, the global burden of dengue fever, and the imperative for preventive measures in endemic regions.

Mental Illness Among Rural Adults at Bel Parao Vill., Haldwani, Nainital (U.K) With A View To Develop Pamphlet

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ABSTRACT:

Mental illness (MI) refers to mental and emotional impairments affecting the individual's thoughts, feelings, mood and behavior; it also comprises mental retardation, organic brain disease, and learning disabilities. People who fail to fulfill their roles and carryout responsibilities or whose behavior is inappropriate to the situation are viewed as Mental Illnesses. Decades of research have established that the public holds negative beliefs about persons with mental illnesses, among them that such individuals are dangerous, unpredictable, unattractive, and unworthy and are unlikely to be productive members of their communities. Community perception towards mental health varies across the culture, and there are various mythsand beliefs regarding mental health. People with mental illness experience discrimination because of stigmatizing attitude and lack of knowledge that are largely socio- culturally constructed. In addition, there is a great misconception for the mentally ill. Many think these people are lazy or just making it up. There is also the attitude that these people are either crazy, possessed by demons, violent, out of control or unsafe. These are negative labels that have been attached due to the lack of awareness. Raising awareness can reduce misconceptions. Thus there is need to understand local contexts in order to develop effective programs to change such attitude. People belief that mental illness is incurable or self-inflicted can also be damaging, leading to patients notbeing referred for appropriate mental health care. Hence there is a need to assess the knowledge regarding mental illness in a selected rural area at Belparao, kaladhungi Haldwani , Nainital (UK)

THE OBJECTIVES OF THE STUDY:

1- To assess the level of knowledge regarding mental illness among adults of rural area.

2- To find the association between knowledge scores regarding mental illness with selected demographic variables like age, religion, residential area, type of family, family income, parent's occupation, etc, on knowledge regarding mental illness among adults of rural area.

METHODS: The sample selected for the study includes 100 adults of selected rural area. To selectthe samples, non-probability purposive sampling method was used. The reliability of the tool was established and the data was collected by using structured knowledge questionnaire, based on demographic data, 30 items on knowledge.

Formulation And Evaluation of Phytosomal Gel Of Ricinus Communis Leaf Extract For The Treatment of Arthritis Related Inflammation

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ABSTRACT
Herbal medicine system is one of the widely acceptable systems of the health care system which aims to manage human diseases efficiently. Around 80% of the World population uses herbal medicines to treat diseases, according to a recent WHO report. In the present study, we propose, agel prepared in the form of 4 different formulations, and a fast drug gel formulation for the anti- inflammatory action. We have synthesized Gel material with the help of castor leaf extract phytosomes. The solubility testing shows the maximum solubility of Ricinus communis leaf extract in Acetone, Ethanol, Phosphate buffer and the least in Dichloromethane. The FT-IR spectra of the castor leaf extract and phosphotidylcholine showed the successful compatibility. Using a spectrophotometric method for the estimation of λmax of Ricinus communis leaf Extractthe absorption maxima was obtained using a UV spectrophotometer at 257nm. The partition coefficient of Ricinus communis was determined by using an n- octanol/water system and the logP value was found to be 0.66 indicating the polar nature of the drug. The microscopic view of allthe formulations showed the size of the particles was within the range of phytosomes. Among allthe phytosomal formulations lowest drug content (68.65%) was observed with formulation F1, whereas formulation F1 showed the highest drug content (82.36). Among the phytosomal formulations highest entrapment efficiency (38.87%) was observed in the formulation, whereas formulation F2 showed the lowest entrapment efficiency (62.1%). The highest in-vitro drug release was observed with the formulation F3(74.34%) and the lowest F4 (54.98 %). Stability studies were carried out for 45 days. There were no significant changes in the homogeneity, drugcontent, pH, spreadability, extrudability, viscosity, and in-vitro diffusion profile. Among all the gel formulations F1 showed the highest % drug release. Keywords: Herbal, Phytosomes, Formulation, Medicines.

A Study To Asses The Effectiveness Of Structured Teaching Program On Knowledge Regarding Typhoid Fever And Its Prevention Among High School Students At Selected Schools of Haldwani

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ABSTRACT: This study aims to evaluate the effectiveness of a structured teaching program (STP) on enhancing knowledge about typhoid fever and its prevention among high school students in selected schools of Haldwani. The research objectives include assessing baseline knowledge levels, implementing the STP, and measuring the post-intervention knowledge enhancement. Hypotheses were formulated and tested to ascertain significant improvements in knowledge following the STP. Operational definitions were established for effectiveness, STP, knowledge, and typhoid fever. Assumptions include limited understanding of typhoid fever and its preventive measures among high school students, with the STP anticipated to address these gaps. Limitations include the focus on high school students and a restricted study duration. Projected outcomes involve heightened knowledge levels and improved awareness of preventive measures, contributing to the management and prevention of typhoid fever. The introduction emphasizes the importance of health education, the prevalence of typhoid fever, and the significance of preventive strategies among adolescents.

Assessing Maternal Health in Pregnancy: Exploring Erythrocyte Sedimentation Rate (ESR) as a Diagnostic Tool

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ABSTRACT: Erythrocyte Sedimentation Rate (ESR) is a widely used diagnostic tool in various medical conditions. This study aims to explore the utility of ESR as an indicator of maternal health among pregnant women. The research objectives include assessing the correlation between ESR levels and maternal health status during pregnancy, identifying potential factors influencing ESR levels, and evaluating the predictive value of ESR in detecting maternal complications. Hypotheses were formulated and tested to determine significant associations between ESR levels and maternal health parameters. Operational definitions were established for ESR, maternal health, and pregnancy complications. Assumptions include the potential of ESR as a non-invasive and cost-effective tool for monitoring maternal health. Limitations include the need for further validation of ESR's utility in diverse populations and clinical settings. Anticipated outcomes involve enhanced understanding of ESR's role in maternal health assessment, contributing to improved prenatal care and management strategies. The introduction provides background information on ESR, maternal health during pregnancy, and the need for reliable biomarkers in obstetric care.