# Compendium of Abstracts

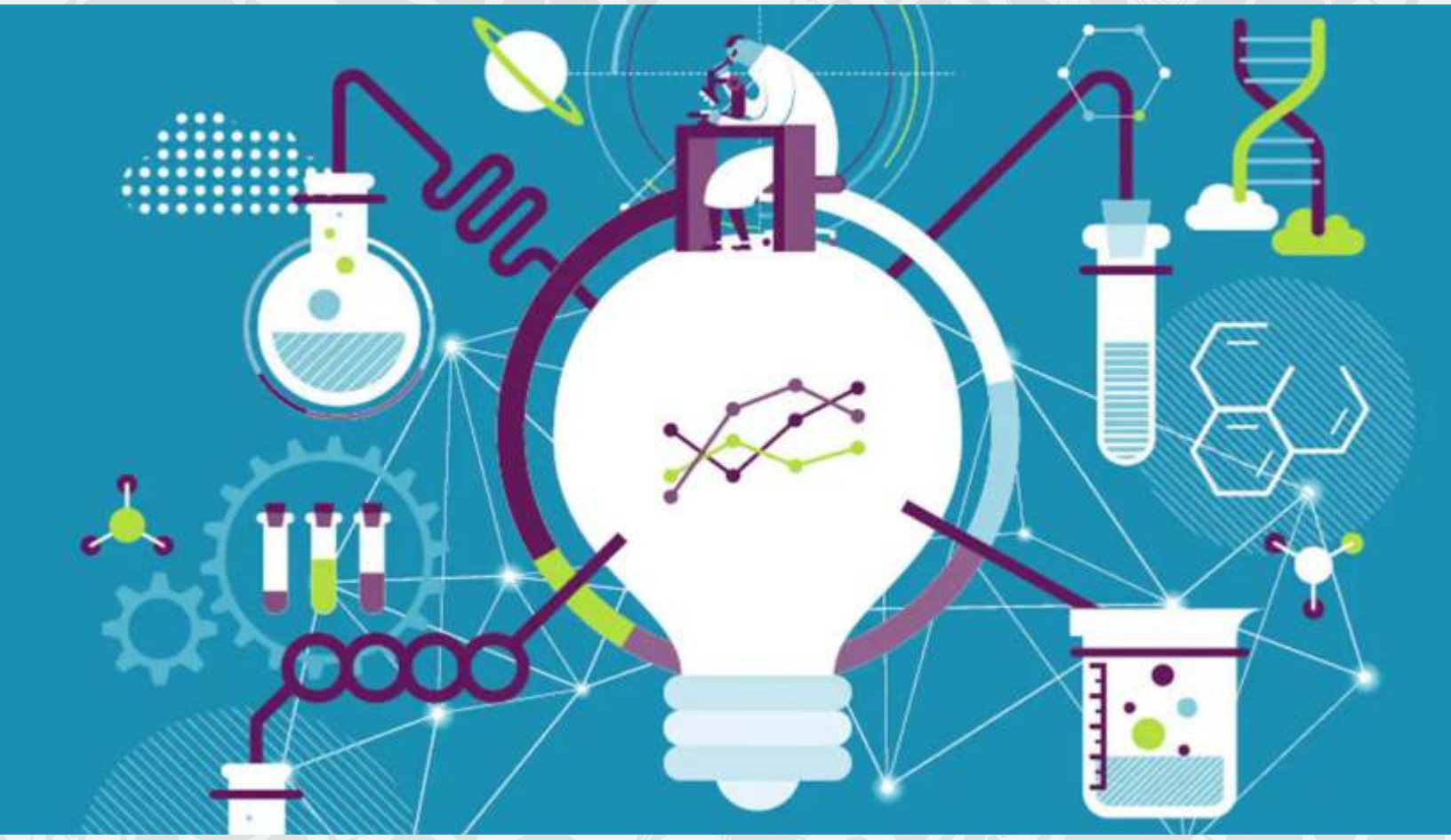
**RUSA SPONSORED**

**ON**

# International Conference

## EMERGING TRENDS IN MULTIDISCIPLINARY RESEARCH (ICETMR 2023)

**24- 25 March, 2023**



*Organized By*

## Faculty of Science

Patna Women's College, Autonomous

Patna University, Patna, Bihar

**In Collaboration with**

**Mount Carmel College Autonomous, Bengaluru**

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# CONTENT

# PATNA WOMEN'S COLLEGE
## Autonomous
## Patna University

## MESSAGE

I am extremely happy to announce that the Faculty of Science, Patna Women's College, Patna University in Collaboration with Mount Carmel College (Autonomous), Bengaluru, is organizing a Ruso Sponsored International Conference on Emerging Trends in Multidisciplinary Research (ICETMR 2023) in Online Mode.

The objective of the multidisciplinary conference is to gather leading academicians scholars and researchers to share their knowledge and discuss current developments in their respective research fields.

I welcome all the delegates and resource persons coming from across the globe to participate in the online Platform. I also congratulate all the Science Departments and the organizing committee of Patna Women's and Mount Carmel College, Bengaluru, and wish them success in their endeavors.

With God's blessings and best wishes.

M. Rashmi ac

**Dr. Sister M. Rashmi A. C.**
Principal

**Dr. Aprajita Krishna**
Dean, Faculty of Science,
Patna Women's College, Patna

# MESSAGE

It is indeed a matter of immense pleasure and satisfaction that the Faculty of Science, Patna Women's College, Patna University in Collaboration with Mount Carmel College (Autonomous), Bengaluru, is organizing a Rusa Sponsored International Conference on Emerging Trends in Multidisciplinary Research (ICETMR 2023) in Online Mode.

As Convenor of this International conference, I feel privileged to welcome all the dignitaries, delegates and research scholars participating in this event.

I am sure the wide range of deliberation on various relevant issues concerning sustainable bio- resources management, electronic materials and their applications, electrochemical, electro mechanical, magnetic, dielectric, biological, artificial Intelligence tools, optical component, devices and systems would definitely enrich and update our knowledge. The conference will also enable participants to explore the possible avenues to foster academic and student exchange programme, scientific activities globally.

I would like to take this opportunity to extend my warm regards and best wishes to all the esteemed members who are part of this International Conference.

Aprajita Krishna

**Dr. Aprajita Krishna**

**Dr. Kavita Verma**
Department of Physics,
Patna Women's College, Patna

# MESSAGE

Multidisciplinary research is a research technique in which tools from different sciences and discipline are used to find an explanation. It refers to how two or more discipline contribute to understanding and defining what learning is. Parallel concepts are cross-disciplinary, inter- disciplinary and transdisciplinary and it therefore refers to an activity consisting of many disciplinary.

The international Conference on Emerging Trends in Multidisciplinary Research endeavours to provide a common national platform and an inter disciplinary forum for researchers academicians and students to discuss ther e c e n t researches in various fields.

I am encouraged by the overwhelming response received. I am very much sure that novel ideas and concept will arise, revolving around our focal themes through this interactive session.

I express my sincere gratitude to the RUSA for their support in organizing this event. My heartfelt gratitude to our Principal, Dr. Sister M.Rashmi A.C. for her constant support and encouragement towards organising the conference.

I heartily welcome the scientists, delegates and students to this platform to take advantage of this opportunity and contribute towards a far-reaching outcome.

Kavita Verma

**Dr. Kavita Verma**

**Alok John**
Dean – National, International Collaborations &
Constancy Services (NICCS)
Patna Women's College, (Autonomous), Patna

# MESSAGE

It is a matter of great pleasure to note that the Faculty of Science, Patna Women's College (Autonomous) has taken the initiative to organized a collaborative RUSA sponsored International Conference on "Emerging Trends in Multidisciplinary Research (ICETMR 2023) in partnership with the prestigious Mount Carmel College (Autonomous) Bengaluru.

I extend a special thanks to the Conference Conveners, Dr. Aprajita Krishna, Dean - Faculty of Science, Patna Women's College and Dr. Regina L Suganthi, Dean, PG Science, Mount Carmel College (Autonomous), Bengaluru for their sincere efforts in maneuvering this Conference in an extremely laudable manner.

I extend my warm welcome to all the eminent dignitaries, valued resource persons, participants and paper presenters to this Conference.

We are looking forward to more of such collaborative ventures between the two great Institutions.

Regards,
Yours sincerely
**Alok John**

## "Synthesis and I-V Characterization of CuO Doped PET Nanocomposites"

***[1]Ashish Kumar,**

***[2]Dr. Pankaj Kumar Modi**

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### ABSTRACT

In the present study PET / CuO nanocomposite films were synthesized and characterized. Nanocomposite films were prepared by a simple and novel solution casting method using 2-Cholorophenol as solvent. The mean crystallite size of used Copper(II) oxide (CuO) nanopowder was 22.4 nm. The nanocomposites of Polyethylene Terephthalate (PET) had been prepared at 14.89, 15.78 and 16.66 wt% of CuO content. The I-V characteristic curves of nanocomposite were analyzed over a temperature range from 400 C to 900C and correlated with filler amount. Nature of the I-V curves indicated non-ohmic behavior of the nanocomposite films. The current was found to increase with increasing temperature. Maximum current was observed in 16.66 wt% CuO – PET film sample. The straight line fitting of the graph of ln(R) with T1/4 shows acceptance of the Mott hopping model.

***Key words:*** Polymer Nanocomposite, Polyethylene Terephthalate, CuO, Solution Casting Method, I-V Characteristic.

## Structural properties using Rietveld refinement of Silver doped Copper Oxide Nanoparticles.

**Chithra B[1], Sheeba N H[2]**

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### ABSTRACT

Copper oxide (CuO) NPs have been synthesised using simple Co-precipitation method and Ag dopant is incorporated into CuO lattice for different doping concentration. The samples are characterised by X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR) for structural analysis, Energy Dispersive X-ray Analysis (EDAX) for compositional study, Scanning Electron microscopy (SEM) for morphology and UV–visible absorption spectroscopy (UV) for optical properties. To obtain the crystal structure and achieve purity of synthesis, the Rietveld refinement is employed for both undoped and doped samples. Crystallite sizes and lattice strain on the peak broadening of Ag doped CuO- NPs were studied by using Williamson-Hall (W-H) analysis.. Monoclinic CuO nanostructures have been confirmed by FTIR measurements of both nanoparticles. Chemical compositions are identified by EDAX spectra. With increasing Ag dopant concentration, UV-Vis spectrophotometer measurements shows that the band gap increased clearly.

**Keywords:** Co-precipitation method, Copper oxide nanoparticles, Rietveld refinement W-H Analysis.

## Evolution of Photonic Crystal Fiber and its Application in Optical World

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### ABSTRACT

This paper is focused on the evolution of photonic crystal fiber and its application in the optical world. Photonic crystal fiber is a new technology that is constantly evolving because it can be configured to transmit different wavelengths of electromagnetic waves. There are several applications where photonic crystal fiber has been used, such as in laser radar, laser communication links, and fiber optic communication. This paper provides a brief history of the evolution of photonic crystal fiber and summarizes recent research on the technology. The evolution of optical transmission systems has been taking place for decades, and this paper will highlight the evolution of photonic crystal fiber through its application in various fields, including aerospace engineering, environmental sensing equipment (packaging), high-tech production lines for various industries such as car manufacturing, and pharmaceuticals, to name a few. Most of this paper will be focused on the latest innovations and applications of photonic crystal fiber, which has been evolving from a relatively new technology to an emerging optical transmission medium in recent years. The most important breakthrough in optical fiber, which led to its relevance in modern communication systems, was the advent of the semiconductor laser, which showed great promise for processing power amplification. However, a major hurdle was encountered when silicon-based lasers were introduced because these devices exhibited low efficiency. Optical fibers showed promise for solving this need for power amplification and speed optimization.

## Excavating through the enigmas of world's largest Buddhist Dagoba: The Kesariya stupa

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### ABSTRACT

"This research project is done to study the tallest and largest excavated stupa in East champaran district of Bihar known as Kesariya stupa. Locally it is known as ' Raja Ben ka deora'.

The study will focus on the historical, archaeological and significant impact of this stupa on world history. Recently the stupa caught into waterlogged conditions after floods in East champaran.

This study is done to avoid such conditions in future and preserve this monument by using the technical aids. XRF and XRD methods are used to study material and artifacts of stupa used during Ashoka age.

This study is best merging of Chemistry, Physics and Archaeology at the same time."

## Green Synthesis of Silver Nanoparticles using Cloves ( Sygium Aromaticum ) & Cinnamon Bark (Cinnamomum Cassia ).

**Saurabh Parmar**
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### ABSTRACT

Nanomaterials have brought a new revolution as they exhibit exotic properties like Enhanced Permeability and Retention Effect, Enhanced Surface to Volume Ratio, etc. We Indians are adhered with the Ayurvedic values, enriched with diverse green natural sources, and Nanoparticles have been part of our medication in somehow other form, since time immemorial. In the present study, the focus is one the synthesis of Silver Nanoparticles, using the plants extract of Indian vegetation like Cloves and Cinnomon bark, which are the common materials found in almost every Indian kitchen. Cloves based bio-synthesis of silver nanoparticles from the Silver Nitrate Salt solution ($AgNO_3$, 0.001 M concentration) yields Nanorods. Eugenol, a compound present in the Cloves is acting here as a reducing & capping agent. Cinnamoan Bark based bio-synthesis of silver nanoparticles from the Silver Nitrate solution yields Nanospheres. Here, Cinnamaldehyde, a compound present in the bark is acting here as a reducing & capping agent. The formation of NPs can be prima facie observed from colour change. The sample has been further tested for spectrophotometric uv-vis analysis and TEM analysis for confirmation.

Following the simple laboratory procedure with basic and less cost requirement, the very same process and taking the same ratio has been carried out for both Cloves and Cinnmaon bark. The different shapes ( Nanorods & Nanospheres) for two different medium may be described as the functional group properties of the reducing agents. Also the Clove based Silver NPs show greater stability than Cinnamon Bark based Silver NPs. Physiochemical factors ( like Temperature, Ph value) may play important role in their morphology.

## Anticancer, Antimicrobial and Biomedical Applications of Zinc oxide Nanoparticles

**PRIYAVRAT**
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### ABSTRACT

Zinc oxide NPs are gaining popularity in variety of areas as they are biocompatible, less toxic, cost efficient and can be synthesized easily through several routes. By altering their morphology, wide band gap and high excitation binding energy, their optical and chemical properties can be easily modified and they can be efficiently used as mediators of intracellular bacterial toxicity, disrupting their cell membranes. The present study comprises of the synthesis of ZnO NPs through Sol-Gel method and their potential effect through anticancer, antimicrobial, and other biomedical activities. By adjusting their hydrothermal reaction parameters such as:- (concentration, duration and pH) microrods, hexagonal-pyramid like rods, and flower-like rod aggregates particles have been synthesized. The present study is a compilation of synthesis, characterization and biological activities of ZnO NPs illustrating their

mechanism of action. The particles shapes and sizes are characterized through SEM and TEM. The height and volume of NPs has been confirmed by the AFM images. XRD and FTIR shows the sizes and functional groups present in the synthesized particles. The study provides enough details regarding ZnO NPs and their potent biomedical applications.

***Keywords:-*** morphology, toxicity, biocompatible, microrods, band gap

## A Machine Learning Approaches To Predict Student Performance

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[2.] **Syed Mufassir Yaseen,** Assistant professor
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### ABSTRACT

In artificial intelligence (AI), the goal is not to create a system that can duplicate human intellect but rather to utilise knowledge that is unavailable to people. Despite the fact that the human brain is universally recognised as the most complicated system in the world, all AI models are incessantly compared to human intelligence. As a result, efforts to create AI robots with good judgement have increased. Artificial intelligence (AI) has proven mostly helpful to humans, but it has not yet been widely accepted by society, and we are nearing the conclusion of the first quarter of the twenty-first century. AI and its branch, machine learning, include all fields that contribute to the generation of new knowledge and technological development (ML). Like the big and minute building blocks that go into constructing a house, AI research is vital to the development of fields as diverse as engineering, sociology, and medicine. Since the beginning of the building of this framework, there has been an increase in the number of studies investigating the use of AI in classroom settings (ES). A good education is the single most important factor in a person's personal growth and, therefore, in the advancement of society as a whole. Constant innovative research is being conducted in the area of educational sciences with the hopes of speeding up its development, increasing its efficacy, and broadening the scope of its services. At the same time as it is being utilised to enhance learning in a broad range of ES fields, the importance of AI in research and applications to education is growing. It may be put to use in a number of ways, including improving lesson planning for educators, tailoring instruction to each student, encouraging thoughtful course choices in higher education, and enhancing test-taking skills.

***Keywords:*** Machine Learning, higher education, supporting students, Python.

## Segmentation Techniques for Mammogram Images

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### ABSTRACT

Breast cancer is one of the most common and deadly cancers among women. As per the reports of ICMR (Indian Council of Medical Research), every 9$^{th}$ person in India is at risk of developing cancer in his/her lifetime. Also, 1 in

every 29 women is at risk of breast cancer in India. In the year 2022, a total of 287,850 new cases of breast cancer were reported in the US. Even though breast cancer is one of the deadliest types of cancer but the survival chances are high if it is diagnosed at the early stage. For the diagnosis, the first step is mammography, the radiologist checks for any abnormalities such as mass, density, distortion, or nodule. Some of these abnormalities may or may not be cancerous. For the identification of abnormalities in the mammogram, a deep learning-based model could be useful. Well-trained deep-learning models are capable of classifying tumors and help in reducing the burden of radiologists. For an accurate model, a well-segmented image plays a vital role. In this study, different segmentation methods are studied, and the best segmentation method is suggested.

***Keywords:*** Breast Cancer, Segmentation, KNN, Otsu

## Impact Of Metaverse On The Future Of Education

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### ABSTRACT

The metaverse is one of the most intriguing environments on the web3. When virtual and augmented reality coexist with the actual world, it is referred to as the "metaverse," a decentralised domain. Other names for it include "BEYOND THE UNIVERSE", sometimes it is referred to as the next version of the internet. You can go to conferences, fashion shows, business meetings, sporting events, and chess matches in the metaverse.

In order to improve learning at all academic levels, metaverse is increasingly being investigated as a key pedagogical tool. In the field of education, metaverse enables students to participate in remotely accessible virtual classes that simulate aspects of a traditional classroom. Physical barriers are being removed while education institutions and technology firms try to make them more immersive, engaging, and communicative. This paper offers a comprehensive literature analysis on the impact of metaverse on the future of education.

Additionally, it links the physical and digital worlds together and provides seamless communication.

This paper investigates student, teacher, and parent perceptions about the impact of the metaverse on the future of education as their level of awareness of the metaverse among various age groups. It also intends to give a representational model using charts and graphs that will be practical, along with all the cost and resource estimations for implementing metaverse in the educational system. It will be evaluated to see if it is ideal or not by listing the benefits and drawbacks.

**Keywords:** web3, augmented reality, virtual reality, virtual class

## Crowdfunding Portal with An Efficient Success Rate Prediction

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### ABSTRACT

Crowdfunding is a process where a number of people donate some money to a person in need. Crowdfunding has played an important role in connecting people with needs with people doing good deeds. I have created a crowdfunding portal called CrowdFunder for web browsers using Node JS and Express JS. The database support is provided by Firebase, a cloud-powered database. The users who are signing in as acceptors are provided with the option to create new campaigns, and the users who are signing in as donors can donate money to the campaigns. I have used a JSON web token to securely store details in the web app. Tampering with any stored cookies results in an authentication error, and the user will be asked for the login details. Each campaign lists the details of the creator who created the campaign, the donors who donated money for the campaign, the goal reached, and the deadline. I have introduced a success rate prediction for the crowdfunding campaigns based on the previous performances of similar campaigns. Practically, people with sufficient money who wish to extend their service to an individual, an organization, or a project find themselves without assistance on how to move further to make their thoughts into action. Similarly, people who seek help remain blank on whom to be contacted for their needs to get fulfilled in this diverse world. So, the main purpose of Crowdfunding is just to bridge these practical extremes by providing a common platform where people can take part mutually, also ensuring transparency.

## A Study on Challenges faced by Rural Learner at Nalanda Open University (NOU), Bihar using Fuzzy Logic

**Dr. Kiran Pandey** (Assistant Professor, Dept. of Computer Science)
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### ABSTRACT

This study has been undertaken to address a literature gap relating to the experience of the rural learner of distance education in developing countries like India. India has many open universities functional in different states. I focus of the study is on the experience of rural learner at Nalanda Open University (NOU), Bihar. Though this university is supposed to be located in Nalanda district, but it is presently working from Patna. The campus may be shifted to Nalanda in near future. This study gives an account of teaching and learning practices at NOU, describes the needs, challenges and coping strategies of learners. It also makes recommendations for improving teaching and support practices in rural areas. An ethnographic approach was used to enable the generation of rich, contextual data from ten study centres of NOU. Data generation methods included many fact finding techniques like surveys, interviews and observations while themes were inductively generated through thematic analysis. Fuzzy logic was used for interpretation of the findings. The study shows that the rural learners have inadequate access to relevant teaching and support services such as tutors, library resources and Internet services. The poor infrastructure and the many technological challenges encountered in rural areas further exacerbate the situation. Such limitations block the learners to develop the intellectual inquiry and critical commentary skills necessary to make informed decisions, and to acquire the competencies expected of graduates and postgraduates of higher education programmes. This study

presents rich data based on the everyday lives of learners at NOU, and proposes a series of recommendations addressing the development of future policy and planning for the university.

## AI assistant to communicate with Retailers using Natural Language Processing (NLP)

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### ABSTRACT

"The exponential growth of e-commerce in recent years has led to an increasing demand for technologies that make online shopping easier and more accessible. The current E-commerce platforms are primarily text-based, which can pose a significant challenge for users who are not fluent in English. This can lead to confusion and frustration, causing users to abandon the platform or resort to alternative means of shopping. To address this demand, the development of an e-commerce application that integrates an AI voice assistant is proposed. The main goal of this project is to assist local Tamil people in understanding the e-commerce terms which are mostly in English, and to aid them in using the e-commerce application more efficiently. The introduction of AI voice assistant technology in e-commerce demonstrates its potential to enhance the accessibility and user-friendliness of online shopping applications. By incorporating this technology, users can have a more personalized shopping experience that can cater to their language and cultural preferences. The AI voice assistant also has the potential to improve the efficiency of online shopping, reducing the need for manual navigation and simplifying the process. This project aims to showcase the possibilities of AI technology and its role in transforming the online shopping experience into a more accessible and user-friendly one. The development of this application can potentially bridge the digital divide by providing equal access to e-commerce for everyone, regardless of their language or cultural background. Overall, the project highlights the significance of AI technology in e-commerce, which can revolutionize the way we shop online.

## Campus Drive Portal

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### ABSTRACT

"College students, college placement professors, and companies visiting the college can all benefit from the university's online automation system for recruiting. For students, placement faculty, and firms visiting the school, this software includes three login portals. When students register themselves in the system, they must provide all of their information, both personal and professional. Faculty members can register by providing information such as their employee ID, subject area, and position. Companies register with their name, job title, number of openings, criteria, job description, and job profile. Students can view and apply to the companies in person. Companies have

access to a list of student profiles who have applied to a particular company. The information needed for the selection process, such as aptitude, reasoning, etc., can be searched for by the students. The company has access to information about the selected student, including information about college events and the students' accomplishments. As a result, it offers a facility for keeping user information and gives the requested list of applicants for companies looking to hire individuals based on a specified query. All three login credentials are managed by the admin. When necessary, the admin may add, remove, or amend information. The admin gathers all the information about the pupils and sends it to the professors. The database, which the administrator can access at any moment, contains all the information. Because a database file and the project files will be saved in SQL.

## The Study of Component Based Software Industry

**Praveen Kumar*, Dr. Kailash Patidar****

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** Department of Computer Science and Engineering, Dr. A.P.J. Abdul Kalam University, Indore

### ABSTRACT

Cost, timeframes, and quality are three of the most important factors in any software development process. Professional, technically competent labor and the constant evolution of technology account for the bulk of the price tag. Software projects can benefit greatly from schedule planning. Rapid software development is essential, as is meeting project deadlines. To compete in today's software business industry, the software development process has had to evolve along with the advancement of technology. Too many long-held assumptions about the software development process have been confirmed by experience and observation. However, in the long run, the cost-benefit analysis of the development process shows that not all forms of recursive reuse are worthwhile. Many large, well-known corporations have tried and failed to apply an improvement process strategy, while others keep trying but fail to fully consider all of the potential advantages. Many businesses still choose for laborious software engineering despite the fact that the upgrade's result is detrimental to their bottom line. The software business has seen a recent revolution due to a move toward a more modular approach, known as component-based software development. When different software components are joined, they form a whole with their own unique capabilities. The overall quality of a software product is equivalent to the quality of its constituent elements.

***Keywords:*** Software, Development, Business, Quality, Product, Component Based Software Engineering (CBSE)

## Intelligent Hostel

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### ABSTRACT

This proposed system will act as a Web portal which provides the most efficient and secured Hostel Management system. It is mainly used to manage the check in and checkout of the hostel students using Face image biometrics security system. This system enlightens upon the invention as well as technology advancement in the field of security. The purpose of such system is to ensure that the rendered services are accessed only by a legitimate user, and not anyone else. By using biometrics it is possible to confirm or establish an individual's identity. In this system

the concept of Face image authentication will be used as a Password. Students can be accurately Time stamped and identified using Face image biometric scanning technology check-in software applications. Managing hostels which have number of students manually is very difficult especially tracking those student's check-in and checkouts. The students can checkout using Face biometric system, if they didn't return to hostel within the estimated date/time the information will be passed to their Parent/Guidant after a warning message which has been sent to Student's mobile within fixed minutes. Student can also pay their hostel and mess fees using this website. We can easily know the status of the students. It will make sure the safety of the students. It is cost effective and it consume less time for processing. This website consists of modules such as Enrolment phase, Out Pass registration process, Approval Process, Face image matching, Alert System, Add fees structure and Payment. Last two modules will be implemented according to the user's interest. This website will be designed using DOT NET and SQL Programming languages.

## How Depression is analysed through social activeness using Sentiment Analysis?

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### ABSTRACT

"Sentiment analysis came out as an uproar trend nowadays to understand people's sentiments in multiple situations in their quotidian life. Data generated from different social media sites like Twitter, Instagram, Facebook and many more would be utilised for the entire process i.e., the analysis and classification processes and it consists of text data and emoticons, emojis etc. Data is gathered from various sites and classification is done that gives more precise results. Machine Learning and Deep Learning techniques would be used for performing classification process. Utilising social media, sentiments levels can be analysed or determined. Social networks have been developed as a great point for its users to communicate with the interested friends and family members and share their views, opinions, photos, and videos reflecting their words, feelings, and sentiments. This creates an opportunity to analyse social network data for the user's feelings and their sentiments to investigate their moods and attitudes when they are communicating via these online tools that helps to analyse whether that particular individual is depressed or cheerful. Although diagnosis of depression using social networks data has picked an established position globally but besides this there are several dimensions that are yet to detect.

In this study, we aim to show how we can gather the data from a social media site sample data and by utilising machine learning techniques we can analyse the person's mental state i.e., how we perform depression analysis through their social activeness.

In the survey, it was optically canvased that social media data which consists of texts, emoticons, and emojis were utilised for the identification of a particular person's sentiment utilising various artificial intelligence techniques. Multi class classification with Machine Learning or Deep Learning Algorithms shows higher precision value during the sentiment analysis. The study helps in conceptualizing high quality solutions of mental health problems among various social media users, as it gives a method for the depression analysis among users by visualising their activeness on various sites.

## An Experiment on Impact of Repeller Device on Animals for Crop Protection

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### ABSTRACT

India is an agriculture-dominated country. Also, the population of India is the second largest in the whole world. In this situation, crop protection is as important as crop production. We have designed a device that can improve crop protection from wild animal attacks. A proposed device is designed to protect crops not only from birds, but also from wild animals. It is also intended to detect any type of fire in the vicinity of the cropland. It can also detect soil moisture levels and alert farmers if they become too low or too high. We conducted an experiment to investigate the impact of repeller frequency on animals. To reduce crop destruction, we are using an ultrasonic frequency generator in our model that will act as a repellent. But after a certain period of time, they become used to it. So, we have conducted an experiment to check the pattern of their behavior against this frequency. Based on this pattern, we can improve the repeller system.

***Keywords:*** Crop protection, repeller frequency, ultrasonic, behavior, wild animals, crop destruction

## Applications of Artificial Intelligence in Cognitive Radio and Signal Processing

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### ABSTRACT

This article throws light on the possible usages of Artificial Intelligence (AI) in cognitive radio and signal processing. Cognitive radio is increasingly being viewed as a way to heighten spectrum utilization. Artificial Intelligence (AI) has made a remarkable impact in the domains of cognitive radio and signal processing. Merging Artificial Intelligence techniques such as machine learning, deep learning, and reinforcement learning have led to more competent and successful resolutions to a variety of issues. Artificial Intelligence (AI) approaches such as deep learning and reinforcement learning can be employed to better the functioning of cognitive radio and allow the device to take decisions according to the surroundings. Cognitive radio systems that use AI can adjust to fluctuations in the radio environment, get the most out of the radio spectrum, enrich radio network performance, and refine radio resource management. In signal processing, AI techniques such as neural networks and support vector machines are very popular for feature extraction, signal categorization, noise reduction, and image processing. The utilization of AI-based signal processing techniques, for example, speech recognition, image and video processing, and pattern recognition have significantly improved the accuracy and productivity of signal analysis. By combining AI with cognitive radio and signal processing, intelligent radio systems have been developed which have better performance, effectiveness, and dependability. AI-based signal processing can be used to enhance the

performance of signal detection and classification jobs. AI approaches can also be employed in the development of signal-processing algorithms. It is clear that AI provides great potential for improving the performance of cognitive radio and signal processing."

## KPI Dashboard for Educational Institutions

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### ABSTRACT

Every educational Institution, University or a College, wishes to provide the best quality services for the students and teachers in order to grow in terms of performance and produce good results. However, due to lack of data analysis platforms, the Institution and the students as well, find it difficult for their performance appraisal and guidance for future job prospects. KPI (Key Performance Indicators) Dashboard allows educational institutions like colleges & universities to analyze various data of students, teachers, departments etc. to make appropriate decisions and devise appropriate strategies that would help in achieving overall progress of the institution. It consists of three separate interfaces, for students, teachers and the principal, that would provide them relevant useful information such as, Analyzing Students Progression, Realtime Students and Teachers attendance using live face recognition module, analyze current Institutions progress and set targets for further improvements etc. In the Students module, the software could predict the best career paths for the students to choose from, based on their history of scores and assessments. It also includes a skill development progress bar that enables students to know their skills and what skills they must gain in order to prepare for their dream career. The teachers could analyze the overall class performance, students performance and track year wise performance, based on which the teachers could make decisions for the students progress. The principals module includes NAAC (National Assessment and Accreditation Council) criteria as KPI and how much of it has been fulfilled along with the department wise performance and teachers performance.

## "Application in Artificial Intelligence and Smart Computing "
## Sub topic: "Study on an identification of chronical disease prediction using Artificial Intelligence and Big Data"

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### ABSTRACT

Knowledge driven from technology has always benefited the human being to large extent. Few years back during 20th mid-century, what was figment of the imagination of many scientists, Artificial Intelligence has turned into reality. Artificial Intelligence (AI) is the simulation of human intelligence demonstrated by machines This aspect involves

learning, reasoning and self-correction. AI has started bringing new revolution in the medical healthcare. The amalgamation of AI in healthcare sector has empowered the human limits. In this review article, various latest development of applications of AI in the field of biomedical including diagnosis and prediction analysis of disease is highlighted. There are certain challenges as well in imbibing the AI framework in medical. The healthcare industry is expanding and rising every year. With this there is huge volume of data generated. As the data grow exponentially, the implementation of machine learning and big data helps in filtering the required data from huge volume of data and turn it into actionable information. Disease always shows the different condition and effects gradually in the diagnosis. But many a time due of lack of correct analysis, disease are not diagnosis prior. This study highlights the different strategies and algorithm used in machine learning, artificial intelligence and big data. This study covered different articles which highlights the various methods and algorithms used to search best optimal way to predict the disease. The data is captured either with Electronic Health Record (EHR) or Medical Health Record (MHR).

**Keywords**: Artificial Intelligence, Big data, Biomedical, Machine learning, Algorithm, Electronic Health Record, Medical Health Record

## Global dynamics of a modified Lesliea Gower model with Holling type_IV functional response and nonlinear prey harvesting with Allee effect

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### ABSTRACT

Global dynamics of a modified Leslieâ “Gower model with Holling type-IV functional response and nonlinear prey harvesting with Allee effect In this work, we explore the dynamics of a modified Leslieâ “Gower model with nonlinear harvesting and Holling type-IV functional response with Allee effect. We study the model system using qualitative analysis and explore all possible local and global bifurcations. We demonstrate the system dynamics through co-dimension one and two bifurcations structure and also show possible phase portraits. For a model with the Allee effect, we perform sensitivity analysis of model parameters for fixed coexistence points. We demonstrate results analytically and perform numerical simulation to validate analytical findings.

## Approximation of Functions belonging to Holder's Class and Solution of Lane-Emden Differential Equation Using Gegenbauer Wavelets

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### ABSTRACT

In this paper, a very new technique based on the Gegenbauer wavelet series is introduced to solve the Lane-Emden differential equation. The Gegenbauer wavelets are derived by dilation and translation of an orthogonal Gegenbauer polynomial. The orthonormality of Gegenbauer wavelets is verified by the orthogonality of classical Gegenbauer polynomials. The convergence analysis of Gegenbauer wavelet series is studied in H$\ddot{o}$lder's class.

H$\ddot{o}$lder's class $ H^{\alpha}[0,1)$ and $H^{\phi}[0,1)$ of functions are considered, $H^{\phi}$[0,1) class consides with classical H$\ddot{o}$lder's class $H^{\alpha}[0,1)$ if $\phi(t)=t^{\alpha}$, $ 0<\alpha\le1 $. The Gegenbauer wavelet approximations of solution functions of the Lane-Emden differential equation in these classes are determined by partial sums of their wavelet series. In briefly, four approximations $ E_{2^{k-1},0}^{(1)}$, $E_{2^{k-1},M}^{(1)}$, $E_{2^{k-1},0}^{(2)}$, $E_{2^{k-1},M}^{(2)}$ of solution functions of classes $ H^{\alpha}[0,1)$, $H^{\phi}[0,1) $ by $(2^{k-1},0)^{th}$ and $(2^{k-1},M)^{th}$ partial sums of their Gegenbauer wavelet expansions have been estimated. The solution of the Lane-Emden differential equation obtained by the Gegenbauer wavelets is compared to its solution derived by using Legendre wavelets and Chebyshev wavelets. It is observed that the solutions obtained by Gegenbauer wavelets are better than those obtained by using Legendre wavelets and Chebyshev wavelets, and they coincide almost exactly with their exact solutions. This is an accomplishment of this research paper in wavelet analysis.

## The Effect of Social Computing on Youth In Education Sector Between the Age-group 15-49 In Patna."

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### ABSTRACT

"Technological advances have drastically changed the way of communication and socialization. Social networking has connected people at low cost, in a less hesitant way, allowing individuals to interact through websites and mobile devices.

However, unsavoury consequences have also emerged, such as cyber bullying, online predation and privacy concerns. Social computing studies social behavioural data collected from social media platforms such as blogs, instant messages and tags. It will prove beneficial for a certain age group amongst youngsters and has variations of advantages and repercussions as per geographical and sectional aspects. With this research, we will try to unveil and bring up the hidden fact with the help of data we gather from such as twitter, LinkedIn , google+ Facebook as well as e-commerce website. This research examines the various measures of social computing through different social media platform. Social Computing is solely the branch of computing that focuses on analysing the link between human behaviour and computer systems. it's supported making or recreating social conventions and social contexts through the employment of computer code and technology. The systems that support the gathering, illustration, processing, use, and dissemination of knowledge that's distributed across social comprehensiveness like groups, communities, organizations and markets. Moreover, the knowledge isn't â ˜unrevealed however is remarkably precise as a result of it's joined to individuals, United Nations agency square measure successively joined to others.

The speedy emergence of social computing applications is ever-changing the ways in which individuals connect with one another. In today's world, the technology is evolving day-by-day, the employment of web and its facilities square measure a pace increasing with the pace.

***Keywords:*** Social Computing, Technology, Education, Specified, Age Bracket

## Some Results on the Matrix Polynomials $L_n^{(M,\delta)}(\chi)$

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### ABSTRACT

In this paper, we discuss matrix polynomials $Ln^{(M,\delta)}(\chi)$. Some results viz, hypergeometric representation, generating matrix relations, integral representation, recurrence relations, summation formulas and fractional calculus operators of the matrix polynomials $Ln^{(M,\delta)}(\chi)$ are obtained.

## Aspect Level Opinion Mining for Hotel Text Reviews using Traditional Machine Learning Approaches

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### ABSTRACT

The customers intend to write their opinion about the hotel they visit in order to provide suggestion, complaint, or appreciate the services. These opinions have been expressed in terms of text on the online platforms. The hotel industries need to process and analyze these opinions to improve their business in the right direction. The challenges such as computational efficiency to process a huge size data ore of opinions and ability to learn from the continuously generated data. This article proposes a machine learning based opinion mining method that captures the intention of the customer as well as the opinions with respect to the specific aspects of the hotel entities. The proposed method has a three stage pipeline that includes pre-processing of the textual opinions, feature extraction from the pre-processed opinions, and classification of the features values into its correct rating and various sub-ratings. The experiments have been carried out on 4.5M reviews of HotelRec dataset. The results obtained through the proposed method has outperformed the existing baseline methods.

***Keywords:*** Opinion mining; Aspect level; Sentiment analysis; Hotel reviews

## Effect of Delay on Pattern Formation in Prey Predator Model

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### ABSTRACT

In this work, we investigate the stability analysis of a temporal model with a delay, and we also introduce diffusion in the delayed model. We have discussed the pattern formation scenarios for non delayed as well as delayed spatio-temporal models and compared the results. Numerical simulation shows that different types of patterns such as cold

spot, hot spot, strip/labyrinthine, mixture of spots (cold/hot) and strip appear without delay also spiral and chaos. In the presence of delay, with the increase of delay more chaotic patterns as well as stationary patterns are observed due to the destabilization effect of discrete time delay. Moreover, time delay promotes the emergence of chaotic patterns.

## Approximation and moduli of continuity for a function belonging to Holderâ

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### ABSTRACT

Â¨ class HÎ± [0, 1) and solving Lane-Emden differential equation by Boubaker wavelet technique "In this paper, Boubaker wavelet is considered. The Boubaker wavelets are orthonormal. The series of this wavelet is verified for the function f(t) = t âˆ t âˆˆ[0,1). The convergence analysis of solution function of Lane-Emden differential equation has been studied. New Boubaker wavelet estimator E2 k,M(f) for the approximation of solution function f belong to HÂ¨olderâ ™s class HÎ±[0, 1) of order 0 < Î± â‰¤ 1, has been devloped."

## "An Introduction of Dynamic Programming"

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### ABSTRACT

Dynamic programming method is very useful for solving various problems such as inventory, replacement, allocation, linear programming etc. The programming is a mathematical technique dealing with the optimization of multistage decision process. Dynamic programming can be given a more significant name as recursive optimization.

In dynamic programming a large problem is split into small sub-problems each of them involving only a few variables. This technique converts one problem of variables into sub-problem each in one variable. The optimal solution is obtained in an orderly manner starting from one stage to the next and is completed till the final stage is reached.

***Key words:*** Dynamic, programming, problems, optimization, recursive."

## Superconvergence of Discontinuous Galerkin Method for Two Parametric Singularly Perturbed Convection-Diffusion Problem

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### ABSTRACT

"We explore the discontinuous Galerkin finite element method (DGFEM) fortwo parametric singularly perturbed convection-diffusion problems with discontinuous source term. Due to the discontinuity in the source term, the

problem typically shows a weak interior layer and the presence of two perturbation parameters caused by both sides' boundary layers. We develop the non-symmetric discontinuous Galerkin finite element method with interior penalties (NIPG) to handle the layer setbacks. With the use of a typical Shishkin mesh, the domain is discretized and a uniform error estimate is obtained. The numerical outcome backs up our theoretical conclusions."

## Title: On Moduli of Continuity of functions in Sobolev Space and solution of Basset Equation using Haar Wavelet

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### ABSTRACT

In this paper, fractional differential equations have been solved using the Haar wavelet operational matrix of fractional integration. An operational matrix of fractional integration utilising the Haar wavelet is designed to solve a linear multi-term fractional differential equation as well as a system of fractional differential equations. The Basset equation for different fractional orders and a system of fractional differential equations have both been solved in order to validate and show the viability of the suggested method. Furthermore, it has also been demonstrated to approximate functions in Sobolev space via the Haar wavelet approach with the help of moduli of continuity. By treating fractional differential equations as a set of algebraic equations, this study significantly advances both the moduli of continuity and numerical solutions of fractional differential equations.

## Topological Structures of Interval Type-2 Fuzzy Rough Sets

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### ABSTRACT

The present paper establishes the relationship between interval type-2 fuzzy rough sets and interval type-2 fuzzy topologies induced by interval type-2 fuzzy relations. We introduce the concept of transitive closure and equivalence closure of interval type-2 fuzzy relations. Specifically, if $R$ and $(R)$ denote interval type-2 fuzzy reflexive relation and interval type-2 fuzzy transitive closure respectively, then $R$ and $(R)$ induce the same interval type-2 fuzzy topology. Subsequently, we point out that when $R$ is an interval type-2 fuzzy reflexive relation, the lower and upper interval type-2 fuzzy approximation operators are not an interior and closure interval type-2 fuzzy operators respectively. We obtain the interior and closure interval type-2 fuzzy operators for interval type-2 fuzzy topology induced by interval type-2 fuzzy reflexive relation. On the other part, we study the same when the relation is tolerance interval type-2 fuzzy relation.

## Wilson wavelet approximation and moduli of continuity for functions having bounded M^(th) derivatives and solutions of Fredholm integral equations

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### ABSTRACT

In this paper, Wilson wavelets have been discussed.The property of orthonormality of the set $ \{ \psi_{nm}(\centerdot): m\in \{-2r-1,-2r\},n\in \mathbb{N}\cup\{0\}\}$ of Wilson wavelets has been investigated.The Wilson wavelet series of functions has been verified.The Wilson wavelet approximation of a function $f$ whose $ M^{th}$ derivative $f^{(M)}$ belonging to $H^{\alpha}[0,1)$ i.e. H\"older's class of order $0<\alpha \le 1$ has been determined.The moduli of continuity for $f-S_{2^{k}-1,\hat{m}}(f)$, where $\hat{m}=(-2r-1)+(-2r)$ has been introduced and it is estimated for solution function $f$ of Fredholm integral equation under condition for $f \in H^{\alpha}[0,1) $ as well as $f^{(M)}$ being bounded.A method to solve integral equations by Wilson wavelet technique has been proposed.The Fredholm-type Integral equations have been solved by the proposed method.It is observed that the solutions of Fredholm-type integral equation obtained by the proposed method are almost same to their exact solutions.This illustrates the effectiveness of the proposed method.This is a significant achievement in Wavelet Analysis.

## Magnetohydrodynamic Flow of a Newtonian Fluid Along a Porous Stretching Surface in a Porous Medium with Radiative Heat Transfer

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### ABSTRACT

The present research work explores the theoretical aspects of the magnetohydrodynamic flow of a Newtonian fluid over a non-linearly stretching horizontal surface embedded in a porous medium. The fluid flow is induced due to stretching of the surface along its lengths. The fluid flow is permeated with an applied magnetic field and the surface of the sheet is porous through which fluid can pass. The associated heat transfer phenomena is also considered which is being affected by the thermal radiation. The fluid flow model is transformed to a set of non-linear ordinary differential equations. The resulting model is then treated with an efficient technique to obtain the physical quantities such fluid velocity, fluid temperature, skin-friction and heat transfer coefficients. The obtained results were then analysed theoretically.

***Keywords:*** Porous Sheet, Porous Medium, Radiation, Magnetic Field"

## An analysis for solution of balanced Transportation Problem

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### ABSTRACT

The transportation problems constitute an important part of logistic management. It is one of the most important requirements for human activity. In this paper we discuss mathematical formulation of balanced transportation problem and various methods to solve problem to obtain optimal solution.

***Keywords:*** Transportation, logistics, mathematical, formulation, optimal solution.

## Optimal Portfolio Investment Strategy in Indian Stock market using Markowitz model

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### ABSTRACT

A number of investment strategies map out to maximize portfolio growth are tested on a long run Indian equity market. The application of the optimal portfolio techniques produces magnificent rate of growth, In spite of the fact that the assumptions of normality. Optimal portfolios are constructed by rebalancing the portfolio weights of four indices and ten sectors of National stock exchange indices. The purpose of this paper is to examine the Optimality of the Portfolio in the NSE and examine hypothesis the application of efficient market. The sample of stocks is not large in spite of its comprehensiveness from the local stock market . This paper also analyzes optimal portfolio and consumption strategies with unobservable states and predictability of risky asset returns. We develop approximate analytical solutions to the unconstrained dynamic problem. The approximation is shown to be fast and accurate. The computation time of the approximate solution is shown to be practically independent of the number of assets when no predictors are present and only marginally affected by the number of predictors. While the portfolio policy strongly depends on the current state of the economy, the consumption-to-wealth ratio is violently state-independent. Hedging demands are negligible with regimes and no predictability, but are important with predictability. On the other hand, the consumption to wealth ratio is not very impacted by the predictor. We provide an out of sample statistical assessment of the returns provided by a multi-regime strategy with respect to a single-regime and to a 1/N strategy."

## Topological Structures of Interval Type-2 Fuzzy Rough Sets

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### ABSTRACT

The present paper establishes the relationship between interval type-2 fuzzy rough sets and interval type-2 fuzzy topologies induced by interval type-2 fuzzy relations. We introduce the concept of transitive closure and equivalence closure of interval type-2 fuzzy relations. Specifically, if $R$ and $(R)$ denote interval type-2 fuzzy reflexive relation and interval type-2 fuzzy transitive closure respectively, then $R$ and $(R)$ induce the same interval type-2 fuzzy topology. Subsequently, we point out that when $R$ is an interval type-2 fuzzy reflexive relation, the lower and upper interval type-2 fuzzy approximation operators are not an interior and closure interval type-2 fuzzy operators respectively. We obtain the interior and closure interval type-2 fuzzy operators for interval type-2 fuzzy topology induced by interval type-2 fuzzy reflexive relation. On the other part, we study the same when the relation is tolerance interval type-2 fuzzy relation.

## Linear Instability Boundaries of a Double Diffusive Flow

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### ABSTRACT

The present study investigates the influence of chemical reaction on the linear instability of a double-diffusive mixed convection flow of a binary mixture in a vertical channel filled with porous medium. The walls of the channel are assumed to be at chemical equilibrium. The buoyancy-driven flow is induced by combined temperature and concentration gradients. It has been found that the chemical reaction parameter can have both stabilising as well as destabilising effects on the instability of the basic flow depending on the permeability of the porous medium. The study shows that the chemical reaction parameter tends to stabilise the basic flow in a porous medium with high permeability whereas it tends to destabilise the basic flow in a porous medium with relatively low permeability. The basic velocity profile contains points of inflection for certain values of Gr/Re (i.e.Gr'), where Gr is the Gr ashof Number and Re is the Reynolds number. It is observed that for Gr/Re>150 the points of inflection start appearing in the basic velocity profile representing the potential for instability in the flow. The same observation is made for other set of parametric values also. The numerical results at N = 1, Re = 1000, Pr = 7, Sc = 1 and Da = 10^(-2), show that the effect of chemical reaction parameter k on the stability of the basic flow is significant. The graph of critical Gr/Re decreases non-linearly which shows that k destabilises the flow. The change in critical Gr' is gradual up to k=10 after which the instability occurs rapidly as k increases.

## Nonlinear image authentication algorithm based on double fractional Mellin domain

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### ABSTRACT

In this paper, we have proposed a novel dual-user image authentication algorithm based on double fractional Mellin transform. We have performed a security analysis of nonlinear cryptosystem based on fractional Mellin transform and show its vulnerability. In the proposed algorithm polar decomposition, and sparse multiplexing are additionally applied to generate a ciphertext. During the encryption process, polar decomposition generates two private keys that can be utilized on the dual-user authentication platform. The proposed scheme has a large key space and is robust against several attacks such as contamination attacks (noise and occlusion), brute force attacks, plain-text attacks, and special iterative attacks. In addition, a comparison with similar existing scheme is carried out for the proposed algorithm. Simulated results indicate that the proposed authentication algorithm is feasible and robust.

## "A Study on the Plantation and Production of Rubber Plant in Garo Hills Meghalaya

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### ABSTRACT

Commercial cultivation of rubber tree, the source of natural rubber, was introduced in India in 1902 in Kerala. According to a report by North Eastern Development Finance Corporation Ltd (NEDFi) the South Western coast the cultivation of rubber has reached almost a point of saturation, but some areas in the North East region have been identified as non-traditional areas suitable for rubber cultivation. Though rubber is a tropical tree, it grows well in some parts of North Eastern India. In this study, we shall be discussing about the plantation and production of rubber plant in Meghalaya. Rubber plantation can go a long way in solving the perennial problem of unemployment in Meghalaya as the State has a tremendous potential when it comes to rubber plantation. More than 36,000 articles ranging from giant truck tyres to small bushes are manufactured from rubber. The tire industry consumes nearly 85% of the natural rubber produced in India and there is an ever-increasing demand for rubber. The objective of this article is to provide an overview of the plantation and productivity of rubber plant cultivation in the various districts of Meghalaya over a period of time. Statistical tools are formulated and interpretations are discussed in detail with data from the Directorate of Horticulture, Department of Agriculture, Meghalaya under this study.

Keywords: Industry, Meghalaya, Productivity, Rubber plantation, Unemployment

# Gene expression and survival study of *INHBA* (Inhibin Subunit Beta A) gene for its prognostic and diagnostic importance in breast cancer

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## ABSTRACT

**Background:** Breast cancer (BC) is a disease of concern worldwide. Expression and mutational profiling of BC-associated genes like *BRCA1, BRCA2, BRAF, P53, KRAS, ATM, CHEK2 etc.* have shown promising results while numerous other genes playing critical roles in BC, need to be examined further. We, therefore, evaluated one of the potential genes, *Inhibin Subunit Beta A* (*INHBA*), for its diagnostic and prognostic importance in BC.

**Methods:** We retrieved the BC microarray data from GSE10810 (31 tumor, 27 control), GEO NCBI. Welch *t* test through T distribution was applied to identify the significant genes differences between tumor and control (fold change ±2, *p* value <0.001). Tukey Fence and Shapiro-Wilk Test was conducted to identify outliers and to check normality respectively. The KM estimator was used to confirm the role of *INHBA* in overall survival (OS) and relapse free survival (RFS) of BC patients.

**Results:** Expression data revealed *INHBA* as significantly over-expressed gene in BC (FC = 6.45, $t$ = -12.71, $df$ = 43.65, $p$ value = 2.89e-16). No outlier was found in the control samples whereas one detected in tumor samples (1/31 = 3.23%). Normality was found in both tumor ($p$-value as 0.873) and control ($p$-value as 0.729) samples. The KM plot for various ER, PR, HER2, and lymph-node subtypes revealed that *INHBA* had a moderate prognostic significance in RFS (7/11 subtypes significant) but was insignificant in OS. Furthermore, validation on different GEO datasets exhibited partial statistical significance for *INHBA* in RFS (5/15 significant) and insignificant OS (0/10 significant). The robust meta-analysis methods for combining $p$ values (Fisher, Lancaster, and Weighted-Z-methods) showed significance in RFS (0.00112, 0.00916, and 0.00727) and insignificance in OS (0.145, 0.458, and 0.304) for *INHBA*.

**Conclusions:** *INHBA* was over-expressed genes in BC which can be considered as a potential prognostic and diagnostic biomarker of moderate importance.

**Keywords:** Breast cancer, Welch *t* test, Kaplan-Meier survival plot, Lancaster, weighted Z and wFisher's method

**Abbreviations:** BC: Breast cancer, GEO: Gene Expression Omnibus, NCBI: National Center for Biotechnology Information, KM: Kaplan–Meier, ER: Estrogen receptor, PR: Progesterone receptor, RFS: Relapse free survival, OS: Overall Survival.

## Statistical Techniques for Demographic Characteristics and Fertility Measures

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### ABSTRACT

"A model is a representation of an actual phenomenon such as an actual system or a process. And the modeling (the art of model building) has become an integral part of the social sciences like the other branches of science because the real- world systems have complex nature. The real-world phenomena are so complicated that these can be treated only by means of a simplified representation of a model. It compromises the reality and the manageability. Though all models give only tentative results, a model may or may not be mathematical one. But mathematical models are theoretical constructions which are tested against reality mainly on grounds of consistency ad reasonableness. Thus, a mathematical model represents a real situation with quantitative approach. In fact, the mathematical models can be classified into two parts viz.; deterministic model and probabilistic or stochastic model. A deterministic model defines that the results of the experiment depend on the fixed condition of the experiment. But a probabilistic model defines that the results of the experiment vary on the changing conditions of the experiments. Thus, a probability model is the representation of a statistical problem in an idealized fashion. It includes the sample space, the probability distribution, and the assumptions by which a probability distribution is generated.

In most of the studies of the demographic characteristics the analyses are based on highly aggregated data. As such the analyses fail to reflect the changes that take place at the micro level. This fact, in turn, necessitates its further investigation. Fertility is one of the main factors of the population explosion. But most studies related to it are based on highly aggregated data. As such the analyses fail to reflect the changes that take at the micro level. This paper will try to make a model to analyse those factors that reflect the changes that take place at micro level."

## The Role of Statistics and Statistical software in Data Analysis- A comprehensive study

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### ABSTRACT

The word “statistics” is derived from the Latin word “statisticum”, which means “of the state” or “of political statehood”. Statistics, starting with mere counting items or goods of importance, has reached an age where it has become vital in present and futuristic developments in all research discipline such as Data Mining, Big Data, Machine Learning, Artificial Intelligence, etc. The modern discipline of statistics took its proper form in the late $19^{th}$ and early $20^{th}$ centuries, with the work of statisticians like Francis Galton, Karl Pearson, Jerzy Neyman, and Ronald A. Fisher. As per the modern definition, Statistics is an art of learning from data. Understanding data helps in taking evidence based decisions. Knowledge of statistical concepts helps in understanding the nature of data and in selection of the proper methods in Data Analysis. Researches in different field need some sort of different statistical concepts and use of software. In this work, we have delved into the wide applications of statistical concepts in various research areas with data and we have also demonstrated the basic interface of various statistical software. This paper also

discusses about the availability of statistical software. This paper will help researcher in deciding the use particular statistical techniques as well as software for their specific needs.

**Keywords:** Data Analysis, Software Package, Methods, Decision making, Evidence, Research, Big Data, Machine Learning.

## Statistical Analysis Methods in Medical Research though R

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### ABSTRACT

With the beginning of the human quest for the truth behind phenomena lead the development of a subject called science. Statistics is a branch of science which plays crucial role in exploring empirical data. It provides a framework for collection, compilation, manipulation, interpretation and presentation of data. Statistical methods and techniques allow researchers to handle complex data sets, identify patterns and establish relationships, draw conclusions. In Medical research data analysis involves empirical data obtained through various diagnostics regarding diseases and cures using medicines. Statistical analysis uses statistical methods on these data to diagnosis the causes of disease and also provides predictive models to help in tracking the further development. There are various methods and models, such as Chi-squared test, t-tests, ANOVA, regression, etc., which acts as analytical powerful tools. And there are various Software packages like SPSS, Stata, Minitab, MATLAB, and R which provides friendly interface to use above tools by the researchers. Today, statistics is widely used field of study that has applications in many areas such as science, medicine, business, and social sciences. Research in medical science involves data from clinical research, health related records etc. In this work, we have delved into the application of various statistical analysis methods, such as t- Test, ANOVA, Logistic regression, Chi-Squared test, and Regression analysis using data through R programming. This paper will be a great help for them who are looking to analyze data in this field of research using R programming.

***Keywords:*** Statistical Analysis, Empirical Data, SPSS, Stata, ANOVA, R- Programming, Chi-Squared test

## A Sophisticated Study of Statistical Approach in Big Data

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### ABSTRACT

The growth of Big Data alters the perspective in which official statistics companies work. Big Data gives a chance, but in order to fully utilize Big Data, a number of challenges must be overcome. It encourages greater collaboration among National Statistical Institutes, Big Data owners, industries, and universities. It may result in a shift in the position of statistical institutes in providing high quality, unbiased statistical information to society in the future. Study of this paper describes changes in regard, advantages, difficulties, and ways to share information. Each partner will build on and contribute different strengths as part of the collaboration between the various parties. Conventional

abilities for national statistical offices include, on the one side, the ability to gather information and merge types of information with statistical products, and on the other, a focus on quality, transparency, and sound methodological approach. They persist to have an expertise of official statistical production methods in the Big Data era of competing and spreading data sources. And their objectivity and respect for privacy, as enshrined in law, distinguishes them as a reliable third party. Based on this, they may provide advice on the accuracy and reliability of data gathered from various sources. They will be able to perform their role as essential information providers in a modern environment by locating individuals in this manner. The purpose of this study is examining statistical approach in Big Data function as well as understand it's observational data. Further, we proposed some modifications to statistical techniques in Big Data. Then we come to a close with a few last observations.

***Key Words:*** Big Data, Statistical analysis, Regression, Mean, Volume, Velocity, Varity

## Application of Internet of Things (IoT) in Smart Education Environment: An Overview

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### ABSTRACT

In the 21" century society, the rapid development of the knowledge economy makes education become the main resource of a country's economic and social development because education increases the tendency for better employment opportunities. Education enhances people's access to current and scientific concepts improves legacy, higher rates of economic stability. The education sector is adapting IoT devices and services to make the best use of technology while making education more interactive, collaborative and simply accessible to all. IoT gives the way for the development of smart education. IoT is a technology that has emerged to bring positive changes to educational sector. IoT creates an environment for learners where they can learn easily without any distractions. Using Internet of Things in education domain has presented a great function to connect and educate the students. Applying the concept of IoT in any education environment will increase the quality of education process students will learn swiftly and teachers will fulfil their job proficiently. Use of IoT in educational field is like a new wave of change that has brought new opportunities and possibilities for the improvement of both teaching-learning process and educational institutions infrastructure. In this paper we proposed an overview of the previous work explaining the way in which IoT application and characteristics, technology has been applied for the smart education. This paper also discuss the applications of Iot in the field of education to keep track of resources and enhance the information to make a smart education environment.

***Keywords:*** Internet of Things, Smart Education, Smart Education Environment, Technologies

## Statistical Analysis on online shopping behaviour of youth(customers)

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### ABSTRACT

In this Paper, we study the various factors which affect online shopping behaviour of youth(customers). Now a day online shopping has become a new trend of shopping and it is quickly effect on traditional shopping behaviour. Due to

widespread of internet access by people and e-commerce uses by traders, online shopping has been a massive growth in recent years. To serve the objective descriptive research design is used by primary data is collected from 1487 respondents with the help of google forms. Data is analysed with the help of frequency distribution, weighted arithmetic mean and chi square test. Young people have been the majority shoppers online and thus this project finds out the attitude of youth towards online shopping. The project attempted to find out whether there is any impact of four factors like internet literacy, gender, educational qualification and online product price on online shopping.

***Key words:*** Online Shopping, Internet literacy, educational qualification, Customer behaviour, customer satisfaction, search through Video,image recognition, virtual Assitants,and Mobile shopping"

## A New Class of Statistical Test with Application in Healthcare

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### ABSTRACT

A new and general class of distribution-free tests based on U-statistics is proposed for testing the location parameters against ordered alternative. The problem related with location parameter arises, when experimenterâ€™s interest is to know whether populations follow the same distribution or there is difference in their location parameters. As an example, it is of interesting to check whether increasing level of dose results in significant effect or not. Distribution of the proposed test along with optimal choice of weights is also discussed in order to achieve maximum efficacy. A real life data example is provided to see the execution of the test.

## Efficacy of Plant Growth Promoting Rhizobacteria (PGPR) Consortium Rice (*Oryza sativa*) for yield and growth improvement

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### ABSTRACT

Owing to the unimpeded rise in population, need for global food security for sustainability of life on earth is alarming. Rice (*Oryza sativa*), a staple crop worldwide requires qualitative and quantitative yield and growth improvement. Due to the toxic long term side effects of chemical fertilizers, the current focus should be shifted towards more ecofriendly approach towards sustainability.

Research has demonstrated the favorable effects of PGPR on plant growth under stress conditions. The diverse genus of PGPR produces siderophore and phytohormones such as indole-3-acetic acid (IAA), gibberellin (GAs), auxin, and 1-aminocyclopropane-1-carboxylic acid (ACC) deaminase activity, organic acids, biocontrol agent that contribute to the improvement of nutrient bioavailability (nitrogen fixing, phosphate solubilizing and Fe-uptake). Thus, use of PGPR consortium will be an effective strategy to combat soil stress, nutrient deficiency and various abiotic and biotic factors, in rice cultivation. This review explains the various mechanisms of action of PGPR used in the field of agriculture as a potential biofertilizer, Phyto-stimulant and as a bio-control agent.

***Keywords***- *Oryza sativa,* PGPR, Biofertilizer, Phyto-stimulant, Siderophore, Bio-control agent.

## Fungal Degradation of Different Historical Monuments of Patna (bihar)

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### ABSTRACT

Monuments all over the world become discolour and degraded due to the growth and activity of different fungi. Fungal colonization on the surface of buildings damage a lot. Fungi are widely recognized as major biodeteriogens. Some historical monuments as Golghor (1786), Khuda Bakhsh Oriental Public library, Ruins of Patliputra kumhrar (Ashok Period), Patna Museum (1917) selected for the study. Mycofloral Processes leading to the degradation of buildings include fungal oxidation and reduction, Production of acidic metabolites, assimilatory and non-assimilatory mechanisms etc. Biodegradation also depends upon different climatic conditions, humidity level and Surface material for fungal colonization. The biological growth of mycoflora also caused staining, Cracking, Powdering, disfigurement and displacement of building material, which leads to the permanent loss of monuments. The available information of our research work gives data of different fungal genera responsible for the degradation of our heritage monuments of Patna.

***Keywords :*** Biodegradation, Historical monuments, Fungi, Acidic metabolites.

## Transcriptomics Analysis to Study Differential Expression in Leaves of Oryza Sativa L. SSP. Japonica Cultivar Loto Inoculated With Funneliformis Mosseae

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### ABSTRACT

"Rice (the two cultivated species i.e., Oryza sativa and Oryza glaberrima) are the second most widely consumed cereal in the world. Oryza sativa is further divided into three sub-species that is Indica, Japonica and Javanica. Though in the era of green revolution, Asian rice production has increased substantially by using chemical fertilization, high yielding dwarf varieties and intensive management practises, yet there is a huge gap in the rice yield and demand of the growing population. Thus, there is a need to develop new technologies to further increase the productivity of rice in the existing conditions and keeping in mind the security of sustainable ecosystem for the coming generations. One of the key strategies to meet future rice demands is to use natural fertilizers amongst which Arbuscular mycorrhiza is the natural biotroph forming association with rice roots. Moreover, there is a need to move towards â ˜Gene revolutionâ ™ in order to understand the molecular mechanisms underlined AM symbiosis in cereal crops. Many studies have been conducted to elucidate the differential gene expression in roots of cereals when inoculated with arbuscular mycorrhiza however the regulation in leaves of mycorrhizal plants at transcriptomics level remain largely indescribable. Thus, the present study was done in order to identify the functional gene regulation in leaves of Oryza sativa L. ssp. japonicacultivar Loto when inoculated with arbuscular mycorrhiza Funneliformis mosseae. Transcriptomics analysis identified upregulation of many genes associated with hormonal homeostasis, nitrogen and amino acid metabolism, starch filling in endosperm, phosphorus sensing and homeostasis, aspartic acid related amino acids, accumulation of unsaturated fatty acids, trehalose accumulation, arginine and ornithine formation, DNA functioning. Besides this, there was significant upregulation in genes related to resistant growth development andstimulated virulence related response. Thus, the present transcriptomics study suggests that when roots of loto rice plants were inoculated with Funelliformis mosseae, functional genomics in leaves was not only upregulated for improving growth and development but also for refining resistance towards diverse biotic and abiotic factors."

## Production, Characterization And Analysis Of Melanin From Submerged Culture Of Lenticular Edodes (berkley) Pegler "production, Characterization And Analysis Of Melanin From Submerged Culture Of Lentinula Edodes (berkley) Pegler

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### ABSTRACT

In the present study, Lentinula edodes was grown in different media to see the maximum growth of mycelium. Among the media screened, PDA media was found to better suited for the growth of mycelium. Further, some additives were used in the PDA media to enhance the production of melanin content. It was observed that 1% Olive oil, 1% methanol and 0.5% peanut oil as an additive aided the enhancement in the melanin. The isolated compound was confirmed by

physico-chemical characterization, Scanning electron microscopy and UV spectroscopy studies. To check the stability, melanin was exposed to various parameters and was found to be stable for light, temperature. When the melanin was exposed to various pH conditions it was observed there was gradual increase in the production of melanin from pH 4 to pH 12. It was also observed that melanin has potential antibacterial activity and strong antioxidant potential observed in the evaluation of its DPPH radical scavenging activities. The results suggest that the submerged culture of Lentinula edodes in PDA media with additives like olive oil, methanol are effective in the production of melanin can be used produce melanin in large quantity which is used in various industries."

## Aquaculture in North Bihar

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### ABSTRACT

There is a natural net of rivers in north Bihar. Almost total of them are coming out from Himalayan origin. Finally total drained water were washed out through their proper channel after rainy season since long back but most of the water logged or inundated area of north Bihar throughout the year were vested uselessly. Under the threat of poverty and helplessness in this region, aquaculture is best option chosen for proper promotion for livelihood and betterment of this region and also for the promotion of sustainable life style. Aquaculture might be the fruitful tool for combating with helplessness and also for the eradication of economic backwardness of this area. Some of the following aquatic plant & animal should be adapted as crop of hydro - ponics. Fish & Prawn culture, Eurial ferox(L), Nelumba, Nymphea, Typha and Azolla. Both flora and fauna should be promoted for sustainable environment and recognize as cash crop.

***Keywords:*** aquaculture, flora & fauna, water logged North- Bihar.

## "Antimicrobial Activity of Catharanthus Roseus"

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### ABSTRACT

Catharanthus roseus (periwinkle) is an important medicinal plant for pharmaceuticals since most of the bacterial pathogens are developing resistance against many of the currently available anti-microbial drugs. Many plants have proved to be significant natural resources for effective chemotherapeutic agents. They offer a broad spectrum of activity with greater emphasis on preventive action. This study aims to investigate some of the anti-microbial properties of this plant. The antimicrobial activity of this plant has been checked against microorganisms like Pseudomanas aeruginosa NICM 2036, *Salmonella typhirium* NICM 2501, Staphylococcus aureus NICM 5021. The findings show that the extracts from the leaves of this plant can be used as prophylactic agent in many of the diseases.

## Transcriptomics Analysis to Study Differential Expression in Leaves of Oryza Sativa L. SSP. Japonica Cultivar Loto Inoculated with Funneliformis Mosseae

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### ABSTRACT

Oryza sativa is the second most widely consumed cereal in the world. Though in the era of green revolution, Asian rice production has increased substantially by using chemical fertilization, high yielding dwarf varieties and intensive management practises, yet there is a huge gap in the rice yield and demand of the growing population. Thus, there is a need to develop new technologies to further increase the sustainable productivity of rice in the existing conditions. One of the key strategies to meet future demands is to use natural biotroph – "Arbuscular mycorrhiza". Moreover, there is a need to move towards 'Gene revolution' in order to understand the molecular mechanisms underlined AM symbiosis in cereal crops. Many studies have been conducted to elucidate the differential gene expression in roots of cereals when inoculated with arbuscular mycorrhiza however the regulation in leaves of mycorrhizal plants at transcriptomics level remain largely indescribable. Thus, the present study was done in order to identify the functional gene regulation in leaves of Oryza sativa L. ssp. japonica cultivar Loto when inoculated with mycorrhiza Funneliformis mosseae. Transcriptomics analysis identified upregulation of many genes associated with hormonal homeostasis, nitrogen and amino acid metabolism, starch filling in endosperm, phosphorus sensing and homeostasis, aspartic acid related amino acids, accumulation of unsaturated fatty acids, arginine and ornithine formation. Thus, the present transcriptomics study suggests that functional genomics in leaves of mycorrhizal loto rice was not only upregulated for improving growth and development but also for refining resistance towards diverse biotic and abiotic factors.

## Evaluation of Arsenic Stress on The Germination, Growth and Biochemical Constituents of A Resistant Variety of Cowpea - Vigna Unguiculata (L.) Walp. Variety KBC-9

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### ABSTRACT

Arsenic (As) is a toxic metalloid ubiquitous in nature. Arsenic resembles phosphorus due to the competitive binding nature of As to phosphate transporters. Hence exposure of plants to arsenic can result in various morphological, physiological and biochemical variation. Plants reportedly represent the initial path for arsenic to enters the food web. Cowpea (*Vigna unguiculata*) is a leguminous plant cultivated widely for its usage as forage, green manure and good grain for humans and animal feed. Seeds are rich in proteins (15-39%) with essential amino acids. Cowpea (*Vigna unguiculata*), variety KBC-9 is highly resistant against the pod borer, dry root rot and collar rot, moderately resistant to YMV and suitable for in-situ green manure/fodder after harvest. The yield is also comparatively high. The effect of Arsenic on germination, growth and biochemicals of the cowpea plants was investigated in the present study. The seeds ware treated with 30mg, 60mg and 90mg As/ kg of soil for inducing Arsenic stress and grown in root trailers. It was observed that there was a decrease in percentage of germination and height of the plants as the concentration of arsenic was increased when compared with the control. The other biochemical parameters were also evaluated at different concentrations of Arsenic.

## Preliminary Evaluation and Comparative Study of Kajal Formulations from *Pleurotus Ostreatus* (Grey Oyster Mushroom) *and Pleurotus Djamor* (Pink Oyster Mushroom) Stipe With Special Reference to Its Anti-bacterial Property.

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### ABSTRACT

Mushrooms are widely cultivated throughout the world. Edible mushrooms such as *Pleurotus* can be easily grown on various agricultural and industrial wastes like straw, corn husk etc. Hence, *Pleurotus* cultivation is considered to be highly economically profitable. *Pleurotus* species commonly called as oyster mushrooms contribute for 25% of the total cultivated mushrooms. It is known to have very high nutritive and medicinal value. Although the stipe is edible it becomes very tough on cooking and is considered tasteless due to very high-water content as compared to the pileus. Therefore, sustainable usage of the stipe becomes important. Kajal is one of the most popular eyes cosmetic products having very high demand in the cosmetic industry. It has been used since ancient time not just as a beauty product but also for its traditional meaning and therapeutic properties. Organic kajal, a value-added product was formulated from the stipe of *Pleurotus ostreatus* (grey oyster mushroom) and *Pleurotus djamor* (pink oyster mushroom). The kajal was subjected to preliminary evaluations such as physical nature, pH value, viscosity, acid and saponification value. It was further analysed for its anti-bacterial activity using two bacterial strains namely *Staphylococcus aureus* and *Pseudomonas aeruginosa* which are involved in causing eye infection like conjunctivitis. Minimum Inhibitory Concentration tests were done using LB broth and Well- diffusion method.

## *In Vitro* Analysis of Exoenzyme Activity and Biocontrol Efficacy of Three *Trichoderma* Isolates from Agricultural Fields Against *Pythium Sp.*

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### ABSTRACT

Plant diseases caused mainly by fungi contribute directly to major agricultural crop depletion. *Trichoderma,* a soil borne ascomycete fungal genus, is of undebatable importance as an ecofriendly biofungicides. There is still a constant need for search of new effective *Trichoderma* strains from different localities against phytopathogens. The present study aimed to evaluate and compare the antagonism and exoenzyme activity of three isolates of *Trichoderma* against *Pythium sp.* responsible for damping off disease in tomato plants. *Trichoderma* isolates were isolated from the rhizosphere of healthy tomato plant in agricultural fields near by Patna region. Three *Trichoderma* isolates were selected for their potentiality as antagonists by an *in vitro* antifungal non-volatile assay. The results revealed that all *Trichoderma* isolates effectively inhibited the growth of Pythium sp. by production of non-volatile metabolite inhibitors at 12.5%, 25%, and 50%. *Trichoderma afroharzianum* caused significantly higher inhibition in the term of mycelial growth of 65.23 % compared to *Trichoderma asperellum* 55.35% and *Trichoderma harzianum* 43.62 % at 50 % v/v concentration. *Trichoderma* isolates were also screened for the production of exoenzymatic activity. The antagonistic *Trichoderma afroharzianum* showed higher chitinase and cellulase activities as compared to *T. asperellum* and *T. harzianum.* The ability of antagonism is strengthened by the production of exoenzyme. On the

basis of above findings, it can be said that antifungal nonvolatile metabolites and exoenzyme of antagonist *T. afroharzianum* are acting synergistically in the inhibition of *Pythium* growth. The secretion of exoenzymes by *Trichoderma* species reveals their application in plant disease management as novel biocontrol agents, as well as for the production of enzymes in biotechnological processes.

***Keywords :*** *Trichoderma*, phytopathogen, *Pythium* sp., antagonism, biocontrol, exoenzyme

## Antioxidant and Anti-inflammatory Activity of Aerial Parts of *Andrographis Paniculata* (burm.f.) Wall.ex. Nees.

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### ABSTRACT

Antioxidants are compounds that can prevent or reduce cell damage caused by free radicals, which are unstable molecules produced by the body in response to environmental and other stressors. They are known as "free radical scavengers" at times. The property of a medication or therapy that lowers inflammation or swelling is known as anti-inflammatory. As a result, it is worthwhile to investigate the anti-inflammatory and antioxidant activities of aerial parts (leaf, stem, inflorescence and fruit) of *Andrographis paniculata* (Burm.f.) wall. ex. Nees, an annual herbaceous plant, belonging to the family Acanthaceae. Protease inhibitor activity was done by adding bovine serum albumin to 100µl of plant sample, with increase in concentrations from 100, 200, 300, 400 to 500µg/ml. However, 400 and 500µg concentrations exhibited the maximum activity in inhibiting the denaturation of albumin protein. *In vitro* antioxidant activity was done by FRAP assay. During the assay, 200 µl of FRAP reagent was added to 100 µl of the plant extract, with increase in concentrations. However, 400 and 500µg concentrations exhibited the maximum activity in inhibiting the FRAP reagent, suggesting that the plant has potential antioxidant activity. Based on the results from the present study, it can be concluded that leaf and fruit parts of *Andrographis paniculata* is found to be a good natural antioxidant source and it is found to be a good anti-inflammatory source. Data showed that *Andrographis paniculata* have potential anti-inflammatory and antioxidant activity which could be due to the presence of bioactive compounds present in the plant extracts.

***Keywords:*** Andrographis paniculata, Antioxidant, Anti- inflammatory, FRAP.

## Cultivation and Quantitative Analysis of *Pleurotus Ostreatus* and *Hypsizygus Ulmarius* and Recycling of Mushroom Spent Under Zero-waste Technology

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### ABSTRACT

Mushrooms are vital in the ecosystem due to the fact they could biodegrade the substrate and consequently use the wastes of agricultural production. Mushrooms are valuable resources for food, medicine, and nutraceuticals. Edible mushroom is considered a novel source of dietary fiber. In the present study, two varieties of mushrooms namely Pleurotus ostreatus and Hypsizygus ulmarius were cultivated on three different substrates viz. Sugarcane bagasse,

sawdust, and wheat straw. The mushroom grown on sugarcane bagasse and sawdust showed infection in the growing mycelium resulting in the formation of the very common “Lipstick mold”. The mushrooms were later grown using the “Ready to Fruiting bags (RTFs)”, which showed a good yield of both varieties of the mushroom. The 2 species of mushrooms viz. White and Elm oysters grown on wheat straw showed a high concentration of Calcium (400 and 600mg/100g respectively), followed by other major minerals Magnesium, Potassium, and Sodium. The production of mushrooms always results in significant residual material after harvest called the spent mushroom. Because spent mushroom has nutritional qualities, repurposing it has made them a renewable source with many uses. Owing to the fertilizer quality of the spent substrate, we made Biodegradable sapling pots. The pots made from spent and natural clay are free of plastic, unlike other sapling pots available in the nurseries. The saplings growing in Spent mushroom pots can be directly potted as such because they are biodegradable and also, can be an excellent source of nutrition for the developing plant. It is an eco-friendly and sustainable approach, and needs only nominal space, low cost, less skilled persons, and can be easily done in the field.

## Effect of Air Pollution Tolerance Index on The Physiology of Selected Road Side Trees.

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### ABSTRACT

Air pollutants have a negative impact on plant growth, primarily through interfering with resource accumulation. The vegetation plays an important positive role in atmospheric purification and air pollutants reduction. This study identifies the tolerance of trees to air pollution, taking into account Air Pollution Tolerance Index (APTI) of trees in Patna town and to advocate their usefulness for pollution indication and plantation. Four biochemical parameters (relative water content, leaf extract pH, total chlorophyll and ascorbic acid) and the dust-capturing potential of plants were analysed. Out of the 10 selected species, Cassia fistula Linn. showed maximum APTI. Pithecellobium dulce, Delonix regia and Syzygium cumini were found to be sensitive to pollution whereas, Acacia catechu and Albizia lebbeck were found to have a moderate to high tolerance to air pollution index. The dust capturing potential was also found high in the trees Albizia lebbeck and Cassia fistula Linn. By planting these trees as vegetation along the road side, can be an effective structure to improve roadside air quality. Therefore, the findings of the present study might help to plant trees with more tolerance to control air pollution in the city. The study will also help in selection of plant species for plantation along the road side.

***Key words:*** Air Pollution Tolerance Index (APTI); Total Chlorophyll content; Ascorbic Acid; Dust capturing potential.

## Effect of Biosynthesed Silver Nanoparticles on Seed Germination of *Vigna radiata*

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### ABSTRACT

Bio-synthesis of AgNPs were rapidly synthesized at room temperature using fresh aqueous extract of leaves of Mimosa pudica. The use of plants in the biosynthesis of nanoparticles have a cost-effective and eco-friendly approach. Surface Plasmon Resonance (SPR) confirmed the formation of AgNPs in UV-Visible spectra at 433 nm.

The Fourier Transform Infrared Spectroscopy (FTIR) analysis was carried out to identify and study the functional groups responsible for the bioreduction of Ag+. XRay diffraction (XRD) study showed the particles to be crystalline in nature,with a facecentered cubic (fcc) structure. AgNPs was administered to observe the physical changes on Vigna radiata.

***Keywords:*** *Mimosa pudica*, Nano-particles, UV-VIS Spectrophotometer, XRD, FTIR

## Assessment of Phytochemical Constituents of Moringa Leaf

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### ABSTRACT

Most of the traditional knowledge of medicinal plants is in the form of oral knowledge and the active ingredients of herbal remedies are unknown to the traditional healers. Herbal remedies generally lack standardization. The correct identification of herbal material and the active ingredients is essential to quality control, safety and efficacy, acceptability by the general public and possible integration into the national health care system. The present study is to determine the qualitative and quantitative phytochemicals constituents of Moringa leaf. Evaluation of Moringa leaf for qualitative and quantitative phytochemicals properties were conducted using standard methods. The results of the phytochemical screening revealed the presence of Tannins, Saponins, Flavonoids, Steroids, Terpenoids, Cardiac glycosides, Anthraquinones and Alkaloids. Quantitatively water leaf contained (%) Alkaloids (10.73), Saponins (18.46), Total flavonoids (8.53) and Tannins (11.43) while the estimated quantity of aqueous and ethanolic extracts are 19.28 and 14.33%. The presence of phytochemical in the Moringa suggests possible preventive and curative property of the Moringa leaf. Medically, the presence of these phytochemicals explains the use of the plant in ethno-medicine for the management of various ailments.

***Keywords:*** Moringa leaf; Phytochemicals; Qualitative, Quantitative

## Effect of arsenic stress on physiological and antioxidative status of high yielding variety MAS 946-1 of *Oryza sativa* at various growth stages.

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### ABSTRACT

Rice is a food staple for more than 3.5 billion people around the world, particularly in Asia, Latin America, and parts of Africa. Rice has been cultivated in Asia for thousands of years. However in India, the yield is low compared to other nations, and 90% of the country's cultivated land is owned by marginal, small, and medium-sized farmers, hindering efforts to increase rice production. The presence of high arsenic content in the soil has led to its accumulation in paddy, which has resulted in its collection at the concentration beyond the food safety threshold. Some studies on arsenic toxicity on rice seedlings showed compromised photosynthetic rate, disturbed carbohydrate metabolism, subdued nitrogen assimilation, elevated phytochelatin synthesis, overproduction of reactive oxygen species (ROS), marked increase in lipid peroxidation in it leading to the oxidative stress. However, plants have an array of

mechanisms to detoxify arsenic poisoning, which mainly include antioxidative cascade, metal transport, chelation, and sequestration through organoarsenic compounds. A new mid-early, medium fine grain, high yielding variety MAS 946-1 was released by the University for Aerobic Cultivation in zone 5 of Karnataka in 2007. However, to the best of my knowledge, this variety of paddy has not been tested for its performance under arsenic stress. The aim of this project to study the effect of three concentrations of Arsenic (30, 60, 90 mg/kg) on physiology and antioxidative status of *Oryza sativa* MAS 946-1 at germination and vegetative stage, respectively. Studies indicated that paddy aboveground plant parts had adverse effects of arsenic stress above 60mg/kg at both germination (as indicated by height, bomass, chlorophyll content and relative water content) as well vegetative stage (a indicated by regulated enzymatic and nonenzymatic antioxidants as compared to control plants).

## Mineral analysis in cultivated *Pleurotus ostreatus* and *Hypsizygus ulmarius* and recycling of spent mushroom under zero-waste management technology

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### ABSTRACT

Mushrooms, besides being valuable resources for food, medicine, and nutraceuticals, are vital in the ecosystem due to the fact they could biodegrade the ligno-cellulosic substrate such as agricultural residues. India being an agricultural country has diverse variety of agricultural residue with differential nutritive value. Thus, the present study was designed to study the cultivation of two varieties of mushrooms namely *Pleurotus ostreatus* and *Hypsizygus ulmarius* in three different substrates viz. sugarcane bagasse, sawdust, and wheat straw. The mushroom grown on sugarcane bagasse and sawdust showed infection in the growing mycelium resulting in the formation of the very common "Lipstick mold". The mushrooms were later grown using the "Ready to Fruiting bags (RTFs)", which showed a good yield of both varieties of the mushroom. The 2 species of mushrooms viz. White and Elm oysters grown on wheat straw showed a high concentration of Calcium (400 and 600mg/100g respectively), other major minerals being Magnesium, Potassium, and Sodium. The production of mushrooms always results in significant residual material after harvest called the spent mushroom, which is basically partially digested agro-residue – a good source of manure. Owing to the fertilizer quality of the spent substrate, biodegradable sapling pots, free of plastic were designed. The saplings growing in Spent mushroom pots can be directly potted as such because they are biodegradable and also, can be an excellent source of nutrition for the developing plant. It is an eco-friendly and sustainable approach, and needs only nominal space, low cost, less skilled persons, and can be easily done in the field.

## Biodiversity and its Conservation

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### ABSTRACT

India is known for its rich heritage of biodiversity. It is an intra-and interspecific variation in biota. It includes genes, species and community including various ecosystems. In the present scenario, the biodiversity is under pressure.

The reasons may be loss of habitat, introduction of exotic species, pollution, urbanization, industrialization and others.

Our desi germplasm is under threat due to high yielding hybrid varieties and transgenic cultivars. Banana varieties in Hajipur are facing pressure due to city expansion. Many medicinal plants like *Andrographis paniculata, Withania somnifera, Rauvolfia serpentina , Heliotropium indicum, Boerhaavia diffusa, Dioscorea bulbifera* and others have become rare. Such traditional medicinal plants should be conserved on priority basis. One way of conservation is in vitro propagation of selected taxa. This with other germplasm conservation technique can ease the pressure.

***Key words :*** Biodiversity, Conservation and in vitro.

## Arsenic toxicity induced impact on physiological and nutritive status of *Eleusine coracana* Indaf 7 at various stage

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### ABSTRACT

*Eleusine coracana* (Finger millet) is the most important small millet in the tropics, and is cultivated in more than 25 countries in Africa and Asia, predominantly as a staple food grain. According to FAO, In India (especially the southern parts of India), finger millet has high yield potential with average yields of 1.3 Mg $ha^{-1}$. They are rich in vital nutrients like carbohydrate, dietary fibres, essential amino acid (lysine, methionine, leucine, isoleucine) and minerals (calcium, phosphorus, iron and magnesium). Arsenic distributes in the environment via contaminated ground water which is used as drinking water and irrigated in the crop field. Chronic arsenic toxicity can be lethal for liver, kidney, bladder, lung, skin. Skin hyperpigmentation and hyperkeratosis are common exposure related phenotypes. Therefore, it's high time to produce ideal cereals that must contain a lower amount of arsenic and ensure safety for all kinds of lives. Moreover, to the best of my knowledge, this variety of finger millet has not been tested for its performance under arsenic stress. The aim of this project to study the effect of three concentrations of Arsenic (30, 60, 90 mg/kg) on physiology and nutritive status of *Eleusine coracana* Indaf 7 at vegetative stage. Studies indicated that ragi aboveground plant parts had adverse effects of arsenic stress above 60mg/kg at both germination (as indicated by height, biomass, chlorophyll content and relative water content) as well vegetative stage (as indicated by imbalanced nutrient distribution).

## Sustainable Use of Waste Flowers by Formulating A Face Cream

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### ABSTRACT

Sustainability and waste management is one of the most important methods to overcome the problems of environmental pollution. Hence reuse and recycle is one of the effective ways to solve the issue of pollution. Temples produce a huge amount of floral waste which will be discarded as waste, unless it is used wisely. In this study the waste flowers were used to formulate a herbal skin cream, which was prepared by using five different flowers and

also an essential oil extracted from one of the plant. The formulated cream was tested for various quality check methods. It was found that the flowers used in the cream had high antioxidant activity, anthocyanin content and also exhibited good SPF values that elevate its quality as a good face cream.

## Phytochemical analysis of volatile components from the leaves and flowers of Torch Ginger and evaluating its activity as a potential pest repellent

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### ABSTRACT

Torch ginger, is an aromatic plant belonging to the family Zingiberaceae. Traditionally, species of Torch Ginger are used as condiment, flavouring agent in dishes, as a vegetable, as carminative, in treating ear ache, sore throat, jaundice, cleansing wound and in rheumatism etc. The plant is known to show antioxidant activity and mosquito repellence. Post-harvest loss of grains due to factors such as pest infestation and unscientific storage account for almost 10% of total food grains. Pest infestation causes a reduction in quality and quantity of the food grains. The present study aims at estimating the phytochemicals present in the essential oil of torch ginger quantitatively and qualitatively and studying its effectiveness as a pest repellent. The results of our study shows that torch ginger essential oil is a storehouse of many phytochemicals and also exhibit excellent pest repellent property.

## Study of Anti-nutritional factors in Little Millet and evaluating methods to reduce these harmful substances

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### ABSTRACT

Millets are group of small grained cereal food crops belonging to family Poaceae. Millets are known for their resilience to environmental factors such as drought, water logging, pests, low soil fertility and extreme temperatures. In recent years, millets have seen resurgence in popularity due to their health benefits and as a sustainable alternative to wheat and rice. *Panicum sumatrense* also known as Little Millet is a minor cereal crop native to India. The de-husked grain is cooked and consumed like rice, or is milled into flour. This crop matures in 2–5 months. They are good source of nutrients and are gluten-free, making them suitable for people with celiac disease or gluten intolerance. Like other food crops certain nutritional inhibitors are associated with Little Millet which reduces its nutritional value by inhibiting the uptake of nutrients by the human body; these compounds are known as Antinutritional factors (ANFs), which may lead to impaired gastrointestinal functions and metabolic performance. In the present study, the level of anti-nutritional factors like tannins, oxalates and phytic acid in little millet was evaluated quantitatively and various methods to reduce these harmful factors were studied. It was observed that the pre-treatments greatly reduced the anti-nutritional factors in Little Millet.

## Extraction of essential oil from the leaves of *Etlingera elatior*, Formulation of incense cones And Evaluating its potency as a repellent against pests of stored grains

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### ABSTRACT

The frequent use of synthetic pest repellents against pests of stored grains have caused many harmful affects to human health, deteriorating the food quality and contributing in polluting the environment. Essential oil from plants having potential pest repellent activities against these pests and can be used as an alternative to the synthetic insecticides. The essential oil from *Etlingera elatior* was evaluated for its pest repellent activity. In this study, the extracted essential oil from the plant was formulated into an incense cone and Repellency of the essential oil was further checked against pests such as *Sitophilus oryzae*, which are stored grain pests mostly found in stored rice and the percentage of repellency was analysed at different time intervals. The results of our study shows the potential of the essential oil infused incense cones in repelling the stored grains pest.

## Analysis of nutritional composition using different detoxification processes in *Dioscorea bulbifera* L. under estimated tuber

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### ABSTRACT

*Discorea bulbifera* L. is native to Africa and Asia, belonging to the family Dioscoreaceae. It is commonly called as yam or air potato. This plant stands at 4th place among the different edible tubers. The plant is said to be potential neglected and underutilized though it is having nutritional advantage over other root crops. Phytochemical analysis of the plant revealed the presence of flavonoids, saponins, steroids and also is good source of essential dietary supplement. In the present study, one of the proximate composition carbohydrates were estimated using different detoxification processes over control. It was observed that 40 minutes open cooking it showed highest carbohydrate content and in soaked condition for 12 hours it showed the lowest carbohydrate content in *Dioscorea sp.* When it was compared with potato and *Dioscorea* it was found that the carbohydrate content is less in yam which will help diabetic patients consume this in place of potato. Hence the estimation of diosgenin which is a saponin in one of the antinutritional factor is done and it is found that the minimum amount of diosgenin is present in closed cooking (3 whistles) and maximum amount of diosgenin is present in raw tuber of *Dioscorea* sp. Therefore, this paper describes the nutritional and antinutritional factors and gives the comparative study between *Solanum tuberosum* and *Dioscorea bulbifera* tubers. Henceforth the plant can be categorized for sustainable cultivation using scientific farming as its important ethnobotanically.

## Effect of fermentation on Protein, Iron and Phytic Acid contents of Lentil *(Lens culinaris* Medik).

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### ABSTRACT

Lentil (*Lens culinaris* Medik.) is one of important pulse crops in the world, because of its nutritional quality. It has rich sources of carbohydrate, protein, iron, dietary fibres, vitamins, minerals and high energetic value. Unfortunately, its acceptability as staple food is limited, due to presence of anti-nutritional factors such as, phytic acid, saponins, tannins, gossypol, lectins, etc., in it. The study aimed to estimate out protein, iron and phytic acid (PA) present in lentil by Bradford method, Bathophenathroline method and Wade Method, respectively. Those were estimated against the standard curve of BSA for protein, Mohr's salt for iron and sodium phytate for phytic acid at 595nm, 535nm, 500nm, respectively, using double beam UV/VIS spectrophotometer (Systronic, 119). The lentil seeds were procured from farmland. These were further given treatment of wet processing by submerged fermentation for 0h, 24h, 48h and 72h. Protein content was evaluated as 43.77±0.426, 55.26±0.808, 59.52±0.433, 63.61±2.31mg/100gm (n=3) at 0h, 24h, 48h and 72h, respectively. This shows increase in protein content with gradual increase in fermentation time, than control seeds. Iron content was evaluated as 3.29±0.29, 8.62±0.76, 11.72±1.01, 14.28±1.26 mg/100gm (n=3) for 0h, 24h, 48h and 72h, respectively, and this also showed higher iron contents with gradual increment in fermentation time than that in raw seeds. As far as, PA content is concerned, it was evaluated in decreasing order, as 63.19±1.3, 35.63±0.98, 29.11±0.88, 23.79±1.01mg/100gm (n=3) with increase in fermentation time, from 0h, 24h, 48h and 72h, respectively. This shows highest PA content in raw seeds followed by gradual reduced content in fermented seeds, depicting impact of fermentation process on phytate.The findings show that lentil contains significant amounts of protein, iron, and the antinutrient phytate, which reduces the body's ability to absorb nutrients. It was observed that fermentation works effectively to lower phytate, while concurrently raising iron and protein levels.

***Keywords:*** Nutritional Properties, Phytic acid, Bathophenathroline method, Fermentation.

## Zero waste Analysis: Its Awareness & Practice

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### ABSTRACT

Waste management is one of the serious issues of the world. Zero waste approach for sustainable waste management can be one of the novel ideas in this regard. Zero waste approach emphasizes maximum recycling, minimising waste, reducing consumption and ensuring that products are made to be reused, repaired, and recycled back into nature or the marketplace. This helps in conserving resources and minimizing pollution. In this regard, to analyse the awareness among local residents, questionnaires were used to gather the information from residents of various parts of Patna. Questions pertaining to various issues like factors that influence waste management & the difficulties faced by them in making their homes garbage free were included. Findings revealed that large scale use of plastic goods was the main cause that prevented waste free environment. Individuals showed interest in recycling,

yet lot of efforts are still needed to be undertaken for zero waste environment. This survey showed that awareness campaigns might be effective in sensitizing people to garbage or waste management.

***Key words*:** Zero waste, waste management, sustainable waste management, recycling, environment.

## E-waste and Environment!

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### ABSTRACT

Electronic waste (E-waste) or waste that is generated from electronic or electrical equipment has become a major problem of the world nowadays. The rapid demand for consumer goods is the reason behind the consumption as well as the production of electronic equipment. The increasing demand for new electronic gadgets has led to accumulation of this waste posing a risk to the environment and health. E-waste emissions mix with the soil & air causing harmful consequences to the entire environment directly or indirectly. Therefore, it becomes necessary to recycle these wastes. Recycling helps in reducing the amount of waste generated & also helps in recovery of valuable materials from them. Online survey & personal interviews were done to find out the awareness & basic knowledge among people regarding e-waste, harmful effects of e- waste on environment and human health, and different measures for e-waste management. Findings revealed that 90% of respondents were familiar with the term 'e-waste'. Higher proportion of respondents recycled the e-waste and were of the view to promote recovery of material from them. 56% of the respondents were familiar with the concept of online E-waste disposal application and e- vendors. Findings also revealed that awareness could be the key to sensitize different strata of the society.

***Key words:*** E-waste; Environment; Health; Recycling; E-waste disposal application; E-vendor.

## Isolation and Identification of Soil Mycoflora of Paddy Field at Naubatpur,Patna

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### ABSTRACT

The mycofloral population of soil has great impact upon the soil health and hence the crop productivity. In this study, attempt has been made to isolate and identify the mycofloral organisations of paddy field at two different locations of Naubatpur namely Chhakkanbigha and Sheikhpura . The soil fungi were isolated as per soil plate dilution technique and identified with the relevant literature and manuals of fungi. A total of 21 number of fungal species belonging to different fungal genera were isolated. The fungi obtained from Chakkanbigha included various species of Aspergillus, Mucor, Rhizopus., Penicillium, Fusariu, Curvularia and Trichoderma. From Sheikhpura, the isolated fungal genera included Aspergillus, Mucor, Rhizopus, Pennicillium, Fusarium and Bipolaris. The dominant genera in the above agricultural fields were Aspergillus, Mucor and Rhizopus.

***Keywords:*** Naubatpur; Paddy field, Fungi, Isolation, Identification

## PHB (Polyhydroxybutyrate) Production by isolated *Pseudomonas aeruginosa* and its application in Bioremediation.

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### ABSTRACT

Soil sample collected from industrial area of Aurangabad, Maharashtra, India. Fourteen different bacterial isolates were found to be the most promising PHB accumulating bacteria from soil. Screening for PHB was done by Sudan black staining. PHB extraction was carried out by chloroform digestion method. Maximum production of PHB was analyzed by U.V spectrophotometer and finally it was characterized by FTIR, which suggested presence of aliphatic chain, –OH stretching, C–O bonds. and HPLC spectroscopy. At the end of 5 days set containing PHB sample along with *Pseudomonas aeruginosa* culture showed highest nano

percent removal that is of 95.5%. While individually treated dye with PHB and *Pseudomonas aeruginosa* alone gives 85.68% and 74.50% respectively. The work was further extended to check its application in bioremediation industrial effluent decolorization activity.

## Green Synthesis of Silver Nanoparticles using Cloves ( Sygium Aromaticum ) & Cinnamon Bark (Cinnamomum Cassia ).

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### ABSTRACT

Nanomaterials have brought a new revolution as they exhibit exotic properties like Enhanced Permeability and Retention Effect, Enhanced Surface to Volume Ratio, etc. We Indians are adhered with the Ayurvedic values, enriched with diverse green natural sources, and Nanoparticles have been part of our medication in somehow other form, since time immemorial. In the present study, the focus is one the synthesis of Silver Nanoparticles, using the plants extract of Indian vegetation like Cloves and Cinnomon bark, which are the common materials found in almost every Indian kitchen. Cloves based bio-synthesis of silver nanoparticles from the Silver Nitrate Salt solution ($AgNO_3$, 0.001 M concentration) yields Nanorods. Eugenol, a compound present in the Cloves is acting here as a reducing & capping agent. Cinnamoan Bark based bio-synthesis of silver nanoparticles from the Silver Nitrate solution yields Nanospheres. Here, Cinnamaldehyde, a compound present in the bark is acting here as a reducing & capping agent. The formation of NPs can be prima facie observed from colour change. The sample has been further tested for spectrophotometric uv-vis analysis and TEM analysis for confirmation. Following the simple laboratory procedure with basic and less cost requirement, the very same process and taking the same ratio has been carried out for both Cloves and Cinnmaon bark. The different shapes (Nanorods & Nanospheres) for two different medium may be described as the functional group properties of the reducing agents. Also, the Clove based Silver NPs show greater stability than Cinnamon Bark based Silver NPs. Physiochemical factors (like Temperature, Ph value) may play important role in their morphology.

## Airs conditioning by honeybee clay system ensuring zero electricity consumption

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### ABSTRACT

Now-a-days higher electricity consumption due to heavy load air conditioners are causing a variety of problems ranging from non-sustainability of resources to increasing size of the ozone hole due to chloroform used in the system. The current air conditioning system is simultaneously responsible for causing health issues such as skin diseases, tonsillitis, cough, common cold, flu and is fatal in some extreme cases.

The traditional clays are quite unused due to the current roofing system. We used wooden circular blocks and cylindrical honeybee clays and developed a system capable of decreasing the room temperature at a broad level ensuring a cost effective air conditioning system with zero electricity consumption. Our system uses environment friendly turbines and water and is capable of functioning in the absence of electricity. Ice cubes additionally added to our system could result in the achievement of a lower temperature range. Normally our system is capable of decreasing 8°C to 10°C temperature. By further enhancing our system by pipe adjustment and ice cube incorporation we can achieve a decrease of 20°C to 25°C. Our system uses the water again and again which is an indication of lesser exploitation of resources.

Our system causes no diverse effect on its users. It is widely operational and quite adjustable a per the requirements. The system developed by us is cost effective, energy efficient and eco-friendly. It could be utilised in the wider interest of public since it enhances the quality of health of the consumers by reduction in the proneness of a variety of diseases and minimises the consumption of resources like coal and uranium involved in the production of electricity.

## Mineral analysis in cultivated *Pleurotus ostreatus* and *Hypsizygus ulmarius* and recycling of spent mushroom under zero-waste management technology

### SUB THEME: Strategy and Innovation in life science for Sustainable Development

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### ABSTRACT

Mushrooms, besides being valuable resources for food, medicine, and nutraceuticals, are vital in the ecosystem due to the fact they could biodegrade the ligno-cellulosic substrate such as agricultural residues. India being an agricultural country has diverse variety of agricultural residue with differential nutritive value. Thus, the present study was designed to study the cultivation of two varieties of mushrooms namely *Pleurotus ostreatus* and *Hypsizygus ulmarius* in three different substrates viz. sugarcane bagasse, sawdust, and wheat straw. The mushroom grown on sugarcane bagasse and sawdust showed infection in the growing mycelium resulting in the formation of the very

common “Lipstick mold”. The mushrooms were later grown using the “Ready to Fruiting bags (RTFs)”, which showed a good yield of both varieties of the mushroom. The 2 species of mushrooms viz. White and Elm oysters grown on wheat straw showed a high concentration of Calcium (400 and 600mg/100g respectively), other major minerals being Magnesium, Potassium, and Sodium. The production of mushrooms always results in significant residual material after harvest called the spent mushroom, which is basically partially digested agro-residue – a good source of manure. Owing to the fertilizer quality of the spent substrate, biodegradable sapling pots, free of plastic were designed. The saplings growing in Spent mushroom pots can be directly potted as such because they are biodegradable and also, can be an excellent source of nutrition for the developing plant. It is an eco-friendly and sustainable approach, and needs only nominal space, low cost, less skilled persons, and can be easily done in the field.

## Effects of mercury in skin lightening cosmetic products and related kidney problems in India.

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### ABSTRACT

Mercury is a toxic metal and can cause serious health effects including kidney damage, glomerulitis, anxiety and depression.Mercury is found in both inorganic and organic forms in cosmetics.Mercury in fairness cream inhibits the formation of melanin,resulting in a lightner skin tone.In cosmetics,high Hg levels are most commonly found in products that promise to fade dark spots and fine lines.It can cause glomerulitus that is inflammation of glomerulus which is the blood filtering unit of kidney.when the body will not get filtered,the toxicity will spread throughout the body and will lead to the renal damage and renal failure.Mercury can be absorbed in the body through inhalation, ingestion and skin.Different brands of skin whitening creams were analyzed by Direct Mercury Analyzer (DMA) for the determination of mercury content.Quantification of mercury levels in these products was achieved by using external standard calibration curve method. Skin whitening creams ranged from 0.00 ppm to maximum of 3.373ppm Mercury is a heavy metal and accumulates the body,do not get excreted out.Absortion of cosmetics through the skin is a slow process but continuously long term use of cosmetics increase the concentration.

***Keywords:*** Mercury, Glomerulitus,Direct Mercury Analyzer (DMA),Melanin, Calibration Curve Method,

## Effect of heat in Blood brain barrier permeability: A Review

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### ABSTRACT

The global warming is one of the major causes of many changes of physiological parameters. The brain is protected from endogenous and external injury by Blood-brain barrier (BBB). Different stressors, like inflammation & trauma, may cause the rupture of this barrier. In this review article, we discussed how heat effects the permeability of blood brain barrier.

## Effects of three distinct acute non-toxic high doses of caffeine on behaviour and cardiac parameters in adult rats

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### ABSTRACT

Caffeine (1,3,7 paraxanthine) is widely consumed central nervous system (CNS) stimulant alkaloid known to improve focus and performance. In a competitive world, the intake of caffeine beyond daily recommended threshold is no exception. This research tends to examine immediate effects of acute doses of caffeine on behaviour and cardiac parameters. Experiments were conducted on young male wistar rats (9-12 weeks of age and 135Â±15 gm of weight). These were divided into four groups (n=5 in each group). Three were intraperitoneally treated with distinct doses of caffeine (100, 50, & 25 mg/kg body weight, respectively) and the control rats, which were treated with the normal saline. The cognitive, motor and memory testing were done on Elevated Plus Maze (EPM), Open Field (OF) and Y-maze. Digital lead-II electrocardiogram (ECG) recording at 250 samples/sec was done using the Biopac MP 45 system and associated software. Heart rate variability (HRV) parameters were calculated with the help of kubios premium software. The behavioural and HRV data were compared to check variations, if any, through statistical tools. The analysis of data showed that high doses of caffeine immediately increase anxiety as analysed by increased time spent in closed arm of EPM with respect to control ($p<0.05$). All high doses escalated heart rate with $p<0.01$ and sympathetic stress $p<0.01$ vis-a vis control. Although no profound alterations in spatial memory was found. The analysis of results reveal that acute high doses of caffeine have immediate deleterious impact on both cognitive and cardiac variability of the subjects and mere for sake of adventurism or even for make shift success the high doses at best avoided.

***Keywords:*** Caffeine, Cognition, Heart rate variability, Memory.

## Antimicrobial Effect of Nigella Seeds (A Promising Herb)

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### ABSTRACT

Since ancient times plant sources have numerous therapeutic potentials and cure many diseases .Plants have several biomolecules, some shows toxic behaviour but some have terrific approach to curing diseases. As curcumine from turmeric, beside others mineral and vitamins riboflavin and flavinoids check the bad cholesterol (LDL) and also minimise the triglycerides .In aloe Vera anthroquinine acts as antioxidants, saponins which works like scavengers having antiseptic and cleansing properties, while in lemongrass isogeranial, geraniol, geranylacetate, citronellol, germacrene-D, and elemolin addition to others biomolecules help to confer various pharmacological actions to cure many diseases. Naringenin-chalconeand rutin (quercetin-rutinoside), present in

tomato helps in curing many chronic diseases. Beside others molecules, thymoquinine present in nigella seeds have promising effects on, maximum diseases. Apis mellifera is one of the oldest traditional medicines considered in the treatment of several human ailments. They shows antiviral, antimicrobial, anti-inflammatory, anti-cancer anti-oxidants, anti-diabetic properties beside these they also play a vital role in wound healing, and so on.

***Keywords :*** Therapeutic Potential, Nigella, Thymoquine, Biomolecules.

## Natural inhibitors of Dengue virus

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### ABSTRACT

Dengue is the most prevalent arthropod borne viral infection that has affected more than 2.5 billion people living in over 100 countries across the world. Due the geographic global expansion of *Aedes aegypti* (a vector which transmits Dengue virus), has raised the concern worldwide. Dengue virus (DENV) is a member of flavivirus genus of *Flaviviridae* family which consists of >70 human pathogens causing considerable morbidity and mortality in tropical and subtropical regions of the world. DENV has 4 serotypes based on its structural antigens i.e., DENV1, DENV2, DENV3 and DENV4. The viral membrane attaches to host cell receptors (DC-SIGN, CLEC5A, heparan sulfate receptors) and viral entry occurs through receptor-mediated endocytosis. The viral genome is released into the cytoplasm followed by translation of the polyprotein encoding the open reading frame. Till date no effective antiviral drug has been reported in the country and the only vaccine developed and marketed is CYD-TDV, which was developed by Sanofi Pasteur (marketed as Dengavaxia) and has been approved by only 20 countries.

This requires an urgent urge for the development of therapeutics from natural sources. Many medicinal muchrooms including *C. militaris, A. bisporus, C. versicolor, P. ostreatus, R. paludosa, P. citrinopileatus,* and *Trichoderma giganteum* releases some bioactive compunds such as polysaccharide, ubiquitin like proteins, laccase, lentin, nebrodeolysin, and cordycepin which hinders various pathways by which virus gains entry into the host body. This review focuses on the natural compounds and its mechanism of action which will be beneficial for further research studies carried out for developing antiviral drug against DENV.

***Keywords:*** Dengue virus, medicinal mushrooms, antiviral drugs, vector, Dengavaxia.

## Mercury containing Cosmetic Products and related health hazards.

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### ABSTRACT

Heavy metal toxicity is a proven threat and are associated with several health risks. . Mercury (Hg) is a toxic heavy metal which enter in body by inhalation, ingestion, and skin contact. Mercury may have toxic effects on the nervous, digestive and immune systems, and on lungs, kidneys, skin and eyes. In cosmetics, high mercury (Hg) levels are most commonly found in products that hide dark spots and fine lines. Mercury salts (HgCl2) contained in cosmetics inhibit melanin production by inhibiting the tyrosinase enzyme by replacing the copper cofactor. The Minamata Mercury Convention sets a limit of 1 ppm for skin-lightening products, but many cosmetics contain mercury above this amount to enhance their lightening effect. Chronic uses of such products lead to accumulation of mercury in

body which causes adverse health effects including glomerulitis and kidney damage. However, cosmetics containing mercury (Hg) are manufactured and purchased worldwide despite the obvious health risks. Due to the large distribution of these products, this could be considered a national public health concern and requires strict regulations. This review describes the effects of mercury containing cosmetic products which causes various health complications different organs of the human body. This also aims to raise awareness among regulatory authorities to restrict the import and manufacture of high-mercury containing cosmetics.

***Keywords:*** Mercury, Skin lightening Cosmetics, melanin, toxicity, Glomerulitis, kidney damage, public health awareness.

## Comparison of acid and fungal pre-treatment methods for effective ethanol production using corn stover as a substrate

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### ABSTRACT

The pre-treatment of corn stover with dilute sulfuric acid, varying the concentration (1%â€“4%), and fungi (Fusarium oxysporum and Phaenerochaete crysosporium) has been investigated. This method was designed to improve the biomass's fermentability and enzymatic hydrolysis in a cost-effective and environmental friendly manner. Given the overall sugar output, the fungus Fusarium oxysporum used fungal pre-treatment and the 2% sulfuric acid method, which were the most effective. The fungi Fusarium oxysporum and Phaenerochaete crysosporium were inoculated for enzymatic hydrolysis in acid pretreated corn stover, the resulting reducing sugars were 33.12 g/L and 32.38 g/L, respectively. Corn stover treated with F. oxysporum and P. crysosporium for 25 days 35.25 g/L and 30.68 g/L reducing sugar were obtained. SEM and Fourier transform infrared spectroscopy (FTIR) were used to examine the structural characteristics of processed corn stover. Yeasts (Kluveromyces marxianus and Saccharomyces cerevisiae) were inoculated to increase ethanol production following the enzymatic hydrolysis. The production of ethanol was confirmed using high- performance liquid chromatography (HPLC). The co fermentation of F. oxysporum and S.cerevisiae produced more ethanol (0.41g/g) than the co - fermentation of P. crysosporium and K. marxianus (0.28g/g) without any prior treatment. Acid - pretreated corn stover when inoculated with F. oxysporum and S.cerevisiae (0.40g/g) than the co - fermentation of P. crysosporium and K. marxianus (0.26g/g) without any prior treatment.

## Efficacy of Plant Growth Promoting Rhizobacteria (PGPR) Consortium Rice (*Oryza sativa*) for yield and growth improvement

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### ABSTRACT

Owing to the unimpeded rise in population, need for global food security for sustainability of life on earth is alarming. Rice (*Oryza sativa*), a staple crop worldwide requires qualitative and quantitative yield and growth improvement.

Due to the toxic long term side effects of chemical fertilizers, the current focus should be shifted towards more ecofriendly approach towards sustainability.

Research has demonstrated the favorable effects of PGPR on plant growth under stress conditions. The diverse genus of PGPR produces siderophore and phytohormones such as indole-3-acetic acid (IAA), gibberellin (GAs), auxin, and 1-aminocyclopropane-1-carboxylic acid (ACC) deaminase activity, organic acids, biocontrol agent that contribute to the improvement of nutrient bioavailability (nitrogen fixing, phosphate solubilizing and Fe-uptake). Thus, use of PGPR consortium will be an effective strategy to combat soil stress, nutrient deficiency and various abiotic and biotic factors, in rice cultivation. This review explains the various mechanisms of action of PGPR used in the field of agriculture as a potential biofertilizer, Phyto-stimulant and as a bio-control agent.

***Keywords****: Oryza sativa,* PGPR*,* Biofertilizer, Phyto-stimulant, Siderophore, Bio-control agent.

## In-vitro Antifungal Evaluation Of *Pteris Aspericaulis* Pteridophytes Against *Microsporum Canis*

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### ABSTRACT

Fungal infections in humans can superficially affect skin and nails as well as penetrate to cause a number of systemic infections. People with weaker immune systems are more susceptible to infection and have higher reported rates of morbidity and mortality. The antifungal activity of Ethanolic extract of *Pteris aspericaulis* was investigated against at different concentrations (5, 10, 15 and 20%). At 20%, maximum antifungal potential was observed with the extracts of which recorded excellent inhibitory activity against Microsporumcanis followed by leaf extract of Pteris aspericaulis (50%) against *Candida albicans, Candida glabrata*, and *Microsporum canis* are tested for antifungal efficacy zone of inhibition at various ethanolic extract concentrations. By measuring the extracts' MIC (Minimum Inhibitory Concentration) and MFC (Minimum Fungicidal Concentration), it was able to determine its results. The study revealed antifungal potential of *Pteris aspericaulis* against *microsporum canis*. It also proposed that this could be further analysing on other fungal species to explore the therapeutic potentials of the selected pteridophytic species. The application of botanical extracts for disease management could be less expensive, easily available, non-polluting and eco-friendly.

***Keywords****:* Fungal infection, Pteridophytes, *Microsporum canis*, MIC, MFC.

## *In-vitro* Antifungal evaluation of *Woodwardia unigemmata Mircrosporum gipseim*

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### ABSTRACT

A large and diversified collection of microorganisms known as fungi collaborate with plants to form symbiotic relationships and serve critical functions in the ecosystem. Fungi can, however, also spread dangerous diseases to

people, animals, and plants, which has a substantial negative impact on the economy and public health. To treat fungal infections, antifungal medicines have been created, but their efficacy is constrained by the emergence of microbial resistance and the toxicity of some antifungal substances. Although antifungal drugs are beneficial, using them has a number of disadvantages, such as the formation of fungal resistance and the creation of drug-resistant strains. Natural treatments for a variety of illnesses and disorders have been derived from herbal therapies for ages. Numerous herbs have been found to have antifungal properties that are effective against a variety of fungi, such as Candida, Aspergillus, and Cryptococcus. Numerous studies have been done on the antifungal qualities of herbs like turmeric, oregano, oregano, ginger, and garlic. These herbs contain substances including allicin, gingerols, carvacrol, and curcumin, which have all been demonstrated to have strong antifungal properties. The usefulness of these herbs in preventing the growth of several fungal infections has been shown in in vitro investigations. In the present study, antifungal activity of ethanolic extract of *Woodwardia unigemmata* was tested at different concentrations against *Mircrosporum gipseim* to determine the diameter of zone of inhibition as well as MIC(Minimum inhibitory concentration) and MFC (Minimum fungicidal concentration) values. The fungal strain showed inhibition of growth to a variable degree which is expressed as % inhibition. Therefore, it can be concluded that *Woodwardia unigemmata* has promising antifungal activity which can be further used for the development of antifungal drugs.

**Keywords:** Pteridophytes, antifungal, infection, MIC.

## Study of Anti-nutritional factors in Little Millet and evaluating methods to reduce these harmful substances

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### ABSTRACT

Millets are group of small grained cereal food crops belonging to family Poaceae. Millets are known for their resilience to environmental factors such as drought, water logging, pests, low soil fertility and extreme temperatures. In recent years, millets have seen resurgence in popularity due to their health benefits and as a sustainable alternative to wheat and rice. *Panicum sumatrense* also known as Little Millet is a minor cereal crop native to India. The de-husked grain is cooked and consumed like rice, or is milled into flour. This crop matures in 2–5 months. They are good source of nutrients and are gluten-free, making them suitable for people with celiac disease or gluten intolerance. Like other food crops certain nutritional inhibitors are associated with Little Millet which reduces its nutritional value by inhibiting the uptake of nutrients by the human body; these compounds are known as Antinutritional factors (ANFs), which may lead to impaired gastrointestinal functions and metabolic performance. In the present study, the level of anti-nutritional factors like tannins, oxalates and phytic acid in little millet was evaluated quantitatively and various methods to reduce these harmful factors were studied. It was observed that the pre-treatments greatly reduced the anti-nutritional factors in Little Millet.

## Approximation of Functions belonging to Hölder's Class and Solution of Lane-Emden Differential Equation Using Gegenbauer Wavelets

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### ABSTRACT

In this paper, a very new technique based on the Gegenbauer wavelet series is introduced to solve the Lane-Emden differential equation. The Gegenbauer wavelets are derived by dilation and translation of an orthogonal Gegenbauer polynomial. The orthonormality of Gegenbauer wavelets is verified by the orthogonality of classical Gegenbauer polynomials. The convergence analysis of Gegenbauer wavelet series is studied in Hölder's class. Hölder's class $H^{\alpha}[0, 1)$ and $H[0, 1)$ of functions are considered, $H^{\phi}[0, 1)$ class consides with classical Hölder's class $H^{\alpha}[0, 1)$ if $\varphi(t) = t^{\alpha}$, $0 < \alpha \leq 1$. The Gegenbauer wavelet approximations of solution functions of the Lane-Emden differential equation in these classes are determined by partial sums of their wavelet series. In briefly, four approximations of solution functions of classes $H^{\alpha}[0, 1)$, $H^{\phi}[0, 1)$ by $(2^{k-1}, 0)^{th}$ and $(2^{k-1}, M)^{th}$ partial sums of their Gegenbauer wavelet expansions have been estimated. The solution of the Lane-Emden differential equation obtained by the Gegenbauer wavelets is compared to its solution derived by using Legendre wavelets and Chebyshev wavelets. It is observed that the solutions obtained by Gegenbauer wavelets are better than those obtained by using Legendre wavelets and Chebyshev wavelets, and they coincide almost exactly with their exact solutions. This is an accomplishment of this research paper in wavelet analysis.

## Recent Advances in Vegetable Oil based eco-friendly coating materials

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### ABSTRACT

Vegetable oils (VO) constitute Mother Nature's most abundant, low cost, non-toxic, non-depletable, biodegradable family yielding materials that are capable of competing with fossil fuel derived petro-based products. The outstanding feature of VO is their unique chemical structure having unsaturation sites, epoxies, hydroxyls, esters, and other functional groups along with inherent fluidity characteristics. These enable them to undergo various chemical transformations producing low molecular weight polymeric materials with versatile applications in the field of coatings. In this presentation, we will briefly described important VO derived materials such as Polyols, Organic-Inorganic hybrid, polymer nanocomposites, along with their preparation, characterization and applications as protective coatings.

***Keywords:*** Vegetable oils, Eco-friendly, Renewable resources, Coatings

## RISUG® -World's first male contraceptive: journey from bench to bedside

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### ABSTRACT

Even after decades of research men still lack reliable and reversible contraceptive methods comparable to female methods of contraception. Traditional methods which are used for male contraception present a high failure rate and also involve high risk both when used for contraception and for protection against sexually transmitted diseases. Various chemical, hormonal, immunological, vas based and herbal methods of contraception have been examined by scientists all over the world during the past four decades. As an alternative to vasectomy, RISUG® (Reversible Inhibition of Sperm Under Guidance), a co-polymer of styrene maleic anhydride offers long term protection with safety, efficacy and with no adverse side effects. It is injected into the lumen of male vas deferens by no scalpel technique which results in the partial blockage of vas deferens and provides contraception for at least 13 years. This polymer after coming in contact with the spermatozoa, on account of its poly-electrolytic nature causes ionic imbalance on the human sperm membrane which results in swelling and rupture of the sperm head (acrosome) and leakage. The RISUG® ejaculates consist of partially or completely damaged spermatozoa which functionally become unable to fertilize the ova. The non-invasive reversal technique, successfully demonstrated in langur monkeys and functional reversal achieved with dimethyl sulfoxide (DMSO) and sodium bicarbonate ($NaHCO_3$) in rats and rabbits with safety at $F_1$ generation have projected RISUG® as a better alternative to vasectomy. Thus RISUG® provides a hope for an indigenously developed first male contraceptive to the world- a game-changer for India's family planning efforts.

## Sub-Theme: Innovation in health care, drug discovery and environment

## *In vitro* and *In vivo* Studies to Evaluate the Wound Healing Property of *Parkia javanica* Chloroform Fraction

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### ABSTRACT

*Parkia javanica* chloroform fraction (PJCF) significantly stimulated healing process in *in vivo* mice model. *In vitro* study result showed significantly induced proliferation and migration of fibroblasts and keratinocytes at optimum dose of 20µg/ml. The increase in phosphorylation of FAK and Akt was detected after treatment of PJCF. The increased expression of NF-κB and cytokines like, IL-1$\beta$, IL-6, IL-8, TGF-$\beta$ was also observed. GC-MS data revealed the presence of compounds, with known wound healing properties. The results convincingly showed the wound healing property of PJCF and the mechanistic study indicated that, the healing activity at least partly be mediated via FAK/PI3K/Akt/NF-κB pathway.

**Keywords:** *Parkia javanica*; Fibroblast, Keratinocyte; Wound healing; Interleukins; Signaling proteins.

## Bioactive Phytochemicals from Pomegranate Peel and its Potential Antimicrobial Activity

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### ABSTRACT

The therapeutic value of plants has been known since the onset of civilization. Bioactive compounds present in different plant parts are capable of modulating metabolic processes such as antimicrobial activity, antioxidant effect, anti-inflammatory effect. The pomegranate is an ancient, mystical, unique fruit, scientifically known as *Punica granatum* L. belongs to family Punicaceae (old Lythraceae). It is a deciduous shrub widely grown in tropical and subtropical countries. The fruit peel comprises of about 50% of the fruit weight which is an agronomic waste but also an important source of several bioactive compounds like phenolics and flavonoids.

Antimicrobial compounds check the growth of several disease-causing microorganisms. To combat antibiotic resistance, antimicrobial properties of traditional plant-based medicines is being revisited. Studies show that pomegranate peel possess abundance of phenolics and flavonoids particularly anthocyanins which are known to have diverse biological functions including effectiveness against pathogenic microorganisms. Based on these facts the objective of this study was taken up to evaluate the potential antimicrobial activity of pomegranate peel and its phytoconstituents.

***Keywords:*** *Pomegranate peel, phenolics, flavonoids, antimicrobial activity*

## Cultivation and Quantitative analysis of *Pleurotus ostreatus* and *Hypsizygus ulmarius* and recycling of mushroom spent under zero-waste technology

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### ABSTRACT

Mushrooms are vital in the ecosystem due to the fact they could biodegrade the substrate and consequently use the wastes of agricultural production. Mushrooms are valuable resources for food, medicine, and nutraceuticals. Edible mushroom is considered a novel source of dietary fiber. In the present study, two varieties of mushrooms namely Pleurotus ostreatus and Hypsizygus ulmarius were cultivated on three different substrates viz. Sugarcane bagasse, sawdust, and wheat straw. The mushroom grown on sugarcane bagasse and sawdust showed infection in the growing mycelium resulting in the formation of the very common “Lipstick mold”. The mushrooms were later grown using the “Ready to Fruiting bags (RTFs)”, which showed a good yield of both varieties of the mushroom. The 2 species of mushrooms viz. White and Elm oysters grown on wheat straw showed a high concentration of Calcium (400 and 600mg/100g respectively), followed by other major minerals Magnesium, Potassium, and Sodium. The production of mushrooms always results in significant residual material after harvest called the spent mushroom. Because spent mushroom has nutritional qualities, repurposing it has made them a renewable source with many uses. Owing to the fertilizer quality of the spent substrate, we made Biodegradable sapling pots. The pots made from spent and natural clay are free of plastic, unlike other sapling pots available in the nurseries. The saplings growing in

Spent mushroom pots can be directly potted as such because they are biodegradable and also, can be an excellent source of nutrition for the developing plant. It is an eco-friendly and sustainable approach, and needs only nominal space, low cost, less skilled persons, and can be easily done in the field.

***Keywords:*** Strategy and Innovation in life science for Sustainable Development

## Drug yielding weeds around Nalanda

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### ABSTRACT

Nalanda is a place of tourism since ancient past, for its historical glory. According to various literatures this is the place where many ayurvedic researches were performed and traditional medicinal systems were frequently applied in society. On the basis of traditional knowledge, many herbs were identified as drug yielding plant, which are usually and frequently growing around Nalanda till today. The valuable herbs just growing like weed,can provide sustainable health care without any cost. Some of them are often used by common people as well as seen in common use. The most common among the herbal weeds are listed bellow – *Achyranthua spera(L), Boerhhavia diffusa(L), Phylanths amarus(L), Phylanths niruri(L), Cynodone ductilon{L), Argimon maxicana(L), Centalla asciatica(L), Bacella alva(L), Aloe vera(L), Sollanum nigram(L), Amaranthus spinosa(L), Sollanum spinosa(L), Euphobia hirta, Parthanium histofloram* and some others.

***Keywords :*** Drug yielding weeds, Nalanda.

## *In vitro* analysis of exoenzyme activity and biocontrol efficacy of three *Trichoderma* isolates from agricultural fields against *Pythium sp.*

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### ABSTRACT

Plant diseases caused mainly by fungi contribute directly to major agricultural crop depletion. *Trichoderma,* a soil borne ascomycete fungal genus, is of undebatable importance as an ecofriendly biofungicides. There is still a constant need for search of new effective *Trichoderma* strains from different localities against phytopathogens. The present study aimed to evaluate and compare the antagonism and exoenzyme activity of three isolates of *Trichoderma* against *Pythium sp.* responsible for damping off disease in tomato plants. *Trichoderma* isolates were isolated from the rhizosphere of healthy tomato plant in agricultural fields near by Patna region. Three *Trichoderma* isolates were selected for their potentiality as antagonists by an *in vitro* antifungal non-volatile assay. The results revealed that all *Trichoderma* isolates effectively inhibited the growth of Pythium sp. by production of non-volatile metabolite inhibitors at 12.5%, 25%, and 50%. *Trichoderma afroharzianum* caused significantly higher inhibition in the term of mycelial growth of 65.23 % compared to *Trichoderma asperellum* 55.35% and *Trichoderma harzianum* 43.62 % at 50 % v/v concentration. *Trichoderma* isolates were also screened for the production of exoenzymatic activity. The antagonistic *Trichoderma afroharzianum* showed higher chitinase and cellulase activities as compared

to *T. asperellum* and *T. harzianum.* The ability of antagonism is strengthened by the production of exoenzyme. On the basis of above findings, it can be said that antifungal nonvolatile metabolites and exoenzyme of antagonist *T. afroharzianum* are acting synergistically in the inhibition of *Pythium* growth. The secretion of exoenzymes by *Trichoderma* species reveals their application in plant disease management as novel biocontrol agents, as well as for the production of enzymes in biotechnological processes.

***Keywords:*** *Trichoderma*, phytopathogen, *Pythium* sp., antagonism, biocontrol, exoenzyme

## Evaluation of endophytic fungal diversity colonizing pharmaceutically significant tree *Terminalia chebula* Retz.

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### ABSTRACT

Endophytic fungi endosymbiotically coexist in healthy and living internal tissues beneath the epidermis of almost all vascular plants without causing any evident damage to their hosts. Screening of endophytic fungi residing in any medicinally important plant is essential for isolation and further appraisal of its bioactive metabolites. Some of these metabolites have demonstrated significant biological activities, such as antioxidant, antimicrobial, anticancer, and antidiabetic effects. The current study focuses on fungal diversity of endophytes associated with *Terminalia chebula* Retz. of two different sites of Patna region. *T. chebula*, also known as the "**king of medicine**" a well known pharmaceutically important medicinal tree, widely used in Ayurveda, Unani, Homeopathic and also has become the focus of modern medicine. These endophytes are known to produce various bioactive compounds that mimic their host plant and thus, have potential applications in medicine, agriculture, and industry. Works on fungal endophytes are still in infancy and underexplored. Endophytic fungi were isolated from *T.chebula*. to evaluate its diversity. Healthy plant leaves and inner tissue of bark were prepared by surface sterilization techniques and were placed on two different growth medium i.e. Potato Dextrose Agar (PDA) and Sabouraud Dextrose Agar (SDA). Identification to an extent was done based on cultural and morphological characteristics. Their diversity was assessed in terms of colonization frequency. The isolated endophytic fungus from two sites belonged to Ascomycota, Coelomycetes, Hyphomycetes, Mucoromycotina and sterile forms. Species of *Aspergillus, Neurospora, Phomopsis, Phoma,* Mycelia sterilia were the most frequent isolates from site 1. The frequency of colonization, isolation and fungal diversity were all higher in site 2 than in site 1.

***Keywords:*** *Terminalia chebula,* Endophytic fungi, Isolates, Colonization frequency.

## Ameliorative effect of Ganoderma lucidum on Sodium arsenite induced toxicity in Charles Foster rats

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### ABSTRACT

An estimated 70 million population are exposed to arsenic poisoning in India in the recent times. Arsenic contamination of groundwater has caused significant health hazards to the exposed population. In Bihar, the first district was Bhojpur, where arsenic-related health conditions were reported in 2002. At the moment, there are 18

districts that are reported with arsenic poisoning in groundwater. The exposed population is primarily affected by different symptoms such as skin manifestations, anemia, loss of appetite, constipation, neural disorders, cardiovascular disorders, hormonal disorders, etc. Long-term exposure causes various other serious illnesses such as cancer in exposed subjects in recent years. Therefore, this study aims to develop the antidote for arsenic-induced toxicity in Charles Foster rats.

The study was carried out on Charles Foster Rats after the approval from Institutional Animal Ethics Committee. A total of n=18, rats (12 weeks old) of an average weight of 160 ± 20 g were used for the study. The study group included n=6 control and n= 12 treated with sodium arsenite orally at the dose of 8mg/Kg b.w daily for 90 days. The n= 6 animals were dissected and rest n=6 was administered orally with *Ganoderma lucidum* (Reishi mushroom) ethanolic extract at the dose of 80mg/Kg b.w per day for 60 days. All the animals were sacrificed after the completion of their respective doses and their blood samples were taken for haematological and biochemical evaluation while the vital tissues such as liver and kidney for the histopathological study.

The study revealed significant fluctuation in the in haematological parameters such as RBC counts, WBC counts, platelets count, heamoglobin percentage after arsenic treatment in comparison to the control group but after the administration of *Ganoderma lucidum* there was significant normalization in their levels. Moreover, there were significant changes observed in the biochemical levels such as SGPT, SGOT, ALP, bilirubin, urea, uric acid, creatinine, lipid peroxidation in arsenic treated groups in comparison to the control group but there was significant reduction in the levels after the administration of *Ganoderma lucidum.* Similarly, the histopathological study also revealed high magnitude of degeneration in the hepatocytes and nephrocytes after the treatment of arsenic but after the administration of *Ganoderma lucidum* there was significant restoration at the cellular level.

Hence, the present study concludes the ethanolic extract of *Ganoderma lucidum* possesses significant ameliorative properties against arsenic induced toxicity in rats.

**Keywords:** Arsenic treatment; *Ganoderma lucidum;* ameliorative effects; Charles Foster Rats.

## Management of Nematode parasites of Rice in Bihar

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### ABSTRACT

Rice *Oryza sativa* is an important staple food crop in the Asia. Rice is long duration standing crop and are very much affected by the numerous Phyto nematodes. The yield losses extend up to 90% due to Phyto nematodes of paddy. In India, yield losses are up to 16 to 32% in rainfed and upland rice. The major Nematode associated with rice are *Ditylenchus angustus*, *Aphelenchoides besseyi*, *Hirschmanniella spp.*, *Heterodera oryzicola* and *Meloidogyne graminicola*. Their eco-friendly management needs careful planning and low-cost effective techniques that the farmers and growers can easily follow with very less investment and can get qualitative and quantitative yield. There are five major rice growing environments (Khush, 1984). It has profound impact on the Phyto nematodes and their concomitant damage many genera of parasitic nematodes causes damage and affect the rice upland, Irrigated lowland and deepwater. Means of spread of foliar parasites and root parasites nematode are seed, stems, panicles, and soil. In Bihar generally foliar nematode ex: *A. besseyi* and root nematodes ex: *Heterodera elachista*, *Hoplolaimus*

*indicus*, *Meloidogyne garaminicola*, *M. arenaria* and *P. zeae* (Pratylenchus) cause yield loss in paddy crop plant. These all causes mechanical damage and malfunctions of the physiological process involved in plant development, resulting in poor growth and yield loss. Some species cause damage leaves, panicles, root and foliar. This is observed that plant parasitic nematodes (PPNs) have adapted to foliar and root both more than 200 species of PPNs have been reported or are associated with rice and causes economic loss. Rice nematodes are of two groups on their habits (i) Foliar parasites, (ii) Root parasites.

***Keywords:*** Eco-friendly management, nematode, *Meloidogyne graminicola*, foliar parasite

## A Study on the Plantation and Production of Rubber Plant in Garo Hills Meghalaya

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### ABSTRACT

Commercial cultivation of rubber tree, the source of natural rubber, was introduced in India in 1902 in Kerala. According to a report by North Eastern Development Finance Corporation Ltd (NEDFi) the South Western coast the cultivation of rubber has reached almost a point of saturation, but some areas in the North East region have been identified as non-traditional areas suitable for rubber cultivation. Though rubber is a tropical tree, it grows well in some parts of North Eastern India. In this study, we shall be discussing about the plantation and production of rubber plant in Meghalaya. Rubber plantation can go a long way in solving the perennial problem of unemployment in Meghalaya as the State has a tremendous potential when it comes to rubber plantation. More than 36,000 articles ranging from giant truck tyres to small bushes are manufactured from rubber. The tyre industry consumes nearly 85% of the natural rubber produced in India and there is an ever-increasing demand for rubber. The objective of this article is to provide an overview of the plantation and productivity of rubber plant cultivation in the various districts of Meghalaya over a period of time. Statistical tools are formulated and interpretations are discussed in detail with data from the Directorate of Horticulture, Department of Agriculture, Meghalaya under this study.

***Keywords:*** Industry, Meghalaya, Productivity, Rubber plantation, Unemployment

## Study of Potato Cutworm *Agrotis ipsilon* (Lepidoptera:Noctuidae) on the host plant and its management.

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### ABSTRACT

Agriculture is the main source of development of human civilization. Pests of different crops are the most challenging one for the increasing crop productions. A polyphagous pest Cutworms causes huge destruction in agriculture field. These are the sporadic pest of all field crops and are the most damaging when caterpillars transfer from summer and autumn feed onto newly emerged seedlings. Being a polyphagous and cosmopolitan pest, it attacks on large number

of crops worldwide including India. This study reveals the caterpillars of *Agrotis ipsilon* is the most damage causing stage generally resides in soil, which remains hidden during the day and feed mostly at night on the young plants at ground level. This cutworm belonging to the genera *Agrotis*, plays important roles in economic sector. The genus *Agrotis* includes number of species of cutworm which extensively damage to vegetables and cereals crops in India. The life cycle of *Agrotis ipsilon* completes within 36 to 50 days which includes eggs, larvae, caterpillar, pupa, and adult. The period of incubation completed within 3 to 7 days. As the larval stage is very destructive phase and causes much damage for which management was done by different methods. While study of Potato cutworm its destructive phase was noticed which is alarming for all the cultivating agriculture field. To get rid of this destruction different control management was done like cultural control, mechanical control, biological control like by encouraging predatory birds to visit the fields by placing birdbaths and feeders near the planting beds and through chemical control management of this pest.

***Keywords:*** Cutworm, Pest, *Agrotis ipsilon*, Life Cycle, Management.

## Influence of Demographic Variables on Self-efficacy of secondary school teachers

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### ABSTRACT

Self efficacy is the self-belief of an individual whereas teachers self efficacy refers to their own belief, trust, level of confidence on their teaching techniques, methods used to accomplish tasks in the classroom and the ability to effectively handle the obligations and challenges among all kind of teaching aspects. High level of Self efficacy is an important characteristic for teachers in order to provide positive learning environment for students. Self efficacy have significant effect on balancing work-life and also it helps teachers in using effective emotional-oriented coping strategies. In context to todays' Indian education system there are lot of changes in education pattern, learning pattern, environmental/generational changes, changes in teaching pattern, also teacher's works have become different in order to manage the diversity in behaviour, learning and understanding of students, therefore all these demographic variables have influence on self efficacy of secondary school women teachers. The current research aims to study the influence of various demographic variables on self efficacy of secondary school women teachers. Teacher self efficacy scale (2021) developed by Nahid Ashraf was used to collect data from secondary school women teachers. Random sampling procedure was used to select the samples. The data was collected from a sample of 250 secondary school women teachers. The result showed that the demographic variables such as age, marital status, family type, educational qualification, number of children, student teacher ratio and type of curriculum have moderate to high significant influence on self efficacy of secondary school women teachers.

***Keywords****:* Teachers, women, Secondary School, Self efficacy

## Innovation in Healthcare

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### ABSTRACT

Healthcare is an industry in need of innovation. They are working to improve care and health outcomes. United States lead the world in Healthcare innovation.

Right now, the health care sector is facing many large challenges such as stringent regulation, privacy concerns and steeply rising costs. Many healthcare professional Are turning to new technologies and Informatics to develop smarter type of healthcare Delivery. These innovations are important because as networks of people and technology become more interconnected .Healthcare organization are going to need better tools for solving health challenges at larger scales.

Right now, many healthcare systems are organised around delivering services without necessarily considering health Outcomes. There are 3 ways innovation can help turn those system.

- Digital transformation in healthcare
- evolving business models and healthcare ecosystem
- innovating in healthcare delivery

In healthcare, when professionals use technology has 3 stages – Digitization, disruption and transformation

Digitization involved setting up digital capabilities that support routine healthcare processes or services. Digitization has made it easier 4 data to be stored, accessed and shared.

Disruption involves newer technologies such as artificial intelligence, mobile technology, analytics and cloud, which are changing the ways in which people, organization and government interact. digital transformation in healthcare is ongoing and will involve a fundamental reimagining of the way payers, healthcare providers and others operate and engage with patients, consumers and stakeholders.

The COVID-19 pendamic in particular has demonstrated there is a strong need for better data system and information exchange between healthcare system, governments and other organizations.

the most important reason for healthcare innovation is tohelp people. Weather it's through new treatment, new technology or new processes, healthcare innovations Will give clinicians and healthcare organization the tool they need to focus more on the needs of dear patients and to help people improve their lives.

Because of Strict regulation new innovations in healthcare are often rigorously tested and adopted gradually.

***Keywords :*** Stringent, innovation , disruption, Digitization, transformation.

## Assessing the sustainable approaches to the fish biodiversity of the River Gandak, Hajipur, Bihar

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### ABSTRACT

The present study was undertaken to represent the biodiversity status, associated risk factors and sustainable approaches of fishes of the River Gandak in Hajipur, Bihar. Every river has its own story which differs from others in many aspects depending upon the surrounding features, runoffs, human interactions with it. Gandak River basically originates from Mustang district of Nepal and flows down into India at Bhaisalotan (West Champaran, Bihar). It joins the River Ganga at Patna, the capital of Bihar. Study was conducted at Hajipur (Vaishali, Bihar) from July 2022 to January 2023. Data were collected from primary and secondary sources. 31 individual fish species belonging to 15

families under 9 orders were documented. Family Cyprinidae (32.25%) belonging to order Cypriniformes with 10 individual fish species were mostly found. During many surveys and site visits, it was found that various risk factors were associated with the decline of the fish biodiversity such as pollution, climatic variations, improper fishing, over exploitation, irrigation, devotional activities, cremational activities and many more. As per current IUCN Red list criteria, most of the species under least concern (LC), number of threatened species were 6 (19.35%) among which the number of vulnerable (VU, 66.6%), near threatened (NT, 33.3%). As fishes are a crucial part of the ecosystem therefore effective sustainable measures should be taken for their proper growth and to reduce their further decline.

***Keywords:*** Gandak River, fish biodiversity, risk factors, sustainable approaches.

## Preliminary evaluation and comparative study of kajal formulations from Pleurotus ostreatus (Grey oyster mushroom) and Pleurotus djamor (Pink oyster mushroom) stipe with special reference to its anti-bacterial property.

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### ABSTRACT

Mushrooms are widely cultivated throughout the world. Edible mushrooms such as *Pleurotus* can be easily grown on various agricultural and industrial wastes like straw, corn husk etc. Hence, *Pleurotus* cultivation is considered to be highly economically profitable. *Pleurotus* species commonly called as oyster mushrooms contribute for 25% of the total cultivated mushrooms. It is known to have very high nutritive and medicinal value. Although the stipe is edible it becomes very tough on cooking and is considered tasteless due to very high-water content as compared to the pileus. Therefore, sustainable usage of the stipe becomes important. Kajal is one of the most popular eyes cosmetic products having very high demand in the cosmetic industry. It has been used since ancient time not just as a beauty product but also for its traditional meaning and therapeutic properties. Organic kajal, a value-added product was formulated from the stipe of *Pleurotus ostreatus* (grey oyster mushroom) and *Pleurotus djamor* (pink oyster mushroom). The kajal was subjected to preliminary evaluations such as physical nature, pH value, viscosity, acid and saponification value. It was further analysed for its anti-bacterial activity using two bacterial strains namely *Staphylococcus aureus* and *Pseudomonas aeruginosa* which are involved in causing eye infection like conjunctivitis. Minimum Inhibitory Concentration tests were done using LB broth and Well- diffusion method.

## A Survey of Fish Fauna of Daha River, Siwan, Bihar, India

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### ABSTRACT

A preliminary survey was conducted to investigate the presence and variety of fish in the Daha River, which flows through the Siwan region of Bihar, India. The current study was carried out between January 2022 and December 2022 to find out the fish flora in the Daha River at Siwan district. A preliminary study and observation revealed a total of 31 species of fish in 19 genera, 14 families, and 7 orders. The order Siluriformes was discovered to have the most

species 13 in total, followed by the Cypriniformes with 8, the Perciformes and Ophiocephaliformes with 3, the Osteoglossiformes with 2, and the Clupeiformes and Beloniformes with just one species each.

***Keywords:*** Fish Diversity, Daha River, Siluriformes. Cypriniformes.

## Antimicrobial Activity of Catharanthus Roseus

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### ABSTRACT

Catharanthus roseus (periwinkle) is an important medicinal plant for pharmaceuticals since most of the bacterial pathogens are developing resistance against many of the currently available anti microbial drugs. Many plants have proved to be significant natural resources for effective chemotherapeutic agents. They offer a broad spectrum of activity with greater emphasis on preventive action. This study aims to investigate some of the anti microbial properties of this plant. The antimicrobial activity of this plant has been checked against microorganisms like Pseudomanas aeruginosa NICM 2036, Salmonella typhirium NICM 2501, Staphylococcus aureus NICM 5021. The findings show that the extracts from the leaves of this plant can be used as prophylactic agent in many of the diseases.

***Keywords:*** Catharanthus, leaf extracts, periwinkle, prophylaxis, Pseudomonas."

## A Sustainable approach for remediation of heavy metal wastewater using immobilized *Anabaena sp.*

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### ABSTRACT

Industrialization resulted in the discharge of various toxic heavy metals into water bodies, which poses serious health hazards to humans and animals. Bioremediation is a sustainable approach to environmental pollution management as a result of its cost-effectiveness, eco-friendliness, and feasibility of the application without the use of any sophisticated machinery. Algae play a pivotal role in removing heavy metals from wastewater through their inherent mechanisms of bioaccumulation and biosorption. Biosorption is the process of removal of any chemical molecules by the treatment of biological material. In the present study, Immobilized *Anabaena sp.* was used as a biosorbent for the removal of the heavy metal, Total Chromium (Cr) from electroplating effluent. Experiments were conducted to study the influence of pH value on the biosorption capacity of calcium alginate entrapped *Anabaena sp.* The maximum achieved removals were recorded at 62.2% for total Chromium at pH 7 after 1 hour of exposure. The treated algal beads showed a significant color change, indicating Carotenogenesis. The carotenoid content in the metal-treated immobilized *Anabaena sp.* is yet to be estimated. The carotenoid pigment having various industrial applications serves as a biological indicator for metal toxicity. The immobilized *Anabaena sp.* provides an economic and excellent tool for the remediation of industrial effluents and can be harvested for repurposing them in industries. The treated compatible wastewater can also be used for any purpose such as irrigation of agricultural non-edible crops. The algae having a high growth rate will help maintain environmental sustainability by controlling the accumulation of heavy metals in water thereby protecting our ecosystem and preserving natural resources for future generations.

***Keywords:*** Strategy and Innovation in life science for Sustainable Development

## Bioactive Phytochemicals from Pomegranate Peel and its Potential Antimicrobial Activity

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### ABSTRACT

The therapeutic value of plants has been known since the onset of civilization. Bioactive compounds present in different plant parts are capable of modulating metabolic processes such as antimicrobial activity, antioxidant effect, anti-inflammatory effect. The pomegranate is an ancient, mystical, unique fruit, scientifically known as *Punica granatum* L. belongs to family Punicaceae (old Lythraceae). It is a deciduous shrub widely grown in tropical and subtropical countries. The fruit peel comprises of about 50% of the fruit weight which is an agronomic waste but also an important source of several bioactive compounds like phenolics and flavonoids.

Antimicrobial compounds check the growth of several disease-causing microorganisms. To combat antibiotic resistance, antimicrobial properties of traditional plant-based medicines is being revisited. Studies show that pomegranate peel possess abundance of phenolics and flavonoids particularly anthocyanins which are known to have diverse biological functions including effectiveness against pathogenic microorganisms. Based on these facts the objective of this study was taken up to evaluate the potential antimicrobial activity of pomegranate peel and its phytoconstituents.

**Keywords:** *Pomegranate peel, phenolics, flavonoids, antimicrobial activity*

## Phytochemical analysis of volatile components from the leaves and flowers of Torch Ginger and evaluating its activity as a potential pest repellent

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### ABSTRACT

Torch ginger, is an aromatic plant belonging to the family Zingiberaceae. Traditionally, species of Torch Ginger are used as condiment, flavouring agent in dishes, as a vegetable, as carminative, in treating ear ache, sore throat, jaundice, cleansing wound and in rheumatism etc. The plant is known to show antioxidant activity and mosquito repellence. Post-harvest loss of grains due to factors such as pest infestation and unscientific storage account for almost 10% of total food grains. Pest infestation causes a reduction in quality and quantity of the food grains. The present study aims at estimating the phytochemicals present in the essential oil of torch ginger quantitatively and qualitatively and studying its effectiveness as a pest repellent. The results of our study shows that torch ginger essential oil is a storehouse of many phytochemicals and also exhibit excellent pest repellent property.

## Efficacy of Polypeptide-p in Diabetic Mice

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### ABSTRACT

Diabetes is a metabolic hyperglycemic condition. It may lead to the neuropathic change in a patient. Damage to any neurological part/organ during diabetes refereedas diabetic neuropathy. People suffering from diabetes can develop nerve damages over a time period. The present investigation categorizedhealthy male mice of 6-8 weeks old into five groups: group I (Control), group II (Diabetic), group III (Diabetic with Metformin treatment), group IV (Polypeptide-P) andgroup V (Diabetic with Polypeptide-P administration). After exposure mice were sacrificed and brains of all the mice were immediately removed and homogenized in buffer.Polypeptide-p increased the activities of endogenous antioxidants GST,SOD and GpXbut decreased the level of GSH and CAT in diabetic mice. It declined the level of oxidative stress markers (TBARS and PCC) both when administered to diabetic mice in compared to diabetic mice.Diabetes leads to neuropathic changes. The antihyperglycemic compound polypeptide-p showed some extent of preventive measurement over diabetic neuropathy due to the production of endogenous antioxidants and decrease in the level of oxidative stress in mice.Data revealed a measure to overcome diabetes and associated problems. Polypeptide-p can serve as potent antihyperglycemic protein that indicates significant control in the incidences of diabetes in near future.

***Keywords:*** Diabetes, neuropathy, polypeptide-p, preventive

## Potential of bacterial cellulases to suppress phytopathogenic fungi: an attempt to study its potential as a Biocontrol agent.

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### ABSTRACT

Cellulose is a linear polysaccharide of glucose residues with β-1, 4-glycosidic linkages. Cellulolysis is the biological process of degradation of cellulose by the enzymes of cellulose system. Cellulase enzyme system comprises three classes of soluble extracellular enzymes: 1, 4-β-endoglucanase, 1, 4-β-exoglucanase, and β-glucosidase (β-D-glucoside glucohydrolase or cellobiase). Due to its massive applicability, enzyme cellulase can be used in production of biofuels like bioethanol, plant waste management and in agriculture. Bacteria which have a high growth rate compared to other microorganism have good potential to be used in cellulase production. Several biocontrol bacteria secrete lytic enzymes such as chitinases, proteases and cellulases, among others, which have the ability to lyse cell walls, mainly from pathogenic fungi. It has been reported that the production of bacterial cellulases in synergy with antibiotic production by other bacteria can suppress diseases caused by pathogenic fungi. The use of Plant Growth-Promoting Rhizobacteria (PGPRs) in agriculture appears to be the key for reducing chemical fertilization treatments, increasing plant development and also, controlling potential plant pathogens, protecting plants from diseases. PGPRs present several mechanisms that directly benefit plants, such as nitrogen fixation, phosphate solubilization, siderophores production and plant mimic hormones biosynthesis; and also, indirect mechanisms, decreasing the potential effects of pathogens by antibiotic production, competition with

pathogens or lytic enzymes production. Bacteria presenting these kinds of indirect PGPR mechanisms are considered biocontrol agents. Therefore, cellulose-degrading bacteria from soil produce cellulases, which might play a role in plant colonization, increasing the competitiveness to reach inner plant niches. An endophytic PGPR with biocontrolling features can produce cell wall-degrading enzymes such as cellulases and pectinases, which increased the internal colonization of roots. Colonizing niches inside root might help bacteria to perform their beneficial effects directly in contact with plants.

***Keywords:*** Cellulase, Phytopathogenic Fungi, Biocontrol Agent

## Effect of different concentration of Osmium sanctum (Tulsi) leaves extract on larval weight of Bombyx mori L

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### ABSTRACT

Ocimum sanctum is commonly known as Tulsi and also called Queen of Herbs with tremendous medicinal potential that is used in Ayurveda to prevent and treat a variety of illnesses. The Bombyx mori larval weight is influenced by dietary nutritional control. The effect of O. sanctum on the post-cocoon characteristics and larval weight of B. mori was investigated in this study. A favourable response was seen in terms of larval weight and post-cocoon characteristics when silkworms were fed mulberry leaves treated with aqueous leaf extract of O. sanctum in the second instar. The highest larval weights were observed at 10% concentration at the beginning of the 5th instar (12.002g/10worms), in the middle (22.13g/10worms), and at the time of mounting (31.904g/10), with the highest weights in the third instar (1.541g/10worms) and fourth instar (5.634g/10worms) and the fifth instar (31.904g/10worms) respectively. The post cocoon characters increased with increase in O.sanctum leaf extract concentrations. Further results showed that total weight 100 cocoons (134.88 Â±0.89gm), average cocoon weight (1.771Â±0.48gm), average shell weight (0.263Â±0.13gm), average silk ratio (16.2Â±0.58) and average filament (840Â±2.2 m) was noticed at 10% O.sanctum leaf extract concentration. The possible significance of these results are being discussed. The overall performance of B. mori in response to the treatment showed an improvement in larval weight and post cocoon character.

## Evaluation of Arsenic stress on the Germination, Growth and Biochemical constituents of a Resistant Variety of Cowpea - *Vigna unguiculata* (L.) Walp. variety KBC-9

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### ABSTRACT

Arsenic (As) is a toxic metalloid ubiquitous in nature. Arsenic resembles phosphorus due to the competitive binding nature of As to phosphate transporters. Hence exposure of plants to arsenic can result in various morphological, physiological and biochemical variation. Plants reportedly represent the initial path for arsenic to enters the food web. Cowpea (*Vigna unguiculata*) is a leguminous plant cultivated widely for its usage as forage, green manure and

good grain for humans and animal feed. Seeds are rich in proteins (15-39%) with essential amino acids. Cowpea (*Vigna unguiculata*), variety KBC-9 is highly resistant against the pod borer, dry root rot and collar rot, moderately resistant to YMV and suitable for in-situ green manure/fodder after harvest. The yield is also comparatively high. The effect of Arsenic on germination, growth and biochemicals of the cowpea plants was investigated in the present study. The seeds ware treated with 30mg, 60mg and 90mg As/ kg of soil for inducing Arsenic stress and grown in root trailers. It was observed that there was a decrease in percentage of germination and height of the plants as the concentration of arsenic was increased when compared with the control. The other biochemical parameters were also evaluated at different concentrations of Arsenic.

## "Production, Characterization and Analysis of Melanin from Submerged Culture of Lentinula edodes (Berkley) Pegler

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### ABSTRACT

In the present study, Lentinula edodes was grown in different media to see the maximum growth of mycelium. Among the media screened, PDA media was found to better suited for the growth of mycelium. Further, some additives were used in the PDA media to enhance the production of melanin content. It was observed that 1% Olive oil, 1% methanol and 0.5% peanut oil as an additive aided the enhancement in the melanin. The isolated compound was confirmed by physico-chemical characterization, Scanning electron microscopy and UV spectroscopy studies. To check the stability, melanin was exposed to various parameters and was found to be stable for light, temperature. When the melanin was exposed to various pH conditions it was observed there was gradual increase in the production of melanin from pH 4 to pH 12. It was also observed that melanin has potential antibacterial activity and strong antioxidant potential observed in the evaluation of its DPPH radical scavenging activities. The results suggest that the submerged culture of Lentinula edodes in PDA media with additives like olive oil, methanol are effective in the production of melanin can be used produce melanin in large quantity which is used in various industries.

## Effect Of Variety Of Sawdust Substrates On The Growth And Yield Of Oyster Mushroom In Gopalganj (bihar)

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### ABSTRACT

The cultivation of oyster mushroom is gradually increasing world wide including India as it has both technical and nontechnical manpower besides having sufficient and varieties of substrates. In Bihar, specially in Gopalganj, this species used to be grown all over the District. For investigation purpose, various kind of sawdust substrates such as Acacia nilotica (Kikar tree T2), Magnifera indica (Mango T3), Bombax ceiba (Semal Tree T4) and Mixture of all three

trees sawdust ( T1), supplemented with 25% wheat bran and lime as basal substrate was to be taken. Analysis was done for the impact of different sawdust substrates on the growth and yield of oyster mushroom. In Kikar, the maximum linear mycelial growth was being observed after 7th, 14th , 21st days respectively. Phases of spawn running (in days) using the sawdust of different woods for oyster mushroom was also analysed. Here, the linear mycellial growth was observed maximum in kikar sawdust in very short span of time. The most significant and the effective substrate was the sawdust of Kikar which was followed by the other substrates on the basis of the data regarding 20%, 40%, 60%, 80% and 100% of spawn running of oyster mushroom. The total yield of oyster mushroom on sawdust of different wood was recorded more in 1st flush and then in 2nd flush. In 3rd flush, the total yield was very less. Further, on Kikar sawdust (T2), maximum production was obtained (288.45gm) followed by Mango sawdust(T3), (268.83gm); Mixed sawdust( T1), (230.58gm) and Semal sawdust( T4) (213.71gm). It was observed that the maximum biological effeciency of oyster mushroom production was of Kikar sawdust (T2) followed by Mango sawdust (T3), Mixed sawdust (T1) and semal sawdust (T4). Finally, it was 2 proved that Kikar sawdust was best among all the given sawdust for the effective growth and yield of oyster mushroom.

***Keywords :*** Oyster, sawdust, biological efficiency, total yield, agricultural waste, treatment.

# शहरीकरण का ऐतिहासिक परिचय

द्वारा

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## सार

प्रस्तुत विषय शहरीकरण का ऐतिहासिक परिचय कराना है। अध्ययन का उद्देश्य विशेष रूप से क्षेत्र का विस्तार एवं ग्रामीण क्षेत्रों में बढ़ते शहरीकरण व्यवस्था को देखना है। परिकल्पना इतिहास से लेकर अब तक शहरीकरण का विस्तार होता चला आ रहा है। शहरीकरण को विकास के उप–समूह के रूप में माना जाता है। यही कारण है कि ऐतिहासिक एवं वैज्ञानिक दृष्टिकोण से भी नए शहरों का निर्माण तेजी से बढ़ा है। प्राचीन समय में जो शहर नदी के किनारे स्थित होते थे। आज शहरीकरण की अवस्था को देखते हुए यह विभिन्न क्षेत्रवाद होता जा रहा है। इस प्रकार शहरीकरण को ग्रामीण समाज से शहरी समाज में परिवर्तन के रूप में देखा जा सकता है, इस प्रकार प्राचीन इतिहास से लेकर अब तक शहरी क्षेत्रों में लोगों की संख्या में वृद्धि के रूप में प्रस्तुत किया जाता रहा है। वही सामाजिक–आर्थिक और राजनीतिक विकास के परिणामों को ही शहरी एकाग्रता और बड़े शहरों की वृद्धि, भूमि उपयोग में परिवर्तन और ग्रामीण से महानगरीय संगठन और शासन के स्वरूप में परिवर्तन का कारण बनता है। ज्ञात हो कि शहरी जनसंख्या शीघ्रता 2018–20 में 4,29,000000 है। अतः प्राप्त परिणाम देखा गया है कि पूरे विश्व की लगभग 55.00% जनसंख्या शहरी क्षेत्रों में रहती है। परिणाम स्वरूप प्राचीन क्षेत्रवाद जहां केवल 7.00% शहरी थे; आज बढ़कर 45.00% हो गये है। प्राप्त परिणाम उपकल्पना को सार्थकता को दर्शाती है। इस लिए इसके विस्तार के अतिरिक्त यह भी ध्यान देने की आवश्यकता है कि अर्थव्यवस्था परस्पर चलती रहे।

**मूल शब्द–** महानगरीय व्यवस्था, शहरीकरण, विकास सामाजिक आर्थिक स्थिति, एवं क्षेत्रवाद।

## Spectroscopic Analysis Through the lenses: telhara archeological site.

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### ABSTRACT

History and Archaeology are the two sides of coin which helps in study past. Archaeology is the scientific study of the human past through material remains same. Bihar and its cultural importance are as old as civilization itself. Bihar is a one of the oldest and a hub of the richest diverse ethnicity. The epics Ramayana, Mahabharata, Buddhism, Sikhism and Jainism all have vital role in building the rich culture of Bihar. Our purpose of research to get the spectroscopic, comparable analysis among the Bihar's different heritage sites and the Telhara University (known as new unearthed heritage site). The symmetrical data will allow to get information of detailed or deep past of the site, which may be related to one another.

***Keywords:*** XRF, Cultural Heritage, Archaeological, Archaeometry

## Effects of Automobile Emission on Morphology and Anatomy of The Mangifera Indica L. Fruit Tree at District Samastipur Bihar, India.

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### ABSTRACT

Motor vehicles have long been linked to air pollution when they are driven, fueled, manufactured, and even disposed of. Vehicle exhaust emission containing a lots of toxic gases like carbon monoxide, hydrocarbons, nitrogen oxides, volatile organic compounds (VOCs), and particulate matter. Poisonous gases having harmful effects on plant health. Due to severe air pollution conditions, the fertility of plants decreases. Air pollution due to vehicle exhaust causes anatomical and morphological variations in the growth of Mangifera indica L. tree. The aim of this study was to assess the injurious effect of vehicular air pollution on morphology and anatomy of the mangifera indica L. fruit tree at district Samastipur Bihar, India. Experiment was based on comparative study. For this, polluted and non-polluted sites were chosen and study was done. Results indicated that automobile air pollution was hindered in the healthy growth of Mangifera indica L.

***Keywords:*** Automobile pollution, Anatomy, Mangifera indica L., Morphology, statistical analysis.

# Digital Currency - Issues and challenges in India

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## ABSTRACT

"Digital currencies are new electronic assets which are managed, stored or exchanged over the internet. They are commonly referred as digital money, electronic money, electronic currency, or cyber cash and exhibit characteristics similar to traditional currencies, but do not have a classical physical attributes of historically existent currencies. Digital Currencies promotes faster transactions through codes over the internet, without any intermediaries and as such it lowers the cost associated with printing, distributing and circulating notes and coins in the economy.

Global acceptance of electronic modes of transactions is facilitating the trend of Digital Currencies and various countries have even started adopting the same in their economy affairs, thus reducing their dependency on cash.

India too has made impressive progress towards innovation in Digital Currency for which the Reserve Bank of India has taken revolutionary measures in adopting the technology into our banking system. Indian Government has also enacted a separate law for Payment and Settlement Systems which has enabled an orderly development of the payment eco-system in the country. The present state-of-the-art payment systems are affordable, accessible, convenient, efficient, safe, secure and available 24 X 7 and 365 days a year, which has become a matter of pride and honour for India.

In the present research paper firstly, the researcher will deal with the concept and technology of Digital Currency and how exactly it is different from physical currencies. Secondly, the researcher will deal with the advantages and disadvantages of adopting Digital Currencies. Thirdly, the researcher will analyse the stand of India in adopting Digital Currency in its economy. Fourthly, the researcher will deal with measures adopted by India in securing its ends and lastly, the researchers will conclude with suggestions that how Digital Currency is the new big thing."

## Synthesis of Bioplastics with agriculture wastes to minimize white pollutions of lithosphere and aquatic system: A review

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### ABSTRACT

Plastics play a vital role in both industries and household appliances but have a negative impact on environment as even after hundreds of years it does not get completely degraded but turns into microplastics. Microplastics causes white pollution which refers to littering of disposable plastic articles like plastic bottles, bags, silverware into the environment which affect the health of animals and degrade the quality of environment. Bio plastics are not just environment friendly but also economically sustainable for a country.

Biodegradable plastics can solve the issue of accumulation of microplastics as they are degraded efficiently by natural microorganisms. Thus, the development of biodegradable plastics for both commercial and industrial applications is essential today. Bioplastics or biodegradable plastics are made from biomers such as starch, chitosan and protein extracted from renewable biomass. The objective of this review paper is to review the sources for the synthesis of bioplastics from agricultural wastes such as corn starch, rice extract and algae. It also includes study of their properties such as biodegradability, hydrophilicity and sealing properties of bio plastics for their packaging applications.

***Keywords:*** Biomers, Microplastics, White pollution, Biodegradability, Hydrophillicity, Biomass.

## Microbial Community Structures of the Freshwater Ecosystem Impacted by Mercury Pollution

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### ABSTRACT

Heavy metal pollution in the freshwater ecosystem has become a serious global issue impacting ecological, environmental, and human health. Over decades, many freshwater rivers worldwide are polluted with several toxic heavy metals, including mercury (Hg), due to intensive anthropogenic activities and natural sources. The combustion of coal in power plants to generate electricity and several other mercury sources have led to mercury pollution in many rivers worldwide.

This study aimed to investigate the heavy metal concentration and microbiome structure-function in soil sediments along the gradient of Mazaruni River of Guyana (South America) and Trinity River of Texas (USA). Elemental analysis including the heavy metals, such as Arsenic (As), Iron (Fe) and Gold (Au) was conducted by using Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). Mercury concentration was determined using cold vapor atomic absorption spectroscopy (CVAAS). The analysis of the microbiome consisted of five steps: DNA extraction, PCR amplification of 16S V3-V4 regions, library preparation, DNA sequencing using Illumina MiSeq, and DNA sequence analysis using QIIME2. These site-specific microbiomes were further analyzed for the overabundance of mercury methylating genera and metabolic pathways that may help bioremediate the heavy metal pollution in the corresponding environment.

Result shows that there is a relatively higher concentration of mercury at the gold-mining sites compared to the mercury concentration at non-gold-mining sites in the Mazaruni River, Also, a higher concentration of mercury was found at the downstream sites compared to the concentration of mercury found at upstream sites of the Trinity River. While microbiome analysis demonstrated that there is no significant difference in microbial composition (alpha diversity and beta diversity) between the contaminated and non-contaminated sites, certain groups of mercury methylating bacterial species/genera were present in relatively higher abundance at sites where there is an increased level of mercury. The current study suggests that; besides mercury, several other physicochemical factors of river water and soil sediment might contribute to emerging a synergistic microbiome composition at these sites, while only small microbial differences lead to affect heavy metals, including mercury metabolism. Future studies of these bacterial strains along with the augmented specific pathways can be better utilized for bioremediatory processes to help reduce heavy metal toxicity from the environment.

***Keywords:*** Mercury (Hg), Methylmercury (MeHg), Microbiome, Soil sediment, Trinity River and Mazaruni Rover.

## Aggregation of Reduced Hen egg-white Lysozyme and its Autofluorescence Characteristics while oligomerization

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### ABSTRACT

The protein misfolding assisted protein aggregation leads to neurodegenerative (Alzheimer's, Parkinson's etc.) and non-neurodegenerative (Type II diabetes, Hepatic amyloidosis etc.) disease. Recently, the nanosized amyloid ordered structures and oligomers have been observed as a material for future application in nanotechnology and nanomedicines. Hence, we studied the oligomerization of reduced Hen Egg White Lysozyme (HEWL) in pH 7. 2 and 57 C, pH 7.2 and at room temperature. At 57 C the aggregation started slowly, and it further aggregates as nanoaggregates as well as ordered like structures of reduced HEWL in the absence and presence of the anionic surfactant (SDS). The oligomerization of HEWL demonstrated typical bimodal emission peaks at 378 nm and 450 nm, respectively upon excitation of tryptophan (excitation at 295 nm), different from tryptophan emission peak which occurs at 344 nm. The bimodal emission peaks may be arising due to aggregation induced and it also indicated the presence of heterogeneous species. However, the emission peak found symmetrical in shape in presence of SDS, indicates ordered structures. Morphology of oligomers and ordered HEWL aggregates were studied using atomic force microscopy. Our study reveals that the oligomerization could be a result of - stacking by delocalization of electron cloud of the indole ring, which restricted the molecular rotation and favors release of excitation energy in terms of emission at a longer wavelength.

## *In vitro* and *In vivo* Studies to Evaluate the Wound Healing Property of *Parkia javanica* Chloroform Fraction

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### ABSTRACT

*Parkia javanica* chloroform fraction (PJCF) significantly stimulated healing process in *in vivo* mice model. *In vitro* study result showed significantly induced proliferation and migration of fibroblasts and keratinocytes at optimum dose of 20µg/ml. The increase in phosphorylation of FAK and Akt was detected after treatment of PJCF. The increased expression of NF-κB and cytokines like, IL-1$\beta$, IL-6, IL-8, TGF-$\beta$ was also observed. GC-MS data revealed the presence of compounds, with known wound healing properties. The results convincingly showed the wound healing property of PJCF and the mechanistic study indicated that, the healing activity at least partly be mediated via FAK/PI3K/Akt/NF-κB pathway.

***Keywords:*** Parkia javanica; Fibroblast, Keratinocyte; Wound healing; Interleukins; Signaling proteins.

## Fresh water fish biodiversity threats and conservation at Indrapuri Dam, Rohtas, Bihar.

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### ABSTRACT

According to the data of 2021-2022 India ranks second as largest fish producing country in the world. In India, Bihar ranks 4$^{th}$ in fish production. Fishes are cheap and have high nutrition specially protein content when it comes to evaluating nutrition. They are also the organisms that balance our water ecosystems. Due to increasing anthropogenic activities and climate change fish diversity is declining at an alarming rate. It is important that we acknowledge its importance and work in this direction to help reduce this loss. This study is one such attempt to evaluate and propose methods of fish diversity conservation.

Indrapuri dam is 4th longest barrage in the world with a length of 1407 m and height 44.94 m. The objective of this study was to evaluate physico-chemical parameters of dam water at present and to compare this data with previous studies to know how anthropogenic activities are affecting water quality and fish biodiversity. We tested 12 parameters and evaluated the kind of environment that exists there and how it has changed in last 10 years. The study was done in two phases, Monsoon and Post Monsoon. We found that diversity in this area increased from species belonging to 5 orders, 12 families and 25 species to 10 orders, 19 families and 37 species. We are expecting to find more as we progress. To us it appears that the water body supports life and the diversity has increased in last 10 years. Water parameters are still healthy enough to support life and promote fish diversity. Further we will try to figure out which species would like the existing environment and can be introduced here for people welfare.

***Keywords:*** Biodiversity, Indrapuri dam, sustainable development, physicochemical parameters, threats and conservation.

## Comparative study of heavy metal pollutants in the paddy fields of Patna and its bioremediation

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### ABSTRACT

The plant growth promoting rhizobacteria has the ability to accumulate heavy metals inside its cell and synthesize the byproducts, which reduces the heavy metals concentration in soil. Bioremediation using soil rhizobacteria is an attractive way to replace chemical fertilizers, pesticides, and supplements in sustainable agriculture promoting the overall growth and development of plants. The comparative analysis for heavy metal concentration in different soil samples collected from paddy fields of Patna district conducted gave result of wonderful cure through microorganisms in nature.

***Keywords:*** Bioremediation, PGPR, Heavy Metal Pollutants, Paddy Fields.

## Ethnozoological practices of ethnic groups of people living in north district of tripura, north -east india.

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### ABSTRACT

As a part of animal kingdom humans interact with several animal species establishing multiple interaction throughout their shared co-existence. Animals have been used by our ethnic people not only as food but also as medicine to treat several ailments and disorders. Ethnozoology seeks to understand as to how people around the world have perceived and interacted with faunal resources throughout the history. This Ethnozoological study is primarily based on field survey and information recorded by interviewing the traditional healers and the local people of North district of Tripura, North Eastern part of India. A total of 41 health related problems like jaundice, tuberculosis, diabetes, ulcers, asthma, hydrophobia, arthritis, premenstrual pain, kidney stones etc. can be treated which show the effectiveness of the used ethnomedicine. Documentation & evaluation of this remedial knowledge may be helpful to establish new drugs for human health & conservation of faunistic resources in the specific region.

***Keywords:*** Ethnozoology, Ethnic, ethnomedicine

## Study on the growth and development of different stages of Bombyx mori

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### ABSTRACT

Bombyx mori, a lepidopteran insect also known as Mulberry silkworm is a monophagous insect which feeds on Mulberry leaves. Bombyx mori plays a very important role not only in textile industry but also in medical science, pharmaceuticals industries, food supplements, biomaterials, biotechnology and in the field of employment sector by providing jobs to needed one. This also helps into boosting our economical field. Bombyx mori sole food mulberry leaves provide nutrition and minerals for their growth and development to complete the whole life cycle. In the present study the life cycle of mulberry silkworm was observed by feeding them fresh mulberry leaves. The study reveals the whole life span of mulberry silkworm which covers within 45-55 days. The life cycle consists of major four stages of growth and development like eggs, larvae, cocoon, and adult moth at maintained temperature of 20-25°C and controlled humidity of 60-65%. The eggs which was 1st laid was whitish in colour and 300 to 400 in clusters. The incubation period of eggs completes within 10 to 12 days after that larval stage starts which continues for 20 to 25 days. The whole larval development completes with four mounting stages which covers 1st ,2nd, 3rd, 4th, and 5th instar larvae. The 5th instar larval stage followed by cocoon formation which after maturation leads to the young newly formed adult moth. Being a bisexual insect, this insect has male and female two different adult moth which shows some morphological differences with themselves.

***Keywords:*** Bombyx mori, silkworm, lepidoptera, economical sector, cocoon

## A Pragmatic Approach to Sustainable Agricultural Methods for Controlling Mealybugs

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### ABSTRACT

Mealybugs are among the most destructive pests affecting agriculture, causing significant economic losses in crops such as fruits, vegetables, and ornamentals. Traditional methods of controlling mealybugs have relied on synthetic pesticides, which have resulted in adverse effects on the environment and human health. In response, there is a growing demand for sustainable agricultural practices that can provide effective control of mealybugs while minimizing their impact on the environment.

There was a need to investigate a pragmatic approach to sustainable agricultural methods for controlling mealybugs. The study involves the implementation of integrated pest management strategies, which tends to effectively manage mealybug populations by providing an economically feasible and environmentally viable alternative compared to traditional pesticide-based methods.

It will be useful to farmers, policymakers, and other agricultural stakeholders, and will help in the development of sustainable agricultural techniques for the management of mealybugs. It will encourage the adoption of effective and

ecologically friendly sustainable farming techniques, ultimately leading to a more sustainable food production system.

***Keywords:*** sustainable agricultural practices, mealybugs, environmentally viable.

## To investigate surface ultra-structure of gill arches and rakers in some fresh water fishes

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### ABSTRACT

Many different fish species which are the same ancestor are found in different environmental conditions due to ecological barriers or any climatic change. They are adapted the body for survival. Gill arch and rakers in different freshwater fish species have expressed many types of morphological adaptation with relation to feeding habits. In fresh water fish found many types of gills like holbrookii, hemibranch and abhinav, which are covered with epithelium layers. The feeding habits of different freshwater fish species influence the morphological adaptation of their gill arch and rakers. They exhibit taste buds and teeth on the epipharyngeal and hypopharyngeal bones indicate that food processing take place in the pharynx. This study Used scanning electron microscopy to examine the morphological surface ultrastore of the gill arches and rakers in three species (Oreochromis niloticus, Ompok pabda and Clarias batrachus). During study period we found that all gill consist of four paired which were termed lateral (L) to medial (M). Every gills consisting of gill arch which carry gill rakers.We studied scanning electron photograph of Oreochromis niloticus, showing four gill arch (1-4) form lateral to medial. Appeared gill rakers are wide and short with tuberous. In Ompok pabda short, broad-base gill rakers are used to strain the water used to bathe the gills and keep any solid objects from passing over them. Long, cylindrical, and emerging at sharp angles to the arch, Clarias batrachus gill rakers aid in the straining of food and other materials while guarding against harm to the gill filaments.

***Keyword:*** Climatic change, Fresh water fishes, Gill arch and rakers, morphological adaptation

## Impact of Cypermethrin on Heteropneustes Fossilis

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### ABSTRACT

In the present study, Cypermethrin (C22H19Cl2NO3) is one among the synthetic pyrethroids and a major pollutant present in agriculture and domestic runoff water that enter in aquatic environment and have harmful effect on aquatic organisms specially fishes. The study was performed to investigate the toxicity of cypermethrin (25% EC) on fresh water fishes Heteropneustes fossilis. Histopathological changes in erythrocytes and changes in haematological profile were observed in adult Heteropneustes fossilis exposed to cypermethrin respectively to lethal dose (1.0 µg /

L) for 24h and sublethal doses (0.3 and 0.5 µg / L ) for 72h. The two sublethal doses were tested alone as well as with low (50 mg/100g) and high (100 mg/100g) level of dietary ascorbic acid (AA). The results showed that the lethal dose of cypermethrin resulted in complete dissolution of plasma membrane and the cytoplasm thereby exposing the nucleus. Under the sublethal doses of cypermethrin total erythrocyte count (TEC), packed cell volume (PCV), mean cell (corpuscular) volume (MCV), haemoglobin (Hb), mean cell haemoglobin (MCH), mean cell haemoglobin concentration (MCHC) decreased in fish fed diet with no supplement of AA as compared to control. These effects of cypermethrin were counteracted by high level of dietary AA, while low the level of dietary AA level failed to counteract the effects of cypermethrin. It is concluded from this study that dietary supplement of ascorbic acid @ 100mg/100g is capable to prevent adverse effects of cypermethrin on haematological parameters of H. fossilis.

***Key words:*** Cypermethrin, Fish, Haemoglobin, Heteropneustes fossilis

## Ameliorative effect of Ganoderma lucidum on Sodium arsenite induced toxicity in Charles Foster rats

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### ABSTRACT

An estimated 70 million population are exposed to arsenic poisoning in India in the recent times. Arsenic contamination of groundwater has caused significant health hazards to the exposed population. In Bihar, the first district was Bhojpur, where arsenic-related health conditions were reported in 2002. At the moment, there are 18 districts that are reported with arsenic poisoning in groundwater. The exposed population is primarily affected by different symptoms such as skin manifestations, anemia, loss of appetite, constipation, neural disorders, cardiovascular disorders, hormonal disorders, etc. Long-term exposure causes various other serious illnesses such as cancer in exposed subjects in recent years. Therefore, this study aims to develop the antidote for arsenic-induced toxicity in Charles Foster rats.

The study was carried out on Charles Foster Rats after the approval from Institutional Animal Ethics Committee. A total of n=18, rats (12 weeks old) of an average weight of 160 ± 20 g were used for the study. The study group included n=6 control and n= 12 treated with sodium arsenite orally at the dose of 8mg/Kg b.w daily for 90 days. The n= 6 animals were dissected and rest n=6 was administered orally with Ganoderma lucidum (Reishi mushroom) ethanolic extract at the dose of 80mg/Kg b.w per day for 60 days. All the animals were sacrificed after the completion of their respective doses and their blood samples were taken for haematological and biochemical evaluation while the vital tissues such as liver and kidney for the histopathological study.

The study revealed significant fluctuation in the in haematological parameters such as RBC counts, WBC counts, platelets count, heamoglobin percentage after arsenic treatment in comparison to the control group but after the administration of Ganoderma lucidum there was significant normalization in their levels. Moreover, there were significant changes observed in the biochemical levels such as SGPT, SGOT, ALP, bilirubin, urea, uric acid, creatinine, lipid peroxidation in arsenic treated groups in comparison to the control group but there was significant reduction in the levels after the administration of Ganoderma lucidum. Similarly, the histopathological study also revealed high magnitude of degeneration in the hepatocytes and nephrocytes after the treatment of arsenic but after the administration of Ganoderma lucidum there was significant restoration at the cellular level. Hence, the present

study concludes the ethanolic extract of Ganoderma lucidum possesses significant ameliorative properties against arsenic induced toxicity in rats.

***Keywords:*** Arsenic treatment; Ganoderma lucidum; ameliorative effects; Charles Foster Rats.

## Fungal diseases controll by Trichoderma

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### ABSTRACT

Trichoderma is a soil born fungus, which is completely dependent upon soil microbes. It also feeds on nematodes. In other words trichoderma is dependent on soil inhibiting organisms. Whenever, wherever and wheresoever soil inhibiting organisms die off, it is assimilated by soil microbes. After the intermingling of the decaying materials with soil particles, it culminates into very much fertile soil. This corneal layer of earth crust becomes more palatable to plants through the process of salt respiration and absorption with water by the help of root hairs, which are easily absorbable to the some specific plant groups. Frequent researches & observations were recorded step by step. Especially the benefits were taken up by vegetable growing crops. Trichoderma used soil were found very much useful for the plants of following families Solanaceae, Crucifereae(Bracicaceae), Malvaceae, Cucurbitaceae, Chenopadiaceae and Leguminoceae.

**Key words** – *Trichoderma* , vegetable crop, salt respiration.

## Innovation in healthcare, drug discovery and environment

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### ABSTRACT

This abstract will provide a brief overview of innovation in healthcare, drug discovery, and the environment. The three areas have seen significant advancements in recent years due to innovative technologies and approaches.

In healthcare, innovation has led to the development of new treatments and therapies, more accurate diagnostics, and improved patient care. The use of AI and machine learning has facilitated personalized medicine and precision oncology, allowing for more targeted treatments. The emergence of telemedicine has made healthcare more accessible and affordable to people in remote areas. Additionally, the integration of wearables and other health tech devices has made it possible for patients to monitor their health in real-time and be more proactive about their well-being.

In drug discovery, innovation has accelerated the drug development process, reducing the time and cost required to bring new drugs to market. Advances in biotechnology, genomics, and data science have made it possible to identify new drug targets and develop more effective therapies. The use of virtual and in-silico models has made drug discovery more efficient and less reliant on animal testing. In addition, the application of AI and machine learning has

facilitated the development of personalized medicine, allowing for the identification of patients who will benefit most from specific drugs.

In the environment, innovation has focused on developing sustainable solutions to environmental challenges. New technologies have been developed to reduce greenhouse gas emissions, improve energy efficiency, and conserve natural resources. The use of renewable energy sources such as solar and wind has reduced the reliance on fossil fuels. The emergence of circular economies has made it possible to reuse and recycle materials, reducing waste and pollution.

In conclusion, innovation has brought about significant advancements in healthcare, drug discovery, and the environment. These advancements have led to better patient outcomes, more efficient drug development, and a more sustainable world. As technology continues to advance, we can expect even more innovations that will transform these fields and improve the quality of life for people worldwide."

## Ameliorative Effect of Moringa Oleifera on Diabetic Induced Swiss Albino Mice

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### ABSTRACT

Diabetes mellitus (DM) is a metabolic disorder that threatens the life of world populations leading to hyperglycemia which is the major cause of diabetic complications, such as retinopathy, nephropathy, and neuropathy. The main objective of the experiment was to compare fasting blood sugar (FBS) levels in diabetic control and *Moringa* treated group. Twenty-one male swiss albino mice were taken and divided in three groups equally into normal control (NC), diabetic control (DC) and diabetic treated (DT). Alloxan (250mg/kg) was administered intraperitoneally in DC and *Moringa* treated groups for diabetes induction. Blood samples were collected after 72 hours and FBS levels were compared among three groups. Mice whose FBS level above or equal to 200 mg/dl, were considered as confirmed diabetics. After diabetes confirmation, DT was administered orally with aqueous *Moringa* extract (300 mg/kg) for 25 days continuously. Every fifth day fasting blood sugar (mg/dl) was taken with the help of Dr. Morepen Gluco One Glucometer. It was found that there was a significant ($P < 0.05$) reduction in FBS level after administration of dry *Moringa Oleifera* powder solution in experimental group. The recovery of treated mice from diabetes with *Moringa oleifera* may be due to its ameliorative action on the pancreatic beta cell. *Moringa oleifera* is effective in reducing blood sugar level. It is cost effective and improves the overall well-being of the experimental group. These findings may have direct repercussions on human health.

***Keywords:*** Swiss Albino Mice, Diabetes, Alloxan, Moringa oleifera, Fasting Blood Glucose (FBS)

## Ameliorative Effect of Fenugreek on Diabetic-induced Swiss Albino Mice

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### ABSTRACT

Diabetes is a dreadful disease affecting the majority of the population worldwide. Currently, diabetes is prevalent among 463 million people of the world, corresponding to 9.3% of the world's adult population. The study was done to

identify the effectiveness of aqueous *Fenugreek* extract in alloxan induced diabetic Swiss Albino mice. The main objective was to compare fasting blood sugar (FBS) levels in diabetic control and *Fenugreek* treated group. Twenty-one male swiss albino mice were taken and divided in three groups equally, into normal control (NC), diabetic control (DC) and diabetic treated (DT). Alloxan (250mg/kg) was administered intraperitoneally in diabetic control and *Fenugreek* treated groups for diabetes induction. Blood samples were collected after 72 hours and FBS levels were compared among three groups. Mice whose FBS level above or equal to 200 mg/dl, were considered as confirmed diabetic. After diabetes confirmation, DT was administered with aqueous *Fenugreek* extract (2.5g/kg) for 25 days continuously. After that, FBS level was compared on every 5th day till 25 days. FBS level was taken with the help of Dr. Morepen Gluco One Glucometer. It was found that there was significant reduction in FBS level over the study period in DT. It was concluded that *Fenugreek* was effective in reducing blood sugar level, maintaining body weight and speedy wound recovery.

***Keywords:*** Swiss Albino Mice, Diabetes, Alloxan, Fenugreek, Fasting Blood Glucose (FBS)

## Antitoxic effect of medicinal plants against arsenic induced toxicity in charles foster rats

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### ABSTRACT

Recently it has been found that several districts of Bihar lying close to the banks of Ganges river are severely affected by arsenic contamination in drinking water. Drinking arsenic contamination above 10 µgram per Litre causes skin manifestation, gastrointestinal disorders, neurological effects, hormone disruption and infertility. Long-term exposure causes various other serious illness such as cancer. Hence the present study aims to develop a novel drug against arsenic induced liver toxicity and reproductive toxicity in rat model. Two different medicinal plant extract were used as an antidote against arsenic toxicity.

The study was caried on Charles Foster rats after getting approval from institutional animal ethics Committee. A total of n=18 rats (average wt. 130±5 g) were used. The treatment groups received sodium arsenite orally at the dose of 8 mg/kg body wt. daily for 90 days. keeping aside 6 rats as control group rest of the rats were treated with Ocimum sanctum seed extract daily by 500mg/kg body weight through gavage method for 60 days. In the arsenic induced rats the levels of SGPT, SGOT, ALP, Uric, Creatinine, lipid peroxidation was found higher. But after getting administered with of ocimum sanctum ethanolic seed extract there was a considerable restoration in the biochemical and lipid peroxidation levels. Additionally, there was significant reduction in the amount of arsenic in the liver tissues of the rats. This medicinal plant (ocimum sanctum) protects vital organs and tissues against chemical stress and it shows an antidote action against arsenic toxicity.

Similarly, a total n =18 male rats (12 weeks of age with a mean weight of 160± 20 gm) were used to study the reproductive toxicity. The study group consisted of n=6 controls and n=12 administered orally with sodium arsenite at a dose of 8mg/kg body weight / day for 40 days. After inducing arsenic toxicity, the treated rats were administering ethanolic extract of Asparagus racemosus root each for 400 mg/kg body weight per for 40 days. At the end of entire experiment the cauda epididymis of the rat was puncher and sperms were released in a normal saline. After staining the sperm with eosin its morphology, mobility and mortality were assessed. Sperm were counted using Neubauer counting chamber. Blood samples were taken for haematological, biochemical analysis and hormonal determination. Testosterone and luteinizing hormones were determined using ELISA. It was found that the amount of testosterone which was reduced due to arsenic toxication was normalised significantly after administrating the root extract of Asparagus racemosus.

***Keywords:*** Sodium Arsenite, ELISA, Charles Foster rats, lipid peroxidation and testosterone. Neubauer counting chamber

## Preparation, Spectral Characterization and Antimicrobial Evaluation of Some Ln(III)-Crown Ether Complexes

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### ABSTRACT

Crown ethers have many applications in catalysis, organic synthesis, biochemistry, microbiology, and material science. Crown complexes may be synthesized to inhibit cell proliferation, and new systems are being used to kill microbial organisms. Crown ethers have a low coordination power towards lanthanides but they have high selectivity to the best-fit metal ions.1 The present paper describes preparation, characterization and antimicrobial study of some new lanthanide-dicyclohexyl18-crown-6 ether complexes having general formula of [Ln.L.(Pic)3].nH2O, where Ln = Pr3+, L = dc18C6 and Pic- = Picrate anion. The crown ethers in uncoordinated state display (C–O–C) stretching vibration band near 1115±10 cm-1. This (CO–C) vibration band shifted to lower frequency by 15-62 cm-1 in almost all complexes. In the far-IR region new bands are found in the 428-580 cm-1 region, which may be assigned to the (Ln–Ocrown) stretching frequency.2 Small changes were observed in the chemical shift of 1-H as well as 2-H, in dc18C6. After formation of the [Ln.L.(Pic)3].nH2O complex, the proton chemical shift (–CH2–O–) shows significant downfield shifts [ (–CH2–O–)=0.08-0.20 ppm], indicating metal-ligand bond formation. Downfield shifts are due to the conformational change in the macrocyclic skeleton during complexation.3,4 The bonding pattern and structure of complexes were suggested from elemental analysis, molar conductivity, IR, UV-Vis and 1H-NMR spectral analysis. Antibacterial and antifungal activities of the ligand and its complexes were carried out against Staphylococcus aureus, Pseudomonas aeruginosa, Bacillus subtilis, Escherichia coli bacteria and Aspergillus niger, Candida albicans fungi by Kirby Bauer method. 10-15 ml nutrient agar and sabouraud's dextrose agar is used as medium for antibacterial and antifungal activities respectively. The antimicrobial activity was estimated on the basis of size inhibition zone.

***Key Words :*** DC18C6, DNPH, TNPH)

## Synthesis and characterization of Zinc oxide nanoparticles from the aqueous leaf extract of Smilax aspera for waste water treatment

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### ABSTRACT

Biomimetic approach for the Synthesis of nanoparticles are in high demand as compared to other physicochemical methods as the plants are easily available, safe to handle, clean, non-toxic, cost-effective, operated at normal temperature and pressure. The field of nanotechnology offers the potential for the synthesis of nanomaterials for waste water treatment. Water covers almost two-thirds of Earths's surface and lack of Clean water has been a global problem nowadays. In this study, an attempt was made for the synthesis of Zinc oxide nanoparticles (ZnO-Nps) from the aqueous leaf extract of Smilax aspera (S.aspera) and these synthesized nanoparticles were characterized by

the use of various analytical techniques such as Uv-visible spectroscopy, X-ray diffraction technique, Scanning electron microscopy(SEM), transmission electron microscopy (TEM), Fourier transform infrared spectroscopy (FTIR) to investigate the shape, size and morphology of Nps. Metal Nps synthesized using the phytochemicals of S.aspera leaves for waste water treatment by removal of dye using adsorption method to explore more applicability and indicate their promising future in Environmental remediation applications."

## FTIR analysis of fruit peels after acid and base hydrolysis

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### ABSTRACT

"Globally fruit peel waste generated annually comprises of major source of agricultural waste. However,these waste showed magnificent potentiability of re utilisation in several industries owing to rich source of bioactive compounds like carbohydrates (pectin, cellulose,hemicellulose),secondary metabolites like glycosides, alkaloids,lipids, protein etc.

This paper presents a comprehensive study on FTIR analysis of fruit peel waste of apple, banana and orange.FTIR analysis of dried and powdered form of sample is done followed by repeating the process after acid and base hydrolysis.

It is observed that acid hydrolysis of sample followed by FTIR analysis is marked by absence of peak due to c=o ester bond and stretching due to c=c and c=o due to lignin and aromatic ring is considerably reduced.Similarly, FTIR analysis after alkali pre treatment is marked with slight increase in intensity of all bands."

## Synthesis and characterisation of silica nanoparticals from rice husk and study of its drug delivery property using Metformin hydrochloride.

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### ABSTRACT

In this study, silica nanocarriers were synthesized from natural source rice husk for drug delivery application in a cost-effective way. First, the biogenic silica in rice husk was extracted by acid leaching and then converted to sodium silicate as a silica precursor. Silica nanoparticles were then synthesized by titrating it against Phosphoric acid for controlled hydrolysis reaction and particle formation during the sol-gel process.The whole process was carried out on a neutral pH. Also, the silica content was analysed by using AAS with analysis of functional groups in raw rice husk through FT-IR. The effects of natural sources type and precursor addition method on nanocarriers' morphological

and physico-chemical properties were investigated by AAS,XRD, FT-IR, UV. Because silica nanoparticles have variable physical, chemical, biocompatibile properties, it has quickly found applications in medicine, drug delivery, biosensors , protein imaging , batteries, optical fibres, supercapacitors, etc. In most applications, high-purity silica comes from synthetic organic precursors, yet this approach could be costly, polluting and non-biocompatible. In particular, to fight the COVID-19 pandemic, recent research has shown that silica deposited on a mask reduces SARS-Cov-2 infectivity to zero. Drug resistance is continuing to spread quickly, outpacing the discovery of new medicinesfor the treatment of infectious diseases. Currently, drug access difficulties include poor intracellular drug accumulations and drug efflux limit conventional therapy.Targeted delivery employing nanocarriers might offer the quantum jump in intracellular drug transport and retention needed to increase access. One of the most often utilised nanoparticles in drug delivery applications is silica (SiNP).

## Analysis of Water Pollution Using Different Physicochemical Parameters: A Study of Sone River, Ganga River and Ground water of Patna Region.

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### ABSTRACT

Our present investigation deals with the comparison of water qualities from three different sources namely Sone River, Ganga River, and Underground water of Patna region. These water resources are generally used for multiple purposes such as: drinking (residential water supplies), agriculture, Construction of buildings, transportation, and other purposes. Most of the rivers in India are facing water pollution due to the performance of heavy religious activities as well as industrial wastes. In our study it was found that the pH value of Sone River, Ganga River and Underground water is 8.12, 7.75, 7.1 respectively. Water of Sone River is highly alkaline in nature while water of ganga river and underground water of Patna is moderately alkaline. Concentration of Chloride ions in Sone River, Ganga River and Underground water are 17.5, 57, 63.18 ppm respectively. Total hardness of Sone River, Ganga River and Underground water are 86, 160, 346 ppm respectively. Calcium hardness of water is 60, 38, 92 ppm respectively. Magnesium hardness of water is 26, 15.5, 28 ppm respectively. Concentration of sulphate ions in Sone River, Ganga River and Underground water are 24.96, 6, 20 ppm respectively. Concentration of iron ions in Sone River, Ganga River and Underground water are 0.028, 0.01, 0.7 ppm respectively. Water hardness of underground water is high due to presence of high amount of calcium. Chloride concentration is low in Sone water and high in underground water. Herein, we report the physio-chemical analysis of water of Sone River, Ganga River, and Underground water of Patna region.

## India Extraction of keratin protein from chicken feather and its medicinal application

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### ABSTRACT

Chicken feather is the most keratinous biomass worldwide; also a valuable and renewable protein source. In the process of production of chicken poultry meat for human consumption, the discarded feather is a solid waste management problem worldwide. It is quite necessary to develop an effective and profitable process to convert waste into wealth both economically and environmentally. In general, from this waste feather, keratin constitutes to about 91% which could be augmented for further value-added products such as basic nutrient, medical substance and fertilizer. Hence, this present research is carried out to optimize the extraction and characterization of keratin protein from the waste chicken feather. Upto 90% of pure keratin, 70% of Amino acid, valuable elements, vitamins and growth factor could be extracted from chicken feather; that's why it is considered as excellent Protein source and used as components. Keratin extraction using Na2S as a reducing agent was studied by response surface methodology using the Box-Behnken method. This data analysis is applied for the keratin extraction process to study the effect of the most significant factors such as reducing agent concentration, extraction time and mixing ratio. Applying response surface methodology, a maximum yield of keratin reached 75.39% at sodium sulfide concentration of 0.43 M, extraction time of 5.43 h and mixing ratio of 26.65 g/l. Keratin protein product was characterized using Fourier Transform Infrared spectroscopy (FTIR), UV-Visible spectroscopy, scanning electron microscopy (SEM), and X-Ray Diffraction (XRD). The analysis by FTIR confirmed the presence of chemical compositions such as carboxyl acid and amino groups in the protein samples. Concentration of protein obtained using different methods is determined by Biuret test. The surface morphology studied by scanning electron microscopy analysis showed the formation of porosity and aggregate which were expected on the powder of keratin. Structural studies carried out by X-ray diffraction suggest that sodium sulfide stabilized the β-sheet structure of the protein.

***Keywords:*** chicken feather, keratin protein, sodium sulfide, RSM-BBD"

## Studies of complexes of transition metals in various oxidation states with ligands of hydrazine derivatives of “2- Acyl-para-Cumenol”.

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### ABSTRACT

In this present work we have studied the complexes of transition metal with multidentate hydrazine derivatives of Ortho-Acyl Cumenol. In such complexes metals are associated with ligands by oxygen and nitrogen donor atom. Most of these metal hydrazine complexes are square planar and some of them are octahedral. Two ligands in these complexes are associated with central atom and being bidentate, complexes are mainly square planar. In some complexes solvent also associated with central atom and makes the complex octahedral. Generally, Cr+3, V+3, Ti+4 forms octahedral complexes. In case of octahedral complexes, two ligands and solvent such as water, liquid

ammonia, associated with metals and makes the complex octahedral. In this work ligands are prepared by condensation of Ortho-acyl Cumenol with hydrazine and hydrazine derivatives. Complexes are prepared by heating ligands with metal salts in suitable solvents by refluxing upto 150 degree Celsius.The change in colour of metal salt indicates the formation of complexes.Thus, the formed complexes are coloured crystal. Cr+3, V+3 complexes are paramagnetic in nature . It indicates that they are outer orbital complexes and their spectral data indicates that the complex is octahedral. Such complexes are chelates having five or six membered ring and generally stable. But they are kinetically labile. If these complexes are kept in solvent then the previously present solvent ligands are replaced. These complexes are not thermodynamically stable also because heating above 200 degree Celsius, vapour came out and octahedral complexes changes into square planar. All these complexes are coloured and they have faint colour due to d-p mixing. Such octahedral complexes are not centrosymmetric. These are electrolytes. Such complexes are reactive towards substitution reaction in proper solvent. Bonding of ligand with central metal ions is confirmed by IR-Spectra of ligand. The IR-frequency of OH and HNN reduced after complexation. It indicates that the coordinate bond is formed with these groups of ligand.

## Synthesis and Characterization of Triazole derived Schiff base ligand and its metal complex with Cd(II) and Hg(II).

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### ABSTRACT

A heterocyclic Schiff Base ligand, 5-ethyl-4-[(E)-(phenylmethylidene) amino]-4H-1,2,4-triazole-3-thiol, containing triazole moiety was prepared in solid state. Its metal complexes were synthesized with Cd(II), Hg(II) and Pb(II). The ligand and its metal complexes were characterized by micro-analytical techniques and spectral studies. The shift in the peaks of the IR and $^{1}$H-NMR spectra of metal complex indicates that the ligand is bidentate in nature and binding of metal ion is taking place through deprotonated mercapto group and imine-nitrogen atom. The ligand was highly soluble in alcohols and metal complexes were soluble in DMSO.

**Keywords :** Heterocyclic, Triazole, Ligand, Metal Complex, Synthesis.

## Structure and antifungal activity of some metal complexes of 4-amino-6-methyl-5-oxo-3-thioxo-1,2,4 trazine (Amttrh)

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### ABSTRACT

"4-amino-6-methyl-5-oxo-3-thioxo-1,2,4-trazine (Amttrh) has been synthesized by condensing molar proportion of pyruvic acid with thyrocarbohydrazide in aqueous ethanol.

The ligand Amttrh contains amino-nitrogen, thioxo-sulphur and carboxo (CO) oxygen as potent donor sites.

The thiol tautomer of Amttrh has been found to co-ordinate as monoanionic chelating molecule forming bis chelate with bivalent metal ions Co(II), Ni(II), Zn(II), Cd(II) and Hg(II).

The complexes are stable and show negligible electrical conductance value in DMF, supporting their non ionic nature.

The crystal structure of ligand Amttrh has been determined from single crystal structure.

The FTIR and 1-HNMR spectra of ligand are inconsistence with proposed structure of molecule.

The antifungal activity with four phytopathogenic fungi, namely Fusarium oxysporum, Rhizoctonia pataticola (Taub) from green gram , A. Nigar and Alternaria alternata from redish, siliqua were evaluated by cup and disc method. The complexes show prominent antifungal activity"

## Post- Covid Physio-chemical Analysis of Water of Some Localities of Patna District, Bihar, India

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### ABSTRACT

Purity of Drinkable and consumable Water is major challenge in this rapid developing world to achieve sustainable developments. Physio- chemical analysis of water is a quality assessment to ensure public health, especially in post-covid situation. The quality assessment parameters are biological, physical and chemical characterisation of consumable water. Our study is restricted to physical and chemical parameters only.

Physically water quality is determined by various physical properties of water, which are a cause of depletion of water quality, when out of their standard range. These parameters in exceeded range makes water unfit for drinking. Some of these parameters are Temperature, Conductivity, Total dissolved solids (TDS), Salinity, Turbidity. The chemical characteristics are expressed as composition of chemical substance and also appearance of chemical reactions occurring in different conditions in various types of water. The chemical properties are the parameters for determining quality and elemental composition of water. The parameters are pH, Acidity, Alkalinity, Carbon dioxide (CO2), Dissolved oxygen (DO), Hardness, Calcium, Magnesium, Sodium, Potassium, Chloride, Iron. There are few other parameters which are present in the form of heavy elements which include Arsenic, Fluorides etc. These are toxic even at very low concentrations. Their concentration increases in water due to addition of industrial wastes and water. However, they are usually present in trace amounts in natural water. The localities considered for experimentation are BAILEY ROAD, BORING ROAD, KANKARBAGH AND PATNA CITY of Patna district.

All the water samples are almost within the purity range for all the parameters. Turbidity of all the samples was low nearly equal to zero or one. CO2 has been absent in all the samples. Alkalinity has been found to be zero for all the samples. Methyl orange acidity has also been found absent in all the samples. Iron has been found to be considerably high, particularly, in PATNA CITY sample. Sodium and potassium showed a constant value for all the samples. Fluoride content has also been in permissible limits and constant in all the samples. Arsenic was within the prescribed permissible limits by WHO but still toxic. All samples of Patna district have been found in permissible limits of drinking suggested by WHO but it contains arsenic, which is toxic in least amount also. "

## A Study of Various Apps for Online Teaching and Learning

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### ABSTRACT

With the progress of technology, the conventional methods used for providing education are not sufficient to meet the needs of students especially during and post Covid-19 pandemic. Various videoconferencing apps are used nowadays which provides an improved method for communication and integration among the students. These apps are used in almost all the fields as they provide a lot of benefits including lower travel cost, improved and reliable communication and so on. The use of these apps is not limited to only communication but also these apps help in sharing files, recording meetings which provide a great help to the students in learning. The COVID-19 pandemic has increased the utility of these apps for establishing connection and providing quality education during and post lockdown. In this paper, three conferencing apps -Zoom, Google meet and Microsoft teams have been compared on the basis of different parameters.

## Metal and halogen free-approach for the synthesis of Thioesters

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### ABSTRACT

An unprecedented metal-, halogen- and solvent-free, methanesulfonic anhydride(MSAA) promoted novel strategy for dehydrative nucleophilic substitution reaction of feedstock acids with thiols has been developed for the synthesis of thioesters.1 This reaction systematically unravels the feasibility and practicality of thioester formation in a step- and atom-economical fashion. Both aryl and alkyl thiols couple suitably with a variety of acids, affording the corresponding thioesters, which are important building blocks for organic synthesis,2 and they have been utilized in acyl transfer reactions as the intermediates. Thioesters also play an important role in biology.3 The reaction avoids the use of expensive and hazardous coupling reagents, bases and generates water as the only by-product, thus making this chemical synthetic process more viable, environment-friendly and contributing towards sustainable chemistry. The successful implementation of this C–S bond-forming strategy relies on the in situ generation of mixed anhydride intermediate from carboxylic acid and cheap and easily handled MSAA.

## The Phytochemical Screening of different extracts of an indigenous mushroom

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### ABSTRACT

Micro organism resistance to synthetic antibiotics is an increasing public health challenge, therefore, researchers are in strong interest to develop new antimicrobial agents from biological sources. It is well studied that mushroom are being used since ancient time as a means of food and medicine.

## Innovation in Pharmaceutical Reasearch

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### ABSTRACT

Open Innovation, as defined by Chesbrough and Bogers (2014) , is a distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuinary and non pecuinary mechanism in line with the organization's business model. The innovation derived from external sources can include ideas, technologies, research and development. Open innovation in medical and pharmaceutical research has grown steadily over the last decade. The scientific literature of open innovation was examined by means of biblometric analyses to identify the most profilic authors, organizations.

## Synthesis and Characterization of di (Gamma picoline) bisbiguanidinium sulphate, hydroxide and its metal complex with Cobalt (III)

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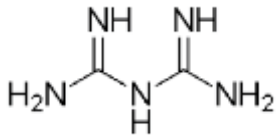
### ABSTRACT

Biguanide is an organic compound that exists in a solid, colourless form, with the chemical molecular formula HN(C(NH)NH2)2. When it is dissolved in water, it creates a solution that is highly alkaline. Over time, this solution undergoes hydrolysis and breaks down into guanidine and ammonia. Biguanide belongs to the group of guanidines and is recognized for its medicinal value to treat Type 2 diabetes.



Di(Gamma picoline) bisbiguanidinium co(III) sulphate, hydroxide and other complex with different anions have been prepared. It is a mixed biguanide (ligand) metal complex which have been prepared using aeration method. The metal salt with which complex is prepared is Cobalt (II) sulphate. The method used for characterization of complex is elemental analysis and spectral analysis i.e. UV and IR. Di(Gamma picoline) bisbiguanidinium sulphate and hydroxide is in octahedral geometry and soluble in hot water and alcohol. Future characterization method used will be Biological and XRD.

***Keywords:*** Biguanide, Gamma picoline, Diabetes, XRD, Octahedral.

## The antimicrobial potency of different extract of wheat grass (Triticum aestivum)

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### ABSTRACT

Interest in plant products is growing constantly in the pursuit of novel therapeutics and therapies for the treatment of disease. Microbial resistance makes finding new antibiotic alternatives an essential topic of research. Wheatgrass is one example of a plant product that is being studied pharmacologically (Triticum aestivum L). Wheat grass, one of the members of Poaceae family, has been considered for very efficient therapeutic drugs. It contains numerous nutrients, vitamins, minerals, iron, zinc, sodium, aluminium, calcium, magnesium, amino acids, and a significant amount of chlorophyll. These bioactive substances contribute to enhanced blood sugar control, increased haemoglobin production, and the removal of toxins from the body. There are many bioactive phytochemicals that have therapeutic potential, such as anti-thlassemia, anti-cancer, anti-ulcer, antioxidant, anti-arthritic, and anti-inflammatory properties. Wheat grass is also effective in treating a number of common health issues, including circulatory, skin, and dental issues. Current study was aimed at evaluation of antimicrobial properties of wheat grass extracts of different solvents (chloroform, methanol, and water extract) at various concentration. The extracts were assayed for antimicrobial activity using diffusion test and calculating zone of inhibition for each drug. All these extracts showed antibacterial activity against different microorganisms but Methanolic extracts have shown the maximum antimicrobial activity against Escherichia coli and Pseudomonas aeruginosa. Keywords: Wheat grass, E coli, anti-bacterial activity.

***Keywords:*** Wheat grass, E coli, anti-bacterial activity."

## Significance of water in life, and causes and consequences of heavy metal pollution.

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### ABSTRACT

Water is the basis of life on the earth and a vital element for survival of human being. The total earth area is about 510 × 106 km², and of this 361×106 km² area covered with water. Ocean contains 97%, ice-caps and permanent glaciers 2.1% and fresh water is only 0.9%. In past few decades there is tremendous increase in human population, leading to disposal of huge amount of unwanted substances into surface water bodies directly or indirectly, and resulting in deterioration of water quality. Water pollution is an undesirable change in the physiochemical or biological characteristics of our Environment (water) that may or will harmfully affect human life or that of other desirable species, our industrial processes, living conditions and cultural assets, or that may or will waste or deteriorate our raw material resources. Major causes of water pollution are- Industrialization, Population explosion, Developmental activities, Urbanization, Direct discharge of sewage, Surface run-off.

Majority of heavy metals are very toxic and lead to nuisance in aquatic environment and adversely affecting human health. Various scientific agencies like CPCB, BIS, ISI, WHI have given standard value with regards to different heavy

metals for drinking/ potable water. Lead is a toxic heavy metal that tends to accumulate in the tissues of man and other animals. Lead and its compounds may enter and contaminate the environment during mining, smelting and processing. Lead exists in nature mainly as lead sulphide (galena). Other common natural forms are lead carbonate, lead sulphate and lead chlorophosphate. Lead enters the aquatic environment through precipitation, lead dust fallout, erosion and leaching of soil, municipal and industrial waste discharge. The potable water should have value up to 50 $ugL^{-1}$.

Biologically, cadmium is non essential, non beneficial element recognized to be high toxic potential. Concomitantly, there have been incidences of acute cases of clinically identifiable "Cadmiosis". Cadmium causes testicular tumors, renal dysfunction, chronic diseases of old age and cancer. Cadmium occurs in nature chiefly as a sulphide salt, frequently in association with zinc and lead ores. The potable water should have value up to 10 $ugL^{-1}$.

Chromium is the most abundant non-gaseous element in the earth crust. The biological activity of chromium is restricted to its trivalent state, $Cr^{3+}$. The hexavalent chromium is highly toxic. The potable water should have vale up to 50 $ugL^{-1}$.

The sources of arsenic in the environment include agrochemicals, wood preservatives, industrial sources, mineral processing, acid mine drainage, burning of fossil fuels. Arsenic in drinking water is absorbed through the intestine into the bloodstream through which it reaches the various organs and may cause arsenic poisoning `Arsenicosis`, and resulting into multiple organ failure. The guideline value or maximum contaminant level (MCL) for arsenic in drinking water is 10 ppb (according to WHO) followed by most of the developed countries. In developing countries including India and Bangladesh, 50 ppb is considered as the accepted level for arsenic in drinking water.

Thus, there is an ample scope for standardization of water treatment plant to remove heavy metals to provide safe drinking water to every citizen of nation.

**Key Words:** Drinking water, Heavy metals, Water pollution, Water quality standards

## Kinetic study of mixed aqueous solvent on alkali catalysed hydrolysis of heterocyclic acid ester

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### ABSTRACT

Kinetic study of alkali catalysed hydrolysis of Methyl Picolinate has been done in two different aquo-organic solvent, DMSO and Ethylene Glycol, at 200C, 250C, 300C and 350C by conductometric process.

Conductance has been observed & recorded at regular interval of time using conductivity meter. Then graph of conductivity vs. time has been plotted which gives the value of slope.

The hydrolysis of ester in alkaline medium follows 2nd order reaction.

$$C7H7NO2 \rightarrow C6H4NO2Na + CH3OH$$

$$\text{Rate } -d/dt\,[C7H7NO2] = k\,[C7H7NO2]\,[OH]$$

Thus specific rate constant can be calculate using equation

$$K = \frac{slope\ x\ 2.303}{(C - C\infty)}$$

Where,

C = Conductivity at time t

C∞ = Conductivity at infinite time

Putting the value of slope obtained from the graph the value of rate constant k has been calculated.

The process has been repeated at different concentration of DMSO and Ethylene glycol (10%, 20%, 30%, 40%, 50% and 60%) and then rate has been compared.

This comparison shows us, at what concentration, temperature and with which solvent it will work effectively. This information will be pharmaceutically important.

## In-vitroAntifungal evaluation of Polystichum discretumon Aspergillus terreus

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### ABSTRACT

Fungi are mostly opportunistic pathogens that can only enter the body if its natural defences are drastically depleted. The infections caused by these pathogens are called fungal infections which can be either topical or systemic. Most common fungal diseases are athlete's foot, jock itch, ringworm and yeast infections. There are 4 main classes of antifungals that are currently being used, viz., azoles, polyenes, allylamines and echinocandins. The major drawback of these drugs is resistance and relapse of disease and due to this herbal medicines are preferred over them. Numerous herbal remedies are available for treating fungal infections such as tea tree oil, lemongrass oil, aloe vera, ginger, grapefruit seed extract, etc. Pteridophytes have been used by physicians in Unani system of medicine, Chinese system of medicine and more recently in advanced pharmacological studies. Among all the pteridophytes, Pteridaceae, Polypodiaceae and Adiantaceae family showed notable therapeutic efficacy. This study includes the collection, extraction and *in-vitro*antifungal activity analysis of *Polystichumdiscretum.* Extraction was performed via maceration in various solvents in the order of petroleum ether, n-hexane, chloroform, and ethanol for 72 hours with intermittent shaking. Different concentrations of ethanolic extract of *Polystichumdiscretum* was used to evaluate the antifungal potential against *Aspergillusterreus*to determine the zone of inhibition. The result was expressed as % inhibition and MIC (Minimum Inhibitory concentration) and MFC (Minimum Fungicidalconcentration) values of the crude extract were also indicated. The present study indicates that *Polystichum discretum* exhibits antifungal activity against *Aspergillus terreus.* Therefore, it can be further evaluated for the development of a potent antifungal drug.

**Keywords:** fungal infection, pteridophytes, MIC, herbal

## Grain – Size measurement and Morpho - Dynamics of the Sai River Basin, Central Ganga Plain, India

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### ABSTRACT

Texture (grain size) is a fundamental descriptive measure of the sediments and sedimentary rocks. It is also important in understanding the mechanisms operative during transportation and deposition. Here, grain size analyses were carried out using laser grain size analyser. It is found that the mean size value indicating that coarse silt to very fine sand. The sorting representing poor to very poorly sorted. The skewness values of the sediment samples suggesting the very fine skewed nature of the sediments. The kurtosis indicating leptokurtic to very leptokurtic nature of the sediments. The sediments of the Sai River were dominantly transported by the uniform suspension. The Sai River flowing in between Ganga - Gomati interfluve regions. Geographically it lies between 25°40'00"N to 27°50'00"N latitude and 79°50'00"E to 83°20'00"E longitude. It originates from Bijgawan village of

Hardoi district and after travelling approximately 760 km distance finally meet to Gomati River near Rajepur village of Jaunpur district. Morphometry means the measurement and mathematical tool to analysis of the configuration of the earth's surface, shape and dimension of its landforms. The basin area of the Sai River is approximately 11,000 $km^2$ with more or less NW-SE sloping trends. Overall, the Sai River comprises of $5^{th}$ order stream basin with high elongation ratio and high bifurcation ratio with meandering in nature suggesting structural and tectonic controls. The drainage density and stream length ratio show low surface runoff and mature stage of erosion. The stream frequency and drainage intensity suggested that high permeable, high infiltration rate and easily erodible respectively. The drainage texture suggests the smooth topography and high drainage density with low surface run-off, low erosion and gentle slope.

**Keywords:** Sorting, Skewness, Kurtosis, Stream length, Drainage basin.

## Depression in the Students of Bhagalpur district of Bihar: Role of Social Support.

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### ABSTRACT

Social support is any assistance, consolation, or encouragement received from a person's social network. Our emotional stability, physical health, and general quality of life are all significantly impacted by it. The availability of social support can lessen the negative effects of stress and improve coping mechanisms while fostering a sense of community and minimising feelings of loneliness and isolation. Various groups, including family, friends, co-workers, religious or social organisations, and professional networks, can provide social support. Depending on a person's circumstances, including age, culture, gender, and socioeconomic level, social assistance may or may not be available or of a certain standard. Depression and social support go together. Research shows that those with more social support are less likely to develop depression and other mental health issues. Social support may mitigate the negative impacts of life events and help people manage with stress. Social support, including emotional, instrumental, and other sorts, may help people cope with life's obstacles and reduce their risk of depression. However, a lack of social support might raise the risk of depression. Without emotional and practical assistance, people may feel alienated and alone, making them more susceptible to stress and life's challenges.

A random sample of 300 pupils was taken from each of the three schools in Bhagalpur that participated in this study. There were 94 males and 206 females among these total participants. The questionnaire was made available to the pupils. The analysis was carried out after the data was imported into the version 26.0 of SPSS. The purpose of this study was to determine whether or not students in the Bhagalpur region of Bihar, social support predicted the depression. The results showed that the absence of social support predicted the prevalence of depression in the students of the Bhagalpur, Bihar.

**Keywords**: Social Support, Depression, Multidimensional Scale of Perceived Social Support, Beck's Depression Inventory, Adolescents,

## *In-vitro* Antifungal evaluation of *Woodwardia unigemmata Mircrosporum gipseim*

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### ABSTRACT

A large and diversified collection of microorganisms known as fungi collaborate with plants to form symbiotic relationships and serve critical functions in the ecosystem. Fungi can, however, also spread dangerous diseases to people, animals, and plants, which has a substantial negative impact on the economy and public health. To treat fungal infections, antifungal medicines have been created, but their efficacy is constrained by the emergence of microbial resistance and the toxicity of some antifungal substances. Although antifungal drugs are beneficial, using them has a number of disadvantages, such as the formation of fungal resistance and the creation of drug-resistant strains. Natural treatments for a variety of illnesses and disorders have been derived from herbal therapies for ages. Numerous herbs have been found to have antifungal properties that are effective against a variety of fungi, such as Candida, Aspergillus, and Cryptococcus. Numerous studies have been done on the antifungal qualities of herbs like turmeric, oregano, oregano, ginger, and garlic. These herbs contain substances including allicin, gingerols, carvacrol, and curcumin, which have all been demonstrated to have strong antifungal properties. The usefulness of these herbs in preventing the growth of several fungal infections has been shown in in vitro investigations. In the present study, antifungal activity of ethanolic extract of *Woodwardia unigemmata* was tested at different concentrations against *Mircrosporum gipseim* to determine the diameter of zone of inhibition as well as MIC(Minimum inhibitory concentration) and MFC (Minimum fungicidal concentration) values. The fungal strain showed inhibition of growth to a variable degree which is expressed as % inhibition. Therefore, it can be concluded that *Woodwardia unigemmata* has promising antifungal activity which can be further used for the development of antifungal drugs.

**Keywords:** Pteridophytes, antifungal, infection, MIC.

## In-vitro Antifungal Evaluation of *Pteris Aspericaulis* Pteridophytes Against *Microsporum Canis*

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### ABSTRACT

Fungal infections in humans can superficially affect skin and nails as well as penetrate to cause a number of systemic infections. People with weaker immune systems are more susceptible to infection and have higher reported rates of morbidity and mortality. The antifungal activity of Ethanolic extract of *Pteris aspericaulis* was investigated against at different concentrations (5, 10, 15 and 20%). At 20%, maximum antifungal potential was observed with the extracts of which recorded excellent inhibitory activity against Microsporumcanis followed by leaf extract of Pteris aspericaulis (50%) against *Candida albicans, Candida glabrata*, and *Microsporum canis* are tested for antifungal efficacy zone of inhibition at various ethanolic extract concentrations. By measuring the extracts' MIC (Minimum

Inhibitory Concentration) and MFC (Minimum Fungicidal Concentration), it was able to determine its results. The study revealed antifungal potential of *Pteris aspericaulis* against *microsporum canis*. It also proposed that this could be further analysing on other fungal species to explore the therapeutic potentials of the selected pteridophytic species. The application of botanical extracts for disease management could be less expensive, easily available, non-polluting and eco-friendly.

**Keywords**: Fungal infection, Pteridophytes, *Microsporum canis*, MIC, MFC.

## Menstruation, A Covert or Natural Process? An Analysis of Social Restrictions, Stigma, and School Absenteeism among School Going Girls

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### ABSTRACT

"In India, a woman's monthly menstrual cycle is wrapped in shame, stigma, and awareness. For generations, the taboo around menstruation has had a negative influence on lakhs of women, ranging from being viewed as ""untouchables"" to dropping out of school, being coerced into early marriages, and more. In a diverse country like India, there are different social connotations linked with menstruation, as well as several cultural and religious taboos that paint this as a shameful process. Menstruation is a natural process, yet it is associated with myths, misunderstandings, and difficulties among young girls. Young women in society encounter stigma associated with menstruation, lack of opportunities to discuss menstruation, and constraints in movement and other activities during periods. Girls often receive incomplete and incorrect information about it, which has a detrimental impact on their mental, physical, and reproductive health, and education of young girls. Not only do stigmas cause difficulties, but there are also insufficient institutional resources to support menstruating young women. Girls' health and education are the central tenets of development and the gateway to full participation as women in a country's political, economic, and cultural life, the purpose of this paper is to evaluate the various factors associated with school absenteeism during menstruation, as well as to assess menstrual hygiene practices. In addition, the paper systematically reviewed literature on menstruation and education. The major purpose of this paper is to analyze sociocultural practices attached to menstruation, awareness of menstrual hygiene, and how a non-conducive school environment causes a rise in absenteeism."

## Validation of Engineering Self-Efficacy Scale using Mokken Analysis in Indian Context

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### ABSTRACT

"The study was conducted to validate the Engineering Self-Efficacy scale in Indian context originally was developed by Mamaril et al., (2016) which measures the General engineering self-efficacy of engineering students using its 6 items. The study was conducted on a sample of 200 second year engineering undergraduate students of Lovely Professional University, Phagwara, India belonging to Computer Science, Mechanical, and Electronics Engineering

steams. In this current research, the non-parametric technique of Mokken Scale Analysis is used to validate the tool, with the help of R/RStudio package â€œmokkenâ€. In the results, the automated item selection procedure produced coefficients which are greater than 0.3 for all the six items individually indicating their belonging to a unidimensional construct. The coefficient H estimated for all the items in pair, were found desirably to be positive. The H coefficient of the entire scale was found to be 0.453 indicating validation of a moderately strong scale. The estimation of item invariance ordering revealed items 6, 5, 4, 3, 1 and 2 to be the sequence of items with respect to their efficiency. However, the HT value, a measure of distance between the items, was low at 0.132 below the benchmark of 0.3. The monotonicity plots of all the items displayed the desirable rise in the latent trait for the increase in the scaleâ ™s responses. The Mokken scale reliability coefficient was found to be quite acceptable at 0.823. The educational implications of the study are discussed.

***Keywords:*** Engineering Self-Efficacy Scale, Mokken Scale Analysis, Engineering Undergraduates, General Engineering Self-Efficacy, mokken package."

## Development And Sensory Evaluation Of Choco Truffle With Orange Peel As An Immune Booster Snack

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### ABSTRACT

"BACKGROUND: Orange is a source of phytochemical compounds and its peels are usually discarded. Orange peel (OP) can therefore be used as a functional food for the development of new product that are beneficial to health. Evidences state that eating OP help lower the risk or slow the advancement of major diseases and disorders such as cardiovascular diseases, cancer, anemia and cataract.

OBJECTIVE: The study aims to develop a choco truffle with orange peel and access the sensory acceptability in a measure to find an alternate method of waste management since OP is primarily responsible for antioxidant activity.

METHODOLOGY: The developed product included elements like sweet potato flour (20%), soya milk (20%), jaggery (22%), nuts (20%), sugar (10%), cocoa powder (5%) and ghee (3%) under its regulated control. As per studies conducted on the toxicity and potential functional characteristics of orange peel, 4 choco truffle formulations were elaborated with different OP levels: OP0 (control), OP9, OP12, and OP15 (0, 9,12 and 15% respectively).

RESULT: OP0 reduced the acceptability for all evaluated attributes and overall acceptance. Higher scores for overall acceptability were verified for OP12. The samples OP9 and OP15 did not present significant difference between them.

CONCLUSION: Addition of OP is a novel approach of developing this product which provides a value addition to the final product as it provides a healthy snack option which has no added artificial colours, flavours, artificial sweeteners, and preservatives."

## Augmented Reality Integrated Teaching Strategy: Teacher Support and Learning Advancement in Science among 9th Grade Students

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### ABSTRACT

National Education Policy 2020, which reimagined the future of Indian classroom, proposed integrating disruptive technology to raise the standard of instruction and learning in educational settings. One of the emerging technologies is Augmented Reality, which has the potential to use in schools in execution of tasks that would otherwise be difficult or dangerous to complete there. National Council of Educational Research and Training (NCERT) has developed "ePathshala AR"-an application for iOS and Android operating systems for science curriculum of grades 9 and 10, which integrated augmented reality and ensured quality content. The current study examines the usefulness of aforementioned application in science teaching and learning in grade 9 from the perspectives of both teachers and students. This study has made an effort to replicate how the application assist teachers in their instruction and how it may be used to improve student's learning outcomes and retention. In the current study, a mixed-method research approach has been used. A single group pre- and post-test quasi-experimental research design were used for the investigation. A total of 79 number of grade 9 students and two science teachers from a 5T secondary school in Odisha has been chosen as the sample for the study based on their availability. The school is well-equipped with the prerequisites resources i.e., smart board and the internet. The majority of the study's data were quantitative, and some pertinent qualitative data were also collected for in-depth analysis and triangulation. A perception scale, an achievement test, a classroom observation schedule, and group interviews were used to collect the relevant data. Both descriptive statistics, like mean and SD, and inferential statistics, like the t-test, were used to analyze the collected data. The qualitative data was also thematically analyzed. The findings revealed that teachers lack a thorough understanding of this technology and also about the "ePathshala AR" application. They found it to be very interactive because AR technology can give them easy access to a variety of high-quality educational resources that are directly related to the textbook, but they also encountered issues like finding practical uses for it and having trouble scanning the anchor because the textbook is printed in black and white. Further, as the grade 9 students used AR technology for learning, their achievement and retention levels were considerably enhanced. The students' attitudes regarding learning with AR applications are overwhelmingly positive. While learning the science material on their own, they encounter the same issues as teachers.

## A Sustainable approach for remediation of heavy metal wastewater using immobilized *Anabaena sp.*

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### ABSTRACT

Industrialization resulted in the discharge of various toxic heavy metals into water bodies, which poses serious health hazards to humans and animals. Bioremediation is a sustainable approach to environmental pollution management as a result of its cost-effectiveness, eco-friendliness, and feasibility of the application without the use of

any sophisticated machinery. Algae play a pivotal role in removing heavy metals from wastewater through their inherent mechanisms of bioaccumulation and biosorption. Biosorption is the process of removal of any chemical molecules by the treatment of biological material. In the present study, Immobilized *Anabaena sp.* was used as a biosorbent for the removal of the heavy metal, Total Chromium (Cr) from electroplating effluent. Experiments were conducted to study the influence of pH value on the biosorption capacity of calcium alginate entrapped *Anabaena sp.* The maximum achieved removals were recorded at 62.2% for total Chromium at pH 7 after 1 hour of exposure. The treated algal beads showed a significant color change, indicating Carotenogenesis. The carotenoid content in the metal-treated immobilized *Anabaena sp.* is yet to be estimated. The carotenoid pigment having various industrial applications serves as a biological indicator for metal toxicity. The immobilized *Anabaena sp.* provides an economic and excellent tool for the remediation of industrial effluents and can be harvested for repurposing them in industries. The treated compatible wastewater can also be used for any purpose such as irrigation of agricultural non-edible crops. The algae having a high growth rate will help maintain environmental sustainability by controlling the accumulation of heavy metals in water thereby protecting our ecosystem and preserving natural resources for future generations.

***Keywords :*** Strategy and Innovation in life science for Sustainable Development

## International Conference on Emerging Trends in Multidisciplinary

**Topic:** *Emerging Trends in Social Science Research*

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## ABSTRACT

**Introduction:** Science are broadly divided into natural and Social Science. It includes various disciplines dealing with human life behavior, social institutions. They consists of anthropology behavior Science, history, sociology etc.

**What is Research?**

Research is a structured inquiry that utilized acceptable scientific methodology to solve problem and create new knowledge. Research is an Endeavor to discover, develop and very true knowledge. In social science Research is systematic method of Exploring, analyzing and conceptualize human life.

These are Trends in Social Science

Economic, Social, Technological and Regulatory.

**Type of Research**:

1.Primary Research
2.Secondary Research
3.Qualitative
4.Quantitative

**Objective :**

To discover new Facts
To verify test old Facts
To develop new Scientific tool,concept,and theories
To understand the function of the society
To evaluate social problems their effect the solution.

**Conclusion:** In this paper concluded that day by day new trends are changing in Research.Trends are a key to develop of Research processes in Open and distance learning

**Keywords:** Social Science, Trends, Research, Discover and facts..

## Attitude toward Psychoactive substances among emerging adults

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### ABSTRACT

Emerging Adults are a positive force of a nation and are responsible for the future productivity. India has fallen into the viscous cycle of consuming psychoactive substances, causing threat to health and becoming a social concern. It is a universal phenomenon with its roots in history and tradition. A psychoactive substance acts mainly upon the central nervous system where it changes the functioning of the brain and leads to temporary change in awareness, attitude, thoughts and behaviour. It encompasses the whole class of licit (legal) and illicit (illegal) substances.

The present study was done with the aim to assess the 'Attitude toward Psychoactive Substances among Emerging Adults'. A standardised questionnaire by Dr Poorva Jain and Amit Deolia- 'Scale of Attitude Towards Drug and Alcohol' containing 26 items was circulated to deduce the objective of the study. The study revolved around the emerging adults (both male and female) belonging to the age group of 18-25 years from Kolkata and Bangalore. The data was collected by purposive sampling from 400 female and male respondents. The collected data was analysed with the help of graphical representations and t-test. From the results, it was found that there is no significant difference in the attitude towards psychoactive substances among emerging adults. Also, it was analysed there is no significant difference in the awareness towards ill effects of psychoactive substances among emerging adults. It can be stated that peer pressure, lack of knowledge, curiosity, stress, media influence and cultural norms play a major role in consumption of psychoactive substances. The influence of psychoactive substances continues to grow, drawing an even larger number of people universally, which is a serious issue and needs constant monitoring.

***Key words:*** Attitude, Psychoactive substances , emerging adults

## Influence Of Emotional Intelligence On Job Satisfaction Among It Employees Of Bengaluru City

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### ABSTRACT

Emotional Intelligence plays a very critical role at job environment. It not only helps individuals to perceive and analyse their own emotions but also emotions of others at work which is finally responsible for enhancing work related culture at place of work. The aim of the present study is to assess the influence of emotional intelligence on job satisfaction among employees of IT sector. The tools used for the study were emotional intelligence scale by Dr.

Arun Kumar and Prof. Suraksha Pal and Job Satisfaction scale by Dr. Kishore Oza and Dr. Udham Singh. The data was collected using random sampling technique from 300 employees that of which are 150 males and 150 females working adults in Bengaluru's IT sector falling in the age range of 25 to 50 years. The collected data was analysed using t-test and correlation. The results of the study indicated that the female respondents have higher scores of Emotional Intelligence than Male respondents. Addition to this respondents who have higher scores in Emotional Intelligence showed higher rates Job Satisfaction levels. Similarly, by correlational analysis Emotional Intelligence is considered as an important determinant of Job Satisfaction. Hence, it can be inferred that emotional intelligence and the dimensions of Emotional Intelligence will have a significant influence on levels of job satisfaction among IT employees.

***Keywords:*** Emotional Intelligence, Job Satisfaction, Influence, Employees.

## Effect of Hobby Classes on Social and Emotional Development of Children

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### ABSTRACT

The process by which children begin to understand, experience, express, and regulate their emotions is referred to as social and emotional development. The environment influences children's social processes by shaping their interactions. Hobbies are an excellent medium for socialization and relationship development, assisting children in developing confidence and self-esteem while stimulating young minds and bodies to explore their passion. The study comprises a total sample size of 400 participants; 200 males and 200 females. Aside from that, the sample size for children who take various hobby classes was 100 boys and 100 girls, and the sample size for children who do not take hobby classes was also 100 boys and 100 girls. To assess the children's social and emotional development, two different scales were used. The social maturity scale and the emotional maturity was developed by Dr K.S. Roopa and Ms Sairabanu in 2017 to assess the level of social and emotional maturity of students. According to the findings, there is a substantial variation between the social and emotional aspects among the participants aged 8 to 10 and 11 to 13. Also, there is no impact of gender on the social and emotional development of children. There is a significant relationship between the social and emotional development of the children who attend hobby classes and those who do not.

***Keywords:*** Social development, Emotional development, Hobby classes, School children.

## A Correlational Study of Spiritual Intelligence, Personality Traits and Resilience Among Employed Women.

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### ABSTRACT

Spiritual intelligence is effective in people's physical and mental health. It includes having the feeling of meaning and mission toward lives and values, holiness feeling in life, the more balanced perception of values and believing to the improvement of the world. Personality traits reflect people's characteristic patterns of thoughts, feelings, and

behaviours. Psychological resilience is the ability to mentally or emotionally cope with a crisis or to return to pre-crisis status quickly. **Objective**: The present study was planned with the primary objective to examine the relationship between Spiritual Intelligence, Personality traits and Resilience among Employed Women. **Sample**: For this purpose 150 Employed Women were taken from Urban Patna. The Sample was collected by Purposive sampling method. **Tools Used**: Roqan spiritual intelligence test developed by Prof. Roquiya Zainuddin and Ms. Anjum Ahmed in (2010), Big Five Personality Inventory developed by Dr. Arun Kumar Singh and Dr. Ashok Kumar and Resilience scale developed by Dr. Vijaya Lakshmi and Dr. Shruti Narain were used and administered to collect data as per the objective of the study. **Result and Conclusion**: There was a significant correlation between Spiritual Intelligence, Personality traits and Resilience among Employed women.

***Keywords:*** *Spiritual Intelligence, Personality traits, Resilience.*

## Influence of Demographic Variables on Self-efficacy of secondary school teachers

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### ABSTRACT

Self efficacy is the self-belief of an individual whereas teachers self efficacy refers to their own belief, trust, level of confidence on their teaching techniques, methods used to accomplish tasks in the classroom and the ability to effectively handle the obligations and challenges among all kind of teaching aspects. High level of Self efficacy is an important characteristic for teachers in order to provide positive learning environment for students. Self efficacy have significant effect on balancing work-life and also it helps teachers in using effective emotional-oriented coping strategies. In context to todays' Indian education system there are lot of changes in education pattern, learning pattern, environmental/generational changes, changes in teaching pattern, also teacher's works have become different in order to manage the diversity in behaviour, learning and understanding of students, therefore all these demographic variables have influence on self efficacy of secondary school women teachers. The current research aims to study the influence of various demographic variables on self efficacy of secondary school women teachers. Teacher self efficacy scale (2021) developed by Nahid Ashraf was used to collect data from secondary school women teachers. Random sampling procedure was used to select the samples. The data was collected from a sample of 250 secondary school women teachers. The result showed that the demographic variables such as age, marital status, family type, educational qualification, number of children, student teacher ratio and type of curriculum have moderate to high significant influence on self efficacy of secondary school women teachers.

***Key Words****:* Teachers, women, Secondary School, Self efficacy

## Interest Activities of The Chronically ILL Children

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### ABSTRACT

Children are likely known to be more playful and active in different activities than adults which is the universal truth. Children's interest in activities is influenced a lot by parents, gender, and the environment they live in. On the other hand, children having mental and physical problems are also likely to lose interest compared to healthy children. The present study is done with the aim to assess the interest activities of chronically ill children. A total of 150 Children in

the age of 3 to 14 and are chronically ill were taken from Mizoram State for the study. Out of 150 children, 75 children were chronically ill children but were staying at home and the other 75 children were in Hospital. Children were divided again into two groups according to gender. The tool used in this study is a standardized questionnaire 'Inventory of Children's Interest Activity' by Terence J.G Tracey, containing 30 questions, to know about the child's interest in six different areas: realistic, investigative, artistic, social, enterprising, and conventional. From the study, it was found that chronically ill children are likely to lose interest in realistic areas, especially hospitalized children and children with severe chronic illnesses. Gender differences do not play much role in children's interest in various activities but age has a significant affect on the interest in activities. The environment in which the children stayed showed significant influence on the hospitalized children as they had more interest in socializing with other children when they feel well whereas the homestay children are more likely to be investigative. Children's interest activities should be given importance as they are highly related to their development and also help parents to put forward strategies, especially for chronically ill children as they have limited activities and play patterns.

***Keywords:*** Interest activities, chronically ill, children, play.

## Perception of Indian Muslim Adolescents on Parenting Styles

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### ABSTRACT

The emerging Indian Muslim society suggests that parents must improvise their parenting styles to raise pious and responsible inheritors of Islam. Parental approaches strongly influence the growth and development of their children, whereby, adolescents undergoing the transitional phase demand acceptance, understanding, and quality time from their parents. The present study was conducted with the primary aim to understand the perception of Indian Muslim adolescents regarding parenting styles. This was achieved by collecting a sample of 180 Muslim adolescents aged 14-19 years further categorizing to 87 Muslim girls and 93 boys from Islamic institutions across Bengaluru. Perceived Parenting Style Scale by Divya T.V. and Manikandan K. (2013) and Scale of Parenting Style by Abdul Gafoor K. and Abidha Kurukkan (2014) was used to measure the perception. Perceived Parenting Style Scale by Divya T.V. and Manikandan K. (2013) measures the adolescents' perception of parenting styles on three dimensions: authoritative, authoritarian, and permissive whilst the Scale of Parenting Style by Abdul Gafoor K. and Abidha Kurukkan (2014) measures the responsiveness and controlling dimensions as perceived by the adolescent. The findings of the study state that parents are observed using an authoritative parenting approach characterizing them as supportive and nurturing parents. Furthermore, it was revealed that mothers are responsive toward their children contrary to fathers being controlling and dominating. In conclusion, Muslim parents are observed to be demanding and dictate terms and conditions whilst discouraging independence and children's participation in decision-making activities.

***Keywords :*** Perception, Adolescents, Muslim Parenting, Parenting Styles, Authoritative , Authoritarian , Permissive
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## Relationship of Locus of Control and Academic Achievement in Undergraduate students

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### ABSTRACT

One of the crucial factors that determines academic success is a person's locus of control. The notions that people have about what determines their rewards or outcomes in life are referred to as their locus of control. Individuals' locus of control may be characterised according to an internal to extrinsic spectrum. The present study is based on finding of the locus of control on the basis of gender (male and female) and locality (rural and urban) and the relationship between locus of control and academic achievement in undergraduate students. The total sample taken for the study is 336. The sample is taken from an undergraduate student of Marwari college and SSV college Kahalgaon, Bhagalpur, Bihar. The tool used for finding the Locus of Control (LoC) is Levenson's Locus of Control and academic achievement (AA) is taken from the marks of the previous year. To find the result, a t-test, Pearson correlation and simple linear regression are done. The findings state that there is no significant mean difference of LOC among gender but among there is a significant mean difference in internal LoC with respect to the locality of undergraduate students. According to the data, there is also a relationship between having an internal locus of control and academic accomplishment. The relevance of the research lies in the fact that it will assist the students in analysing the ways in which they may raise their own internal self-motivation for their academic work, which will ultimately lead to improved outcomes for the students in their future lives. Problem-solving abilities also boost pupils' life ownership.

***Keywords:*** locus of control, academic achievement, undergraduate students

## Structural properties using Rietveld refinement of Silver doped Copper Oxide Nanoparticles.

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### ABSTRACT

Copper oxide (CuO) NPs have been synthesised using simple Co-precipitation method and Ag dopant is incorporated into CuO lattice for different doping concentration. The samples are characterised by X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR) for structural analysis, Energy Dispersive X-ray Analysis (EDAX) for compositional study, Scanning Electron microscopy (SEM) for morphology and UV–visible absorption spectroscopy (UV) for optical properties. To obtain the crystal structure and achieve purity of synthesis, the Rietveld refinement is employed for both undoped and doped samples. Crystallite sizes and lattice strain on the peak broadening of Ag doped CuO- NPs were studied by using Williamson-Hall (W-H) analysis.. Monoclinic CuO nanostructures have been confirmed by FTIR measurements of both nanoparticles. Chemical compositions are identified by EDAX spectra. With increasing Ag dopant concentration, UV-Vis spectrophotometer measurements shows that the band gap increased clearly.

***Keywords:*** Co-precipitation method, Copper oxide nanoparticles, Rietveld refinement W-H Analysis.

## Significance and Challenges of Demographic Dividend in India

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### ABSTRACT

In the twentieth century India has witnessed remarkable demographic changes. The population has increased by four times; from 238 million at the beginning of the century, to one billion at the end of it, and currently it is around 1.21 billion (GOI Office of registrar general of India 2011).Although the population has increased in absolute terms, it is characterized by demographic transition which provide economic opportunity or disadvantages to economies, depending on which phase of the demographic transition there are in. The large number of youths in the light of its impact on work participation and dependency ratios has been called a window of opportunity in terms of growth and development of our country, an opportunity which would need to be seized before the window closes. But a potential does not mean that it will be automatically achieved. It is an opportunity, which can be harnessed if the right conditions are there or created. These conditions are a healthy population, especially women and children, educated young people, especially girls, a skilled workforce, a high-performing economy that is generating required high-quality jobs, and people in gainful employment. Without proper policies, the increase in the working-age population may lead to rising unemployment, fueling economic and social risks. Hence this paper briefly discusses the significance and challenges of demographic divident at macro level.

## Issues and Challenges of Digital Currency in Indian Economy

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### ABSTRACT

Unlike traditional money, digital currencies have small transaction costs and quick payments since they can be dispatched directly between parties. This transactional mode helps in a better and effective management of currency with respect to traditional payment techniques . Governments all over the world are inquiring into the idea of government sponsored digital currencies with the increasing apply of digital disbursement. The Government of India in its “Union Budget 2022” has planned to introduce “Digital Currency” composed by Reserve Bank of India in the Financial Year 2022-23 .The objective of the paper is to study the risks and challenges of introducing digital currency in India . The regulatory phase and market operations of digital currencies have been discussed briefly in the paper. Many activities in today's lifestyle are incorporated on-line due to quick and breakneck development of data and communication technologies and they become a lot of skillful and more practical . An enormous growth in area of on-line users has turned on virtual world conception and constructed a new business development aspect that is cryptocurrency to promote the monetary activities like buying, selling and trading. Cryptocurrency refers valuable and abstract objects that are accustomed electronically in diverse applications and networks like on-line social networks, on-line social games, and digital world and like to see networks. The use of digital currency has become deep in many alternative systems in recent years. The paper presents the cryptocurrency market, business, impact of cryptocurrency on monetary policy of Indian economy. The

conclusion of the paper is to propose protective measures that can strongly decrease the unauthorized usage of cryptocurrencies.

***Keyword :*** Digital currency, Cryptocurrency, Monetary policy.

## Analysing Seminal Parameters in Male Infertility: A Clinical Study

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### ABSTRACT

Male infertility is a complex and widespread issue that affects numerous couples worldwide. To identify the underlying causes of male infertility, it is crucial to evaluate seminal parameters. This study aims to examine the various seminal parameters used to investigate male infertility, which include semen volume, sperm concentration, motility, morphology, and vitality. Semen volume is a critical factor, and a low volume may suggest blockages or obstructions in the reproductive system. Sperm concentration measures the number of sperm present in a given volume of semen, and a low concentration may indicate problems with sperm production or maturation. Sperm motility refers to the ability of sperm to move, and reduced motility can impair the ability of sperm to reach and fertilize the egg. Sperm morphology assesses the shape and structure of sperm, and abnormal morphology can indicate issues with sperm development or maturation. Sperm vitality is the percentage of live sperm in the sample, and low vitality can be indicative of poor sperm function. This study collected semen data from a clinical laboratory to analyze the overall problem in a set of patients. The findings revealed that 37 percent of fifty individuals are infertile due to problems in sperm volume, liquefaction time, sperm count, sperm motility, and sperm morphology. Furthermore, irregularities in the liquefaction time were common among infertile individuals. The results of this study raise awareness about the risk factors associated with male infertility.

## Multidisciplinary Diversity in Research Designs

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### ABSTRACT

"Research designs are important because they provide road maps to conduct the future studies that will reach their productive objectives. Researchers deeply study historical and psychological perspectives related to the research and adopt single or multiple methods to reach the objective. In recent times, emergence of inter disciplinary nature of research in literary studies, linguistics, education, history, psychology, sociology, anthropology and many other subjects has made it difficult for scholars to forge an identity in research community. The varying research traditions carry with them a series of assumptions that have remained largely unexamined. Scholars, therefore, have begun to question the research methodologies in light of their practical, epistemology and ideological implications. The biggest confusion lies whether methodological pluralism is possible for smooth conduction of a study or use of different research methodologies in a study may mislead the process, one methodology will be incompatible with the

other methodology and are in direct conflict with each other, hence will lead the research in vague direction. This chaotic situation gives birth to many questions that need to be addressed.

***Keywords:*** Epistemology, Methodological, Pluralism, Incompatible "

## Assessment of Erosion Hazard in Parts of Gandak River Basin in Bihar Using Remote Sensing and GIS

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### ABSTRACT

River erosion in one of the significant and unpredictable hazards in India. Soil which forms in hundreds of years depleting due to various geological phenomenon or the anthropogenic causes. Assessment of the vulnerable area is essential to take any remedial measures to control river erosion. Remote sensing and Geographical Information System techniques can be effectively utilized to assess the severity level of erosion as realistic as possible. Hydrological parameters can be calculated by using Geographical Information System. We have processed the Digital Elevation Models in Geographical Information System of the study area to calculate the important hydrological indices i.e., Topographic Wetness Index, Sediment Transport Index, Stream Power Index and slope gradients along with other relevant parameters. The erosion susceptible areas are delineated on the basis of variability found in Sediment Transport Index, Stream Power Index, Topographic Wetness Index and Slope Gradient of the study area. An Erosion Hazard Vulnerability Map of the study area (Parts of Gandak River Basin, Bihar) has been prepared on the basis of Weighted method of Geographic Information System. The results of the hydrological parameters shows a very gentle slope in the study area which are least prone to erosion. River bank erosion is occurring due to high river flow specially in monsoon season, and river channel shift due to heavy siltation. The spatial tools of Geographic Information System have been used to demarcate the erosion susceptible areas.

***Keywords:*** Erosion; Sediment Transport Index; Stream Power Index; Soil gradient

## Gandhi Ji aur Swatantrata Sangram

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### ABSTRACT

As a mass leader Gandhiji believed that only people can carry forward any national movement. A leader can only guide the movement. He made sure the participation of people in every movement. He also asserted the importance of guidance. It was possible only when the issues of common people were made the centre point of struggle. He fought for the common people in South Africa. He had utmost faith in the determination of people, their courage, their sacrifice, and moral power. He was an anti-colonialist, non-violent freedom fighter who led the country towards freedom without picking up any weapon. He believed in the power of Truth or Satya. Thus, he named his movement Satyagraha. Gandhiâ€™s belief and fight for truth got him universal support. Many of them venerated Gandhiji,

referring to him as their Mahatmaâ€. They appreciated the fact that he dressed like them, lived like them, and spoke their language. Unlike other leaders he did not stand apart from the common folk, but empathised and even identified with them. This identification was strikingly reflected in his dress: while other nationalist leaders dressed formally, wearing a Western suit or an Indian bandgala , Gandhiji went among the people in a simple dhoti or loincloth. Meanwhile, he spent part of each day working on the charkha (spinning wheel), and encouraged other nationalists to do likewise. The act of spinning allowed Gandhiji to break the boundaries that prevailed within the traditional caste system, between mental labour and manual labour. He succeeded in acknowledging the nerve of people. He emerged as the most popular leader in the history.

## Savtantrata sangram ki gumnaam Virangnaye

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### ABSTRACT

"Hamare desh ki azaadi mein na sirf pursho ne balki hamare desh ki mahilaaon ka bhi bahut mahatvapurn yogdaan raha hai. Mahilayein jineh najuk, mom ki gudiya tatha aur anyaay naamo se sambodhit kiya jata tha, un mahilaaon ne aajadi ki ladai mein yeh vatla diya ki mahilayein sirf ghar hi nhi sambhaal sakti valki jarurat padne par apne ghar par buri nazar rakhne walo ko zad se ukhaad kar fenk sakti hai jiska jablant udhaaharan bhartiye sabtantarta sangraam hai. Azadi ki ladai mein samay samay par hamari desh ki mahilaaon ne adamaye sahas ka parichay diya hai, parantu bahut afsos ki baat hai ki aaj hamaare desh mein azadi ke jab 75saal pura ho gya hai, tab bhi pursho ke sahas ka parichay diya jata hai. Kuch jani maani mahilaaon ko chod kar un sabhi mahilaaon ka naam parichay ka mohtaaj ho gaya hai jo na jane kahan gum ho gayi han. Aaj un veer Biranganau ki charcha karenge jo ki itihaas ke panno par gum ho gayi han, bahut kam shabdon mein unki Gathaoun ka varnan nhi kiya ja sakta hai.yahan par hum inhi men se kuch Virangnau ke naam ki charcha karenge.

(1) Matangini Hazara (2) Begum Hazrat Mahal (3) Aruna Asif Ali (4) Bhikaji Kama (5) Tara Rani Shrivastav

(6) Kamla Devi Chatopaadhyaay (7) Pandit Rama Bai aadi

Bharat ki aisi veer mahilaaon ko sat sat pranaam hai. Jinhone humein is khuli hawa mein saans lene ka absar pradaan kiya hai."

## Growth of Cryptocurrency in India: Its Challenges and Potential Impact on Legislation

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### ABSTRACT

Many of the actions we perform in our everyday lives have been digitized and have become more adaptable and efficient as a result of the fast growth of information and communication technology. In order to make financial transactions like buying, selling, and trading easier, there has been a significant increase in the number of internet users. This has activated virtual word concepts and produced a new economic phenomenon called cryptocurrency. Virtual worlds, peer-to-peer networks, online social networks, and online social games are just a few of the

applications and networks that employ cryptocurrency to represent valuable and intangible goods. In recent years, the usage of virtual currency has extended throughout several systems.

This study looks at what users anticipate for the future of cryptocurrencies. It also investigates consumers' trust in utilizing cryptocurrencies at a time when their usage is not fully regulated and supervised. Also, in order to get a clear picture from a practical perspective, the article aims to measure the spread of bitcoin use. The research also examines how 21 other nations have reacted to cryptocurrency rules and legislation to get a clearer picture of how it would affect various laws in India to govern it. "

## Digital Currency – Issues and Challenges in India

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### ABSTRACT

The Modi government's demonetization of cash in 2016 altered India's shift to the use of digital payment systems. Although it was a difficult decision for a country like India where 90% of transactions are in cash, people quickly adapted to digital payment methods. The use of digital payment methods is made possible by the amazing rise in smartphone ownership and the availability of user-friendly payment options like PAYTM and BHIM UPI. Via SWOT analysis, the article looks at the worldwide developments in digital currencies in a few selected nations and attempts to analyze how they could affect India.

Although at first many in India were hesitant to adopt digital systems, they have become increasingly common and simple to use thanks in large part to their widespread usage in wealthy nations worldwide. Immediate Payment Service (IMPS), United Payments interface (UPI), Bharat interface for money (BHIM), Bharat bill Pay system (BBPS), or Aadhaar enabled payment system are some of the technology platforms that have been developed throughout time to support national payments (AePS).

## An Investigation on the Factors Influencing Entrepreneurial Intention among Business Students

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### ABSTRACT

In the current 21st century trend, having entrepreneurial abilities within yourself is essential for the circumstances to flourish and to sustain yourself for the work opportunities accessible. The basic purpose of this research is to determine the most important characteristics or components that an individual should acquire in order to encourage entrepreneurial intention. And yet this strategy is primarily used with students during their internships, when they learn about the real corporate environment and improve their internal competencies to be aware of the current conditions that influence their career aspirations to pick between job seekers and job providers. Students get

a variety of entrepreneurial skills during their internships that help them compete with others for employment while being guided by their entrepreneurial aspirations and entrepreneurial behavior abilities. In order to help students, understand career advancement prospects and how to take advantage of opportunities, research will serve as an intervention enabling universities of higher learning to emphasize more on these policies and initiatives. In this descriptive study, the criteria considered to explain entrepreneurial intention are the need for achievement, attitude toward entrepreneurship, and self-efficacy. These motivational elements come from within, and they encourage someone to progress through internal stages in order to accomplish their professional objectives. Through the convenient sampling technique, information is being gathered from MBA students who have finished their internships. And with the aid of SPSS, data analysis, Cronbach alpha calculation, and regression application are performed. These findings contribute to the literature by highlighting the unique environment, sector of society (young people), and significance of entrepreneurship learning within the field of entrepreneurship. Our findings have significance for government officials, academic institutions, and policymakers.

***Keywords:*** Need for Achievement, Entrepreneurial Attitude, Self-Efficacy, and Entrepreneurial Intention

## Consumer buying behaviour towards branded apparels in Bihar

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### ABSTRACT

A study was analyse the "Consumer buying behaviour towards branded Apparel in Bihar" A random 60 sample (Consumer) has been selected from Patna town. The hypothesis was that whether the consumer differ significantly on banded and non branded Apparel. We know that consumer is a person who buy goods and services. Consumer behaviour is the actions and decisions process of people who purchase goods and services for personal conjunction the influence of the buying behaviour to their motivation biogenic need psychogenic need and also there perception, attitude, personality, and some other social factors. The result has been obtaine in table 1 buying behaviour of the consumer would differ significantly on banded and non branded apparel ($t=2.57, df=58, p<.05$). The results support hypothesis. It was conducted the consumer's different and distinct personality traits in different location, the marketer should be able to identify these differences and its influence on the consume buying behavior.

***Keywords:*** Brands, Buying behaviour, Perception, Attitude, Personality, and Apparel.

## Digital Currency-issues and challenges in India.

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### ABSTRACT

During these days the trend of digital currency is emerging as the need of time. With the growing use of digital payments all over the world, Indian government were also exploring the idea of digital currencies which is supported by the government, which can provide safer transactions in India and rest of the world. Along with India, Countries like Nigeria, Singapore, Malaysia, and China have introduced their own Digital Currencies.

**Central Bank Digital Currency (CBDC)** is a digital currency launched by the government of India during the Budget 2022, which is completely controlled by Reserve Bank of India. As the Government of India, has proposed to introduce the **CDBC** and takes one more step towards the Digital **India**. For the growing economy and achieve financial inclusion, India, has been trying to come forward to digitize its economy. During the **demonetization** of currency notes in the year 2016 and the **pandemic (Covid-19)** need of digital payments in the country has been increased and by launching of **Central Bank Digital Currency (CBDC) by** Indian government and with various UPIs, mobile banking, phonepay, googlepay etc, Digital revolution has been started. Along with CBDC Bit coin. Ethereum., Ripple., Lit coin are other Examples of Digital Money .I had done a curious study on this topic and the objective of the paper has been to study the important area of digital currency as well as finding the issues like risks to financial stability, monetary policy, financial market structure, Disintermediation of banking system etc.

Also the article has a brief idea about the growth of digital currency, drawback in aspects of digital currencies in India.

**Keywords:** Digital India, Digital Currencies, Digital Payments, Central Bank Digital Currency (CBDC), Digital money.

## Concerns and Challenges regarding Digital Currency in India

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### ABSTRACT

India The paper aims to explain the major concerns and challenges that may influence the prospects and potentials of digital currency backed by the central bank, as rapid growth in technology and innovation has been observed in recent years in our country, especially in the context of the banking and finance sectors, and this growth has also raised some challenges and issues regarding the usage of the same via technology and modern means, studying broadly with regard to the prospects of digital currency in India. It has been observed from the viewpoints and reports of the RBI and government that they had favoured central bank digital currency (CBDC) rather than crypto currencies, even though CBDC and cryptos are the two most popular forms of virtual currency across the globe. According to their analysis and research, different countries have either adopted, banned, or legalised both forms of virtual currency, and the same analysis is under way in our country. The paper opted for an exploratory study using

existing literature, a case study, online sources, and speeches of officials of the central bank and government that assisted us in identifying the current problems and complications like safety, anonymity, connectivity, and adequate digital infrastructure, including financial awareness, etc. that may impact the monetary implications. The data were complemented by documentary analysis, in which the concept note of the Reserve Bank of India and the consultation paper of the Bank of England, and existing literatures regarding centrally backed currency were studied for the clarity of the above work. Keywords: Digital currency, C.B.D.C, Connectivity, Safety, Monetary implications.

## Poverty as a challenge for Digital currency in India

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### ABSTRACT

India is a rich economy country of the world , but its population is very large and most of the population is facing problem of poverty . The problem of poverty gave rise to the another problems like low level of education , low level of income and lack of new technology and skills etc . Due to this problem of poverty most of the population of India is unable to adopt digital currency and it is also a challenge in its flourishment . Central Bank Digital Currency (CBDC) is the pilot project of RBI to adopt digital currency in India . In India , the Digital Rupee ( e -R ) was proposed in January 2017 and was launched in the 2022 - 23 financialyear . Bitcoin ( BTC ) , Ethereum ( ETH ) , Tether ( USDT ) and Cardano ( ADA ) are some examples of digital currency which are used in India . Since the launch of Digital currency in India till now , only those people have participated in its use who are fully educated and capable of acquiring new technologies . The major challengeof digital currency in India is to give awareness and advantages of digital currency to the group of people who are facing the problem of poverty . For the development of digital currency in India is to conduct some awareness program for the lacked people . This may result a positive participation and acceptance of digital currency in India .

**Keywords** : Poverty, Digital currency, India .

## "Significance and Challenges of Demographic Dividend in India

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### ABSTRACT

In the twentieth century India has witnessed remarkable demographic changes. The population has increased by four times; from 238 million at the beginning of the century, to one billion at the end of it, and currently it is around 1.21 billion (GOI Office of registrar general of India 2011).Although the population has increased in absolute terms, it is characterized by demographic transition which provide economic opportunity or disadvantages to economies, depending on which phase of the demographic transition there are in. The large number of youths in the light of its impact on work participation and dependency ratios has been called a window of opportunity in terms of growth and development of our country, an opportunity which would need to be seized before the window closes. But a potential

does not mean that it will be automatically achieved. It is an opportunity, which can be harnessed if the right conditions are there or created. These conditions are a healthy population, especially women and children, educated young people, especially girls, a skilled workforce, a high-performing economy that is generating required high-quality jobs, and people in gainful employment. Without proper policies, the increase in the working-age population may lead to rising unemployment, fueling economic and social risks. Hence this paper briefly discusses the significance and challenges of demographic divident at macro level.

## The Glass Ceiling Effect: A Psycholoical Barrieer to Gender Equality

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### ABSTRACT

The word Glass ceiling refers to an intangible barrier within hierarchy that restrains qualified women or minorities from obtaining higher level position at their workplaces/societies. This paper focuses and explores ageless ceiling effect along with gender stereotypes and remedies to encourage the societies/organisations to promote the eligible women in respectful deserved positions. Generally, it is evident in our social strata that women, despite having requisite scholastic achievements, are scarcely appointed at top echelons of an organisation. A perspective analysis attributes it to the barriers like mental blockages or prejudices and Glass ceiling effect. In today arena of globalisation and women empowerment, the belief about their home bound duties, is being challenged. Women participation in public domain and their endeavours for top hierarchical position has made our management to think beyond this effect (Glass Ceiling). Careers path does not welcome women with red carpet. In spite of their position changes, women still have to face barriers in their inclination towards top positions in organisations/societies. Analysis of Glass Ceiling is not easy affairs in Indian context, however, this phenomenon has been studied comprehensively in western societies. In India, glass ceiling as perceived and dealt is still unchartered sea. The study shows it seems India has to go a long way to realize the dream of gender equality especially in Haryana where gender inequality looms large in term of declining sex ratio.

## Digital citizenship behaviour: Awareness among young digital citizens in Bihar, India

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### ABSTRACT

We are living in the world of technology all around us. The young generation, children and youth are heavily loaded with technology and technical information. The technology has both positive and negative effects, also can be used positively and negatively. With the technological advancements and use of internet, the national boundaries are blurring. It is in the global village that the youth are living, rather the web-world or the digital village that the young generation is living. Being offline, we are citizen of one nation; but being online, we become digital citizen. Our

behaviour on the digital platform influences us and our performance. With this background, the study aimed to explore the awareness of youth in Bihar, India on various facets of digital citizenship behaviour. The Data were collected from 127 college students using questionnaire. The graphical representation was used to present the results. It was supplemented by the qualitative data collected with the quantitative data. The results indicated that the students were aware of the facets of digital citizenship behaviour. The implications were discussed in the study.

## Relationship Between Life and Marital Satisfaction Among Dual Career Couples:

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### ABSTRACT

A Study of Durgapur, West BengalÂ "A conjugal relationship like marriage is the most intimate and significant part of an individualâ€™s life. It satisfies important basic needs of an individual like living life, shared goals, intimacy and love, and individual career aspects of the couples. Hence, marital satisfaction is an unspoken necessity that require for a healthy married life, and the Work life of an individual may have a direct or indirect influence over their marriage and life satisfaction as a whole. The present study analyse the relation between life satisfaction and marital satisfaction among working couples of Durgapur, West Bengal. The study involves 202 participants (101 males and 101 females) working in different private and public undertakings. The age range of the participants varies from 25 to 65 and the duration of marriage considered being 1 â€“ 40 years. The job sector and educational qualification have also been considered in the present endeavour. Women who are single mothers or separated from husband or widows were not considered for the study, so as men. A comparative study with purposive sampling was used for the present research. The respondents were administered Enrich Marital Satisfaction Scale and Satisfaction with life Scale developed by Blaine J. Fowers and David H. Olson and Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S respectively. The results were obtained through Pearsonâ€™s Product Moment Correlation indicated that there exists significant difference between life and Marital Satisfaction of samples on all the measured demographic dimensions under study. The results also revealed significant difference on two important dimensions of the scales like valid and reliable marital quality and positive descriptions of the marriage and subjective well-being of oneâ€™s life. Findings indicated that gender differences moderate how husbandsâ€™ and wivesâ€™ family and work conflict may have an effect on their marital and life satisfaction of individuals. The implications of the study for working couples are discussed explicitly taking each demographic dimension under considerations.

***Keywords:*** Marital satisfaction, Working couples, Quality of Life, Private and Public.

## Emotional intelligence, self-esteem and interpersonal relationship among late adolescents

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### ABSTRACT

The study was undertaken to investigate the emotional intelligence, self-esteem and interpersonal relationship among late adolescence (18 to 21 years ).Six hypotheses were formulated for the purpose of finding out the correlation between the variables and also to find out the significant gender differences between the male and female adolescents. A sample of 140 late adolescence were chosen using incidental sampling technique. The data was collected in an offline mode from different colleges and institutions across city. The variable used of Emotional intelligence scale given by Singh and Narain in the year 2014. The scale consist of 31 items.

Self-esteem scale was developed by Dhar and Dhar in the year 2005. The scale consists of 23 items. Interpersonal relationship scale developed by Mathur. It consists of 30 items. The positive correlational has been found between emotional intelligence and self-esteem.

The negative correlation has been found between the self-esteem and interpersonal relationship. The negative correlation has been found between the interpersonal relationship and emotional intelligence. The difference between boys and girls of late adolescence in emotional intelligence and interpersonal relationship is found insignificant whereas, the difference between boys and girls of late adolescence in self-esteem is found significant.

***Keywords:*** Emotional intelligence, Self-Esteem, Interpersonal Relationship.

## In vitro and In vivo Studies to Evaluate the Wound Healing Property of Parkia javanica Chloroform Fraction

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### ABSTRACT

In vitro and In vivo Studies to Evaluate the Wound Healing Property of Parkia javanica Chloroform Fraction Parkia javanica chloroform fraction (PJCF) significantly stimulated healing process in in vivo mice model. In vitro study result showed significantly induced proliferation and migration of fibroblasts and keratinocytes at optimum dose of 20Âµg/ml. The increase in phosphorylation of FAK and Akt was detected after treatment of PJCF. The increased expression of NF-ÎºB and cytokines like, IL-1Î², IL-6, IL-8, TGF-Î² was also observed. GC-MS data revealed the presence of compounds, with known wound healing properties. The results convincingly showed the wound healing property of PJCF and the mechanistic study indicated that, the healing activity at least partly be mediated via FAK/PI3K/Akt/NF-ÐºB pathway.

# ''सम्राट अशोक के लेखों में वर्णित तत्कालीन समाज की रूपरेखा''

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## शोधसार

प्रस्तुत शोध लेख का विशय ''सम्राट अशोक के लख्े ाों में वर्णित तत्कालीन समाज की रूपरेखा है। इतिहास की पृश्ठभूमि में असंख्य योद्धाओं, शूरवीरों व विजेताओं के बीच मौर्य साम्राज्य के शासक सम्राट अशोक का नाम एक उज्जवल 'नक्षत्र' की भाँति विद्यमान है। यह एक महान योद्धा थे, जिन्होंने युद्ध व हिंसा के पथ को त्यागकर प्रेम, शांति, करूणा व विश्व बंधुत्व के पथ का आश्रय लिया। सम्राट अशोक वास्तव में आदर्श शासक थे, जिसने मानव धर्म का वह शुद्ध स्वरूप विश्व के समक्ष प्रस्तुत किया, जो सभी सम्मानित, नैतिक, आदर्शों तथा सिद्धांतों का एक संगह्र मात्र है। सम्राट अशोक ने अपने शिलालेखों के माध्यम से समाज को उपदेश दिया कि सभी लोग चाहे छोटे हो या बड़े, किन्तु वे स्वर्ग की प्राप्ति कर सकते हैं और भगवान का भी साक्षात्कार कर सकते हैं। अंततः हम कह सकते हैं कि सम्राट अशोक ने लेखों के माध्यम से समाज की एक रूपरेखा तैयार की जो आज भी स्मरणीय है।

# शहरीकरण का ऐतिहासिक परिचय

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## शोधसार

प्रस्तुत विषय शहरीकरण का ऐतिहासिक परिचय कराना है। अध्ययन का उद्देश्य विशेष रूप से क्षेत्र का विस्तार एवं ग्रामीण क्षेत्रों में बढ़ते शहरीकरण व्यवस्था को देखना है। परिकल्पना इतिहास से लेकर अब तक शहरीकरण का विस्तार होता चला आ रहा है। शहरीकरण को विकास के उप–समूह के रूप में माना जाता है। यही कारण है कि ऐतिहासिक एवं वैज्ञानिक दृष्टिकोण से भी नए शहरों का निर्माण तेजी से बढ़ा है। प्राचीन समय में जो शहर नदी के किनारे स्थित होते थे। आज शहरीकरण की अवस्था को देखते हुए यह विभिन्न क्षेत्रवाद होता जा रहा है। इस प्रकार शहरीकरण को ग्रामीण समाज से शहरी समाज में परिवर्तन के रूप में देखा जा सकता है, इस प्रकार प्राचीन इतिहास से लेकर अब तक शहरी क्षेत्रों में लोगों की संख्या में वृद्धि के रूप में प्रस्तुत किया जाता रहा है। वही सामाजिक–आर्थिक और राजनीतिक विकास के परिणामों को ही शहरी एकाग्रता और बड़े शहरों की वृद्धि, भूमि उपयोग में परिवर्तन और ग्रामीण से महानगरीय संगठन और शासन के स्वरूप में परिवर्तन का कारण बनता है। ज्ञात हो कि शहरी जनसंख्या शीघ्रता 2018–20 में 4,29,000000 है। अतः प्राप्त परिणाम देखा गया है कि पूरे विश्व की लगभग 55 प्रतिशत जनसंख्या शहरी क्षेत्रों में रहती है। इस लिए इसके विस्तार के अतिरिक्त यह भी ध्यान देने की आवश्यकता है कि अर्थव्यवस्था परस्पर चलती रहे।

**मूल शब्दः** महानगरीय व्यवस्था, शहरीकरण, विकास सामाजिक आर्थिक स्थिति, एवं क्षेत्रवाद।

## Structure and antifungal activity of some metal complexes of 4-amino-6-methyl-5-oxo-3-thioxo-1,2,4 trazine (Amttrh)

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### Abstract

4-amino-6-methyl-5-oxo-3-thioxo-1,2,4 trazine ( Amttrh) has been synthesized by condensing molar proportion of pyruvic acid with thyrocarbohydrazide in aqueous ethanol.

The ligand Amttrh contains amino-nitrogen, thioxo-sulphur and carboxo (CO) oxygen as potent donor sites.

The thiol tautomer of Amttrh has been found to co-ordinate as monoanionic chelating molecule forming bis chelate with bivalent metal ions Co(II), Ni(II), Zn(II), Cd(II) and Hg(II).

The complexes are stable and show negligible electrical conductance value in DMF, supporting their non-ionic nature.

The crystal structure of ligand Amttrh has been determined from single crystal structure.

The FTIR, 13-CNMR and 1-HNMR spectra of ligand are inconsistence with proposed structure of molecule.

The antifungal activity with four phytopathogenic fungi, namely Fusarium oxysporum, Rhizoctonia pataticola (Taub) from green gram , A. Nigar and Alternaria alternata from redish siliqua were evaluated by cup and disc method. The complexes show prominent antifungal activity.

## Metal and halogen free-approach for the synthesis of thioesters

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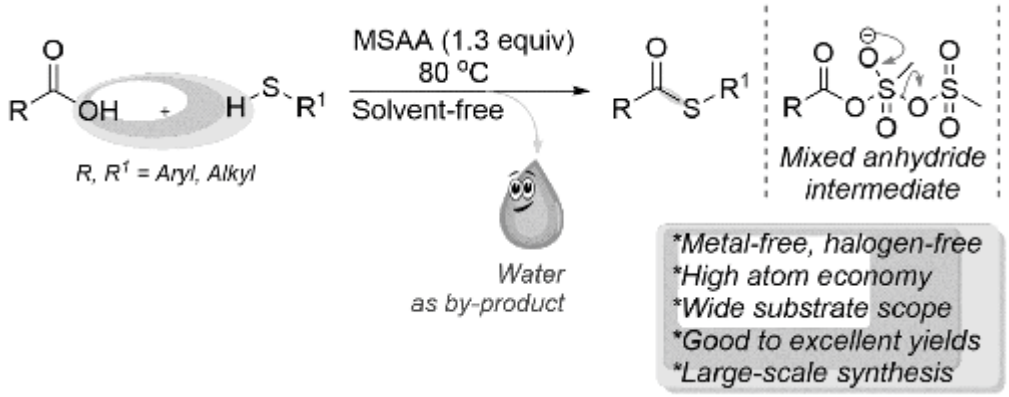
### Abstract

An unprecedented metal-, halogen- and solvent-free, methanesulfonic anhydride(MSAA) promoted novel strategy for dehydrative nucleophilic substitution reaction of feedstock acids with thiols has been developed for the synthesis of thioesters.[1] This reaction systematically unravels the feasibility and practicality of thioester formation in a step- and atom-economical fashion. Both aryl and alkyl thiols couple suitably with a variety of acids, affording the corresponding thioesters, which are important building blocks for organic synthesis,[2] and they have been utilized in acyl transfer reactions as the intermediates. Thioesters also play an important role in biology.[3] The reaction avoids the use of expensive and hazardous coupling reagents, bases and generates water as the only by-product, thus making this chemical synthetic process more viable, environment-friendly and contributing towards sustainable chemistry. The successful implementation of this C–S bond-forming strategy relies on the *in situ* generation of mixed anhydride intermediate from carboxylic acid and cheap and easily handled MSAA.




**Scheme 1. Synthesis of thioster**

**Keywords:** MSAA, Dehydrative, Neat Condition, Atom Economy, Thioester

## Freelancing Space Using React JS in Web 3.0

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## Abstract

This Paper is an attempt to elucidate issues and challenges faced by those who have small business and those who have free time with skills. This project is made taking in mind to reduce unemployment rate. This research uses empirical method of study. Formulation of technical tools was done on the basis of Requirements to build this application.

Tools used for Developing this application includes ReactJS, Firebase and Tailwind CSS. By the multiple surveys it is found that there is no such application in India especially in Bihar for freelancers. It is Evident that Indian freelancers have to face lot of Issues irrespective of opportunity, price rate, time flexibility etc. This Research work discusses the importance of freelancing in web 3.0 as there are lot of freelancing space using web 2.0 but not web 3.0 hence, the importance and application of web 3.0 shown in this Research Paper.


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