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School of Agriculture

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International Conference on Advanced Innovation and Research Challenges in Science and Technology (ICAIRST 2023)

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Dr. P. Shanmughasundram
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PREAMBLE

International Conference on Advanced Innovation and Research Challenges in Science & Technology (ICAIRST 2023) is a premier international conference which aims at current challenges in science and technological advancements with research updates and innovations that are shaping the future of mankind. This conference will create a global platform for researchers, scientists, academicians, policy makers, and industry experts to share experiences, discuss research findings and acquire desired knowledge in the subject from around the world with many networking opportunities. This platform provides an international forum for researchers to exchange ideas in recent advances on various aspects of theories, analysis, experimentation and computational methods in science, technology and management etc.

It is a multi-disciplinary conference, which includes all areas of Science and Technology used for material research including old material and new material performance in various field. Innovative original research papers on topics covered under following broad areas (but not limited to). Materials used in – Applied Science, Agriculture Science, Physical Science, Chemical Science, Pharmaceutical Science, Biotechnology, Micro Biology, Health Science, Medical Science, Space Science, Environmental Science, Computer Science and Engineering, etc. Attending this conference would help participants reflect on their work to sharpen their skills and refine their ideas using novel approaches by meeting with their peers and contemporaries. Participants will also be allowed to interact with experts and high-level representatives and share their opinions and update research outcomes.

Message from the Chancellor's desk

Dr. Ishari K. Ganesh
Founder - Chancellor
VISTAS

First, I would like to congratulate School of Basic Sciences, School of Life Sciences, School of Pharmacy and School of Agriculture for organizing the International conference on Advanced Innovation and Research Challenges in Science & Technology (ICAIRST 2023) on March 1-3, 2023.

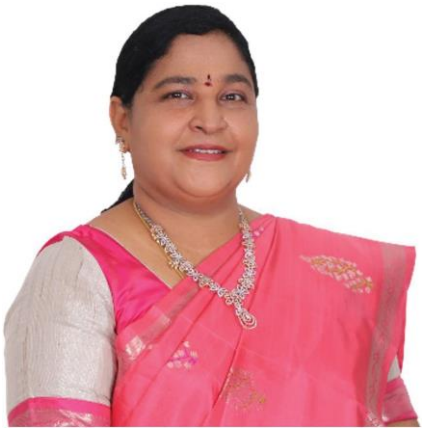
The field of Biological Sciences is one of the fast growing and every day we live the products of them. The contributions of these departments in the major areas of healthcare, agriculture, industrial and environment was uncountable. More explorations in the applications are necessary. I hope this conference will provide the platform for all the scientists and young researchers to interact and know the recent advancement in the field.

I convey my best wishes and greetings to all the organizers, delegates and participants of this international conference.

Best wishes.

Message from the Pro Chancellor's desk

Dr. Arthi Ganesh,
Pro Chancellor (Academics),
VISTAS



It is indeed an immense pleasure to know that International conference on Advanced Innovation and Research Challenges in Science & Technology (ICAIRST 2023) is organized on March 1-3, 2023.

The mission of VISTAS is to encourage, support, represent and unify the Medical and Biological Sciences community in order to promote health and quality of life through advancement of research, development, application and management of technology.

The objectives of this International Conference for Biological Sciences shall be scientific, technological, literary, and educational. Within the field of medical, clinical and biological sciences, its aims shall be to encourage research and the application of knowledge, and to disseminate information and promote collaboration.

This conference may promote the formation of regional, national, international or specialized societies, groups or boards, the coordination of bibliographic or informational services and the improvement of standards in terminology, equipment, methods and safety practices, and the delivery of health care.

My heartiest congratulations to the entire team and I wish for the grand success of the programme.

Message from the Pro Chancellor's desk

Prof. Dr. A. Jothi Murugan
Pro Chancellor (Planning & Development)
VISTAS

First and foremost, I want to thank all the organizers of the International Conference on Advanced Innovation and Research Challenges in Science and Technology (ICARIST 2023) during 1-3 March 2023. This International Conference provides a platform to bring together not only researchers, and postgraduate students but also industrial people. With this platform, VISTAS will embark on a whole process of making new discoveries and then translating them into products and services for the market place and this is only made possible with people like all of you. With the field of innovation studies now half a century old, the occasion has been marked by several studies looking back to identify the main advances made over its lifetime. The intention here is to prompt a debate within the innovation studies community on what are, or should be, the key challenges for us to take up, and more generally on what sort of field we aspire to be. It is argued that the empirical focus of our studies has not kept pace with the fast-changing world and economy, especially the shift from manufacturing to services and the growing need for sustainability. Today's scenario has brought many unanticipated Biopharma risks and challenges, but it has also brought some of the biggest opportunities to date. In executing those growth opportunities, one might consider how employing expert consultants can help the development of society. This conference will definitely focus on all these aspects and I wish the conference a grand success.

Message from the Vice President desk

Dr. Preethaa Ganesh
Vice President
Vels Group of Institutions

On behalf of the organizing committee and the institution, Vels Institute of Science, Technology and Advanced Studies, it is our pleasure to warmly welcome you to ICAIRST 2023. This International Conference on Advanced Innovation and Research Challenges in Science & Technology (ICAIRST 2023) is organized on March 1-3, 2023. This conference is intended specifically for biotechnologists, nanotechnologists, biologists, clinicians, pharmacists, educators and other health care professionals, basic science researchers, research scholars, academicians, entrepreneurs, drug manufactures agricultural biologists and students.

Basic Sciences, Life Sciences, Pharmacy and Agriculture are interdisciplinary areas and have wide applications in all fields of science and Technology. The emergence of new technologies in nanomedicine, computational biology, genomics, proteomics, drug discovery is helping the community. This conference is intended to connect with compatible colleagues from the scientific community to share the scientific advancement and will provide comprehensive updates, education, and information on current and emerging areas of biological sciences and the challenges ahead for researchers. This scientific gathering will serve as a platform to exchange the research ideas and to establish collaborations between the research groups and industries.

I extend my wishes to the School of Basic Science, School of Life Science, School of Pharmacy and School of Agriculture for supporting the conference. I thank all the sponsors for providing support. I also thank all the delegates and I am confident that this conference would be a rewarding experience for all the participants.

Message from the Vice-Chancellor desk

Dr. S. Sriman Narayanan
Vice-Chancellor

Vels Institute of Science, Technology and Advanced Studies
(VISTAS)

I am happy to note that the Schools of Basic Sciences, Life Sciences, Pharmaceutical Sciences and Agriculture of VISTAS are organizing a three days International Conference on "Advanced Innovation and Research Challenges in Science & Technology (ICAIRST 2023)" from March 1-3, 2023. This topic is of great importance in the present scenario to bring reforms and transformation in the Indian Research Eco System to acquire in depth knowledge about recent innovations and applications.

The multidisciplinary areas of Sciences have wide applications in every walk of life. This includes applications of diagnosis of diseases for drug delivery and sustainable agriculture. Integration of these areas would be a forum to many blossoming scientists so that they will be able to bring changes together to find scientific solutions to the problems of society.

I trust that this conference will provide a platform to interact with the Scientists, Pharmacist, Clinicians, Agriculturists, Industrialists, Research scholars and Students to share the recent advances in various areas of sciences.

I wish the conference all the very best and urge all participants to brainstorm on various thrust areas of the conference. I hope that this conference will be a trigger platform for generating innovative ideas and new breakthroughs among the participants for bringing positive changes in the Science & Technology.

Also, I believe that the efforts undertaken by the Organizing team will lead to exciting, rich and high-quality papers, featuring high-impact presentations for all attendees to enjoy, appreciate and expand their expertise in the latest developments and to stimulate further study and research.

I congratulate the organizers and wish the conference a great success.

Message from the Pro Vice-Chancellor desk

Prof. Dr. M. Bhaskaran
Pro Vice-Chancellor
VISTAS

I am pleased to note that the School of Basic Sciences, Life Sciences, Pharmacy and Agriculture are jointly organizing International Conference on Advanced Innovation and Research Challenges in Science & Technology (ICAIRCST 2023) which will be held on March 01-03, 2023 at VISTAS campus, Pallavaram, Chennai. The Conference will provide a forum for sharing new ideas and exploring the advances in the respective field of Sciences.

The scientific program includes keynote & plenary talks from eminent speakers of National and Internationally reputed Institutes through video, oral and poster presentations with technology demos. It is the goal of the organizers to make this conference an event of scientific excellence, attractive to students, academicians cum scientists, industrial and stakeholders in sciences and its advancements.

The applications of basic sciences are vital for advances in basic sciences, medicine, industry, agriculture, water resources, food security, energy planning, environment, communications, culture etc.,

In the past couple of years, science has exposed its potential in various areas, the science of today is the technology of tomorrow. One of the most important messages the people of science conceived is, situations need an interdisciplinary approach to reach a practical and a useful conclusion.

The curiosity of the human mind has ability to seek answers anywhere it flourishes, from home to lab; from the petri plate to the computer software remedy awaits itself to be acknowledged by the questioning mind. The core vision of the conference is to provide an excellent academic forum and interactive platform for exchange of ideas and views with participating members on the emerging trends and challenges in research in the field of basic and life sciences. Its objective is to abreast the emerging scientists with the latest developments of this field by providing them an opportunity to enrich their vision in research by under taking the stock of the present status of and to gather future research ideas and directions towards a quality of research so as to groom the young scientists' minds to face the challenges of future for effective and efficient professional responsibilities. I am sure that this conference will be a perfect platform for the scientists, science communicators and science enthusiasts are encouraged to share their expertise knowledge and address the several gamut of emerging issues. I convey my congratulations and best wishes to all the participants and organizers of this mega event.

Message

Dr.V. Geethalakshmi
Vice-Chancellor
Tamil Nadu Agricultural University
Coimbatore

I am glad to participate in the "International Conference on Advanced Innovation and Research Challenges in Science & Technology - ICAIRST 2023"

I fervently believe that this conference will boost the quality of the research and enable more collaborations in the future. Research plays a crucial role in the development of the country. Research institutions including universities and industrial firms located nationally and internationally should initiate and perform more research studies to address and find solutions to the problems faced by the world. The outcome of the research studies must be discussed critically, and suitable solutions have to be taken based on constructive arguments. The articles sent to this conference are written by famous researchers around the world in multi-disciplines. I have confidence that this International Conference on Advanced Innovation and Research Challenges in Science and Technology is a great platform to discuss the research outcomes critically and come up with effective solutions as well as establish a good collaboration between universities and industrial firms located nationally and internationally.

The theme of the conference is to cover basic and advanced science and technology. The conference has attracted delegates from all over the world; people with wide-ranging knowledge on the multi-disciplinary aspects.

At this conference, you will be able to share experiences and research results, discuss challenges encountered and solutions adopted, and have opportunities to establish productive new academic and industry research collaborations.

Finally, I would like to thank distinguished keynote speakers, reviewers, sponsors, and participants. I also wish the organizing committee of the conference and all staff members of the Faculty for organizing this conference successfully.

Message from the Dean

Dr. R. A. Kalaivani
Dean
School of Basic Sciences
Vels Institute of Science, Technologyand
Advanced Studies (VISTAS)
Chennai-600117
E-mail: director.sbs@velsuniv.ac.in

The International Conference on Advanced Innovation and Research Challenges in Science and Technology (ICAIRST 2023) has been organized by the Department of Chemistry, School of Basic Sciences, VISTAS during March 1 -3, 2023. This conference aims at current challenges in Science and Technological advancements with research updates and innovations that are shaping the future of mankind. This conference also makes a platform to bring together scientists working on various aspects of advanced from all over the country to enable stimulating discussion and exchange their knowledge. With the help of the eminent scientists and delegates, this conference will give wide knowledge to the students, and research scholars of various disciplines.

I thank the eminent personalities for their acceptance to deliver the lectures highlighting recent advances in their field of research and to shape this International Conference.

I hope that the scientific deliberations and discussion of the gathering during the two days virtual conference would help to stimulate better scientific understanding and technical innovations for the growth of materials research and development

Message from the Director

Prof. Dr. P. Shanmugasundaram
Director
School of Pharmaceutical Sciences
VISTAS

It is my great pleasure to welcome you all to the International Conference on Advanced Innovation and Research Challenges in Science and Technology. This conference provides a platform for researchers, innovators, and practitioners from around the world to come together and share their expertise, experiences, and knowledge in the field of science and technology.

We are living in an era where science and technology are rapidly advancing, and new innovations are emerging at an unprecedented pace. These developments are reshaping the way we live, work, and interact with each other, and creating new opportunities and challenges for us to explore.

In this conference, we will be discussing the latest research and innovation trends in various fields of science and technology, including but not limited to artificial intelligence, data science, robotics, biotechnology, and materials science. We will also be exploring the challenges and opportunities that these trends bring, and discussing how we can harness the power of science and technology to create a better future for all.

I am confident that this conference will be a valuable learning experience for all of us, and that it will lead to new insights, collaborations, and ideas that will shape the future of science and technology. I would like to thank all the participants, organizers, and sponsors who have made this conference possible, and I wish you all a productive and enjoyable experience.

Message from the Director

Prof. Dr. AK Kathireshan
Director
School of Life Sciences
VISTAS

It is my great honor to welcome you all to the International Conference on Advanced Innovation and Research Challenges in Science and Technology. This gathering represents a unique opportunity to exchange knowledge, ideas, and experiences on the latest scientific and technological breakthroughs that have the potential to reshape the world as we know it.

As we gather here, we recognize the critical role that science and technology play in addressing the complex challenges of our time, such as climate change, global health, energy, and sustainability. We also acknowledge that the pace of innovation and research is accelerating, and it is essential that we continue to push the boundaries of what is possible to make a positive impact on society and the planet.

During this conference, we will engage in rigorous discussions and debates on the latest advances in a broad range of scientific and technological fields, including but not limited to biotechnology, nanotechnology, renewable energy, and materials science. We will also explore the challenges and opportunities that arise from these developments, including their ethical, legal, and societal implications.

I encourage all of us to engage actively in this conference, share our research, ask critical questions, and learn from one another. Let us take advantage of this unique opportunity to collaborate and advance our collective knowledge and understanding of the world around us.

Once again, I welcome you all to this conference and wish you a fruitful and enjoyable experience.

Message from the Dean

Prof. Dr. M. Paramathma
Dean
School of Agriculture
VISTAS

It is my utmost pleasure to welcome you all to the International Conference on Advanced Innovation and Research Challenges in Science and Technology. This conference is a testament to the passion and dedication of individuals around the world who are committed to advancing the boundaries of human knowledge and technology.

The theme of this conference is particularly apt in our current age, where we face unprecedented challenges that require innovative solutions. Climate change, global pandemics, and social inequality are just a few of the many issues that demand our attention and concerted efforts to address.

Through this conference, we hope to create a platform for researchers and innovators to share their ideas and discoveries and to foster collaboration and dialogue among experts in various fields of science and technology. We believe that this exchange of knowledge and ideas will inspire novel approaches and solutions to the complex problems facing our world.

We are honored to have such distinguished speakers and attendees from around the world, and we hope that this conference will be a fruitful and inspiring experience for all of you. We look forward to learning from your research, hearing your ideas, and building new relationships that will further advance the frontiers of science and technology.

Thank you for your participation and support, and we wish you all a successful and productive conference.

Dr.-Ing. MozaffarAbdollahifar
Battery Material Scientist
Battery Process Engineering
Chemistry Department
Institute of Particle Technology
Technische Universität Braunschweig,
Germany

SILICON/GRAPHITE COMPOSITE ANODES OF LI-ION BATTERIES: CHALLENGES AND SOLUTIONS

Silicon is considered a promising anode with extremely high theoretical capacity as a candidate for the next-generation of high-energy-density anodes for lithium-ion batteries (LIBs). However, practical applications of these materials have been hindered by suppressed electrochemical properties caused by significant volume changes and degraded electrode architectures. The development of active silicon materials in combination with graphite (state-of-the-art anode for LIBs) has established that these materials are outstanding electrode candidates for efficient lithium storage devices, as they take advantage of Silicons high theoretical capacity and graphites ultrahigh stability. Silicon/graphite composite anodes have several benefits, including low-cost, high capacity, natural abundance, and environmental friendliness, and therefore, demonstrating great potential as anodes of LIBs. However, long cycle stability is a key challenge for the commercialization of these composites. To solve this problem, we produced silicon/graphite composites by fluidized bed granulation. A core-shell microstructure is observed in the composite powder prepared by this process, which contains nano-sized silicon particles adhered to micron-sized graphite particles. As a result of the FBG process, and using a suitable binder allows the Si nanoparticles to adhere firmly to the graphite surfaces during subsequent carbon coating. The composite particles are coated with pitch and carbonized to form a layer of amorphous carbon, showing highly electronically conductive and mechanically stabilizing. The anode composites show a high capacity of over 600 mAh g −1 . Even without electrolyte optimization, the polymer-coated Si@Gr demonstrates cycling stability up to 1000 cycles. The simple polymer coating process is highly interesting for preparing long-cycle-life anode electrode materials for practical applications.

Dr. Kamal kumar
Professor
University of Technology and Applied Sciences
(Higher College of Technology)
Muscat, Oman

RECENT ADVANCES IN THE FIELD OF DOMINATION THEORY AND ENERGY OF GRAPH

Drawing a graph eases understanding a complicated situation in engineering. In graphs we deal with only two entities vertices and edges. Vertices represent the object while the edges represent the relation between the objects. The application of graph theory can be found in diverse fields such as psychology to anthropology and linguistics to communication networks. The theory of Domination was introduced by Claude Berge in 1958. In his book “Theory of graph and its application” he has introduced it as “A subset S of V is said to be a dominating set, if every vertex not in S is adjacent to at least one vertex in S. If no proper subset of S is a dominating set, then S is said to be minimal dominating set. The minimum cardinality of all minimal dominating sets is called as the ‘co efficient of external stability’ and denoted as In 1962, Oystien Ore renamed it as “Domination number”.The theoretical concept energy of graph first evolved in the field of chemistry. It was found that the energy of graph is correlated with few physical quantities like enthalpy of formation and the total pi electron energy of a hydrocarbon. A chemical compound could be represented a molecular graph with atoms as nodes and bonds between the atoms as edges.Eigen values are extensively studies in various fields of sciences such as theoretical chemistry, structural designing, vibration analysis, sound damping and sound proofing, oil exploring simulations, crack analysis in solids, atomic mass analysis, drug designing, QSAR Modelling and others. In this talk we will highlight few latest researches in Roman and Inverse Roman Domination in Graphs. Overcome the limitations in energy of graph by introducing the various energy of graph through atom connectivity matrix (ACM) and in general connectivity matrix (CM). Also we will connect the above two parameters.

Dr. Syahril Abdullah
Deputy Director
Institute of Bioscience,
Faculty of Medicine & Health Sciences,
Universiti Putra Malaysia (UPM),
Malaysia

TARGETING OF LUNG CANCER CELL LINES-DERIVED CANCER STEM CELL USING HUMAN MESENCHYMAL STEM CELL EXPRESSING TRAIL

The increasing trend in the global lung cancer-related mortality justifies the needs for newer therapies that are effective and tumour selective. TNF-related apoptosis inducing ligand (TRAIL) has been shown to be a promising therapeutic agent against several tumours. However, due to its short half-life and poor bioavailability, TRAIL needs a delivery system to be effective. Mesenchymal stem cells (MSCs) have recently emerged as an effective anti-tumour cytotherapy, able to deliver TRAIL in pre-clinical tumour models. The CD133+ CSC was isolated from the NSCLC cell lines and verification assays were subsequently performed. The sorted CD133+ population strongly exhibited the characteristics of CSCs based on their bigger sphere size in an anchorage independent culture, significantly higher number of colonies, and expression of aldehyde dehydrogenase (ALDH). Flow cytometry analyses have also revealed that the expression of DR5 TRAIL receptor was high in the CD133+ CSC population in both H2170 and H460 compared to A549. It was observed that the co-culture of MSC-TRAIL and the CD133+ population from both H460 and H2170 induced a significant inhibition to the CSCs. Furthermore, inhibitions to both the unsorted and CD133- cells were also found, indicating that the MSC-TRAIL was effective in destroying the tumour. The MSC-TRAIL was noticed to induce apoptosis and cell death to both H460 and H2170-derived CD133+ CSCs, indicated by the positive annexin V and sytox-green stained cells. Through investigation of the mitochondrial membrane potential, it was also found that MSC-TRAIL was able to induce intrinsic apoptosis to the CSCs. As such, these findings add credibility to the use of MSC-TRAIL as anti-tumour cytotherapy and help to uncover a unique therapeutic potential of MSC-TRAIL in the treatment of NSCLC.

Dr. K. S. Subramanian
Former, Director of Research & Head
Centre for Agricultural Nanotechnology
Tamil Nadu agricultural University
Coimbatore 641 003

NANOTECHNOLOGY FOR SMART AGRICULTURE

Nanotechnology is a fascinating field science deals with atomic manipulations that lead to Nanotechnology applications in agriculture is quite diverse encompassing diagnostic kits for early detection of plant diseases, nano-agricultural inputs (nano-fertilizer, nano-herbicides, nano-insecticides, nano-seed science, plant health management), nano-food systems besides environmental remediation and biosafety of nano materials.

- Seed quality assessment can be done using e-Nose and e-Tonque technologies wherein volatile organic compounds (VOCs) such as hexanal, alcohol, acetaldehyde and melanaldehydes are signature molecules serve as an indicator of level of seed deterioration and organic acids from the seeds like acetic acid will serve as an indicator. Leaf moisture (impedomentric sensor), nitrogen (optical), early detection of diseases (dip stick method).
- Nano-agri inputs can be developed using top-down approach by reducing the size using high energy ball and bottom-up approach using chemical or biological method
- Preservation of Fruits using Nanotechnology Pre-harvest spray or post-harvest dip of nano-emulsion to extend shelf-life of fruits (mango, guava, grapes), nano-stickers, nano-pellets and nano-package
- Biosafety of nano-materials / particles: Nano-products have to be studied for their safety against beneficial microbes, predators, parasitoids, honeybees, earthworms, zerba fish in aquatic systems and human cell lines (liver cells, lung cells, epithelial cells, kidney cells and cancer cells) as per the DBT Regulatory Guidelines set for the evaluation of Agri-nano inputs and Nano-food products which was officially launched in 2020.

Nanotechnology is being visualized to revolutionize agriculture sector in the years to come. The futuristic agriculture should focus on the development of processes and products intended to deliver inputs precisely, besides deriving solution to unresolved issues at the farm gate.

Dr. B. M. Nagabhushana
Professor & Head
Department of Chemistry
M. S. Ramaiah Institute of Technology,
Bengalaru, India

MORPHOLOGICAL EFFECT IN NANO - STRUCTURED MATERIALS - RESEARCH OPPORTUNITIES IN SOLUTION COMBUSTION PROCESS

Nano-materials are the foundation of major technological advances. The field of nano-structured materials is widening in several directions. Nano-materials are extremely important materials for a wide range of applications. Nanotechnology has the potential to change every part of our lives. Nanotechnology affects all materials: ceramics, metals, polymers, and biomaterials. In the coming decade nanotechnology will have an enormous impact Future advances could change our approaches to manufacturing, electronics, information technology and communications technology making previous technology redundant and leading to applications which could not have been developed or even thought about, without this new approach.

Synthesis of nano-metal oxides with tailored made morphologies has in recent times generated amongst Material Chemists because of the challenges addressed by the normal wet chemical routes over the sophisticated physical techniques. In wet chemical methods by changing the reaction conditions as-synthesized products with various representative morphologies could be obtained. The interest in nano materials stems from the fact that the new properties are acquired at this length scale and equally important that these materials change with morphology. Recently, there has been a growing interest in synthesis of efficient nano-materials with better properties. To achieve this, material must have fine size, narrow size distribution, non-aggregation, smooth surface and spherical morphology. In this talk, the preparation of nano metal oxide materials with different morphologies through solution combustion method and effect of morphology on different properties will be discussed in detail.

Dr. Chitiphon Chuaicham
Special Assistant Professor,
Department of Earth Resources
Kyushu University, Japan

INTERPOLATION OF ENERGY AND ENVIRONMENTAL ISSUES VIA PHOTOCATALYSIS

In recent decades, pollution and energy constraints have brought into focus a possible global crisis. To preserve the long-term sustainability of human civilization, it is essential to discover alternative energy resources and pollution treatment processes. Photocatalysis has been designated as a representative green technology that is extensively employed and implemented in a range of academic research domains, including the degradation of hazardous pollutants in wastewater, the conversion of biomass, and the evolution of hydrogen gas. This presentation will provide an overview of recent research on the development of photocatalysts for wastewater treatment, biomass conversion, and hydrogen gas evolution by bandgap engineering and composite fabrication. Moreover, the roles of the utilization of clay minerals and industrial wastes are emphasized in photocatalyst composites. In addition, the newly reversed double-beam photoacoustic spectroscopy (RDB-PAS) technique will be highlighted to elucidate the surface electronic properties in the modified photocatalyst, related to photocatalytic performance.

Dr. B. Anbarasan
Professor,
Department of Pharmaceutics
Sri Ramachandra Faculty of Pharmacy
Sri Ramachandra Institute of Higher Education
and Research, Chennai

QBD QUALITY BY DESIGN AN OVERVIEW

Pharmaceutical industries are striving to ensure and achieve quality, safety, efficacy. Quality by Design (QbD) is a concept coined by Joseph M. Juran to achieve breakthroughs in new products, services and processes. In order to outweigh the risks of Drug recalls, manufacturing failure cost, scale up issues and regulatory burden, QbD has been implemented and encouraged by regulators. Before the QbD era, product safety was ensured by end product testing. However, QbD is used at any time in the life cycle of the drug to enhance product quality with predefined objectives and emphasizes product and process understanding. ICH Q8 Pharmaceutical Development discusses the various elements of Quality by design as Product Profile, Critical Quality Attributes (CQAs), Risk Assessment, Design Space, Control Strategy and Lifecycle management and continuous improvement. The Regulatory bodies are thus focusing on implementing QbD, a science-based approach that improves process understanding by reducing process variation and the process- control strategies.

Dr. S. Rajendra Prasad
Former Vice Chancellor
University of Agricultural Sciences (UAS), GKVK,
Bengaluru, India

SOILLESS AGRICULTURE: A NOVEL TECHNOLOGY FOR INTENSIVE CROP PRODUCTION

The rapidly-growing world population is projected to reach 9.6 billion by the year 2050. FAO (2009) predicted that the global grain production is required to increase by 70%, with the limited additional arable lands and scarce water resources. In this respect, the possibility of exploiting soil whose productivity is on declining trend for agricultural purposes under limiting water resources makes the soilless system cultivation surely a valid opportunity to eliminate the stated problems. Currently, about 3.5% of the worldwide area for vegetables production adopts soilless agriculture technique. It can increase not only yield but also quality and safety of fresh produce and thus meet the demands of modern society. It saves up to 80–90% of irrigation water, 60-80% pesticides, eliminate weeds, can be implemented in areas unfavourable for conventional farming, almost zero environmental pollution, better yield than conventional cultivation and effective utilisation of labour source. The complete control of nutrition via the nutrient solution (NS) provides efficient tools for physiological and nutritional studies, to study the effect of nanoparticles on physiology of the plants. This tool could be utilised efficiently to produce high quality seeds especially for high value crops.

Dr. M. Senthilkumar
Department of Chemistry
National Institute of Technology (NIT)
Kurukshetra, Harayana

METAL CATALYSED OXIDATION REACTIONS: A POSSIBLE PLATFORM FOR HYDROGEN STORAGE MATERIALS

The scientist community around the world is now focusing on the hydrogen economy over the fuel economy. Though the hydrogen economy is considered to be superior compared to the fuel economy, it suffers from two major drawbacks such as production of green hydrogen from sustainable resources and storage and transportation of hydrogen in a safer way is considered to be the bottle-neck in the hydrogen economy. Currently, the scientific community around the world is working on developing technologies that lead to safe storage and transportation of hydrogen. One such method to store and transport hydrogen in a much safer way is by using the liquid organic hydrogen carriers (LOHCs). LOHCs are liquid or semi solid compounds which can easily be stored and transported in a safer way. LOHCs are capable of releasing and storing the hydrogen gas by undergoing reversible dehydrogenation and hydrogenation, respectively in the presence of a catalyst

This lecture will focus on the catalyst systems that are able to catalyse the dehydrogenative oxidation of alcohols and amines. Oxidation of amines and alcohols are very important reactions because of the formation of industrially important products such as nitriles, imines and ketones. Further, the release of hydrogen as the only by-product suggests the potential application of developed catalyst systems in hydrogen storage.

Dr. R. Balaji
Professor
Department of Molecular Oncology
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STATE OF ART IN VIVO PHARMACOLOGY TOOL: SMALL ANIMAL IMAGING

In vivo reporter gene and imaging technologies have the potential to contribute to the drug discovery pipeline in several areas. They provide systems that enable the study of the biochemical activity of a target in disease, and in response to a drug, to be monitored over periods of time, and offer more accurate methods of measuring pharmacodynamics and toxicity. Although reporter-gene technology is in its infancy, with further refinement reporter animals could become a valuable tool in the early stages of target and lead identification and preclinical drug development.

Dr. Timothy O. Randhir
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College of Natural Sciences,
University of Massachusetts, USA

CLIMATE SMART DECISIONS FOR AGRICULTURAL RESILIENCE AND FOOD SYSTEMS SUSTAINABILITY

Climate change-induced increased temperature, rainfall variability, floods, and droughts could have widespread impacts on agricultural and food systems. These directly affect water and food security through changes in production conditions and livelihoods. These risks are complex, compounding, and cascading, requiring innovative approaches to mitigate and adapt to these changes. There is a critical need for multiscale innovation at multiple levels of the agricultural ecosystem and social systems. Climate-smart innovation and decision-making are needed for focused strategies in adaptation options across scales and regions. Identifying limits and barriers to change, enhanced local knowledge systems, and sustainable practices can be used to develop climate-smart decisions. Science, technology, and economic innovations remain critical in developing resilience in agriculture and food systems. With small holding remaining a large portion of the supply chain, innovations that transform small-scale systems are essential for sustainability in world agriculture. Precision agriculture, biotechnologies, nanomaterials, Integrated systems design, water harvesting, integration of IoT in farming, big data analysis, participatory research, smart instrumentation, agribusiness innovation, and economic institutions are some areas with excellent potential for climate-smart agriculture. Innovation in yield enhancements, sustainable income, resilience to climate variability (floods and droughts), financial innovations, social capital enhancements, and institutional designs can guide countries toward climate-smart decisions that can build resilient agricultural communities and ecosystems.

Dr. N. Vijayan
Senior Principal Scientist
CSIR- National Physical Laboratory
New Delhi

ROLE OF INDIAN REFERENCE MATERIALS IN R&D SECTOR

CSIR-NPL as the National Measurement Institute (NMI) of India holds responsibility to offer various apex level calibration services to the industry & user organizations of the country and provides educational training on industrial metrology to support the economic growth. Certified reference materials are essential for marketing the quality products in National/International market. All the developed countries have very strong program on certified reference materials. Unless the products produced have been certified with the help of metrological institutes it will have no value in the international market. In the recent past, India faces a huge problem due to poor quality import on one hand, and rejection of our export at foreign borders on the other hand, causing a huge economic loss to the country. In order to export the Indian product, the testing is done in foreign country, which not only is expensive but also taking away our jobs related quality control and testing. In this regard, indigenous development of in-house as well as through Reference Material Producers (RMPs), several BNDs (Bharatiya Nirdeshak Dravyas) in different areas such as food, fuel, ores and minerals etc. are essentials for quality controls of the processes and products in the country. In-house production of the BNDs/CRMs is essential for import/export as well as the job creation (as the BND production will require a huge manpower and also for their distribution and marketing). In addition, this will also save a huge foreign exchange for the country. So, it is mandatory to calibrate the instruments with the reference standards (IRM/ BNDs). The detailed information's will be shared during the conference.

Dr. Ling Shing Wong
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INTI International University,
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Malaysia

FOLLOWING THE TREND: RESEARCH IN ENVIRONMENTAL WHOLE CELL BIOSENSOR

Research is challenging, especially this fast-moving world. Billions of gigabytes of new data are generated daily, with ten of thousands of research papers published daily, our world is now saturated with breakthroughs and novelties. As researchers, we might find difficulties in to progress with the current trend of research. Many of the topic of interest that we studied might not be attractive anymore in short period of time. Therefore, we must be able to adopt and moving together with the trend of the research in our field. In this session, personal experience of the speaker in keeping the environmental whole cell biosensor research going over the pass decade will be shared. The challenges and the solution will be highlighted as well.

Dr. Klas Abelson
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Department of Experimental Medicine,
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COMPARISON OF FACIAL AND RETRO-BULBAR BLOOD SAMPLING IN MICE IN RELATION TO ANIMAL WELFARE AND BLOOD QUALITY.

Repeated blood sampling is a common procedure in laboratory mice, but at present it is unknown which technique has the least impact on the animals when large or repeated blood samples are required. Retro-bulbar sinus puncture is a reliable technique but has been shown to cause many changes in the animals, why sublingual and facial vein puncture have been suggested as suitable alternatives. This study investigated which of the three blood sampling techniques had the least impact on nest building activity, level of faecal corticosterone metabolites, body weight, fur status, and macroscopic changes, whether the blood sampling techniques gave rise to variation in blood quality between blood samples, and whether sublingual and facial vein puncture should be performed with or without anaesthesia in female C57BL/6 mice.

Prof. Rajiv Prakash
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Indian Institute of Technology (IIT)
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India

NOVEL INTERFACIAL TECHNIQUE FOR ORGANIC SEMICONDUCTOR MATERIALS: FABRICATION OF ORGANIC DEVICES

With the rich experience of developing silicon devices over a period of the last six decades, it is easy to assess the suitability of a new material for device applications by examining charge carrier injection, transport, and extraction across a practically realizable architecture; surface passivation; and packaging and reliability issues besides the feasibility of preparing mechanically robust wafer/substrate of single-crystal or polycrystalline/ amorphous thin films. For material preparation, parameters such as purification of constituent materials, crystal growth, and thin-film deposition with minimum defects/disorders are equally important. Further, it is relevant to know whether conventional semiconductor processes, already known, would be useable directly or would require completely new technologies. Having found a likely candidate after such a screening, it would be necessary to identify a specific area of application against an existing list of materials available with special reference to cost reduction considerations in large-scale production. Various families of organic semiconductors are reviewed here, especially with the objective of using them in niche areas of large-area electronic displays, flexible organic electronics, and organic photovoltaic solar cells. While doing so, it appears feasible to improve mobility and stability by adjusting π-conjugation and modifying the energy band-gap. Higher conductivity nanocomposites, formed by blending with chemically conjugated C-allotropes and metal nanoparticles, open exciting methods of designing flexible contact/interconnects for organic and flexible electronics as can be seen from the discussion included here.

Dr. Fuad Ameen S. Hasan
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PATHOGENIC FUNGI FOR HUMAN

Pathogenic fungi are a diverse group of microorganisms that can cause a range of diseases in humans, including superficial infections of the skin, hair, and nails, as well as more serious systemic infections affecting multiple organs. These fungi are often opportunistic, taking advantage of weakened immune systems to establish infections in vulnerable individuals. Pathogenic fungi are also known for their ability to adapt to various environmental conditions, which enables them to survive in a wide range of settings. Despite significant progress in the development of antifungal agents, the treatment of fungal infections remains a challenge due to the emergence of drug-resistant strains and the limited availability of effective drugs. As such, the study of pathogenic fungi and their interactions with human hosts continues to be an active area of research with the goal of developing better diagnostic and treatment options.

Dr. S. Shanmugharaju
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Indian Institute of Technology (IIT),
Palakkad, Kerala

SURPRISING 'TWIST AND TURNS' IN SUPRAMOLECULAR SELF-ASSEMBLY FORMATION OF NOVEL STRUCTURES AND MATERIALS

Supramolecular self-assembly chemistry provides a fascinating platform for developing functional structures and materials that can have applications in various fields.Self- assembly is the spontaneous association of components into well-defined ensembles based upon the information embedded in the components. In the past few years, we have been interested in the rational design and synthesis of amino-1,8-naphthalimide-derived Tröger's bases (TBNaps) fluorophores and employ them as bifunctional supramolecular scaffolds to generate hierarchical functional structures and novel materials for applications within the material and medicinal chemistry fields.2-7 TBNaps are fascinating chiral scaffolds, comprising a methano-1,5-diazocine ring fused with two 1,8-naphthalimide molecules placed orthogonal to each other giving rise to a unique V-shaped structure possessing a hydrophobic cavity. The ease of synthesis, its unique cleft-shaped structure, and its interesting photophysics have made TBNaps an attractive scaffold for use in host-guest systems and in numerous supramolecular constructs. We have developed several interesting structures, materials, and polymers made from TBNaps and demonstrated their applications. For instance, a novel Tröger's base p-cymene–Ru(II)–curcumin organometallic conjugate was used as a theranostic agent against cervical cancer cells. Very recently, we have developed a TBNaps functionalized Triazine covalent organic polymer for 'turn-on' fluorescent sensing of volatile organic pollutants. In this talk, I will discuss in detail the recent advancements in supramolecular self-assembly formations of novel structures and functional materials made from TBNaps.

Dr. Mah Siau Hui
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Taylor's University
Malaysia

XANTHONE DERIVATIVES AS POTENTIAL ANTI-INFLAMMATORY LEAD COMPOUNDS

Xanthone is a class of secondary metabolite that possesses a wide spectrum of pharmacological activities, including anti-inflammation. Acute inflammation may lead to a variety of chronic inflammations, including life threatening hypersensitivity reactions such as stroke and progressive organ damage. The common anti-inflammatory drugs possess many side effects. Therefore, the discovery of new lead compounds for anti-inflammatory drugs is crucial. Our previous studies on the various plant species have led to the isolation of various xanthones with different substituent groups. The variation of xanthones were then increased by the synthesis of derivatives for their structure- activity relationship study on anti-inflammation. Hydroxy xanthones were firstly synthesized and subsequently modified into a few series of new xanthone derivatives. The chemical structures of these derivatives were confirmed by MS, NMR, FTIR and XRD. All the xanthones were evaluated for their cytotoxicity by using MTT assay before subjected to anti-inflammatory activities evaluation through NO production inhibition assay by using LPS-induced RAW 264.7 cells. Interestingly, some of these xanthone derivatives showed stronger NO inhibitory effects than the standard drug, diclofenac sodium with low IC 50 values. These xanthones were further evaluated for their suppression effects on the production of pro-inflammatory cytokines, TNF-α, IL-1β and IL-6. The results showed that these xanthones inhibited the cytokines at varying degrees. In summary, xanthone derivatives are potential to be the lead compounds for anti-inflammatory drug, thus further molecular studies are recommended to confirm on their mechanisms of action.

Dr. M. Menaga
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Bioneemtec Pvt Ltd
Golden Jubilee Biotech Park for Women Society,
SIPCOT IT Park, Chennai

SMALL MOLECULES SECONDARY METABOLITES- ANTIBIOTICS INNOVATION IN HEALTH CARE

Secondary metabolites are physiologically active tiny molecules that are not essential for survival but give the generating organism a competitive edge. Many antibiotics, chemotherapeutic medications, immune suppressants, and other medications are derived from the bacterial secondary metabolites. Bacterial infections that produce infectious diseases are a major cause of mortality and morbidity throughout the world. Despite a steady decline in the number of new antibiotic discoveries over the past few decades, bacterial drug resistance has increased. Thus, it has become of utmost importance to find more potent antibacterial drugs. Several plant-derived substances have a wide range of chemical structures that could lead to the development of novel antibacterial action mechanisms and new targets for our research.

Dr. Isnaini Rosyida
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PICTURE FUZZY GRAPH COLORING

In a fuzzy set (FS), there is a concept of alpha-cuts of the FS for alpha in [0,1]. Further, this concept was extended into (alpha,delta)-cuts in an intuitionistic fuzzy set (IFS) for delta in [0,1]. One of the expansions of FS and IFS is the picture fuzzy set (PFS). Hence, the concept of (alpha,delta)-cuts was developed into (alpha,delta,beta)-cuts in a PFS where beta is an element of [0,1]. Since a picture fuzzy graph (PFG) consists of picture fuzzy vertex or edge sets or both of them, we have an idea to construct the notion of the (alpha,delta,beta)-cuts in a PFG. The steps used in this paper are developing theories and algorithms. The objectives in this research are to construct the concept of (alpha,delta,beta)-cuts in picture fuzzy graphs (PFGs), to construct the (alpha,delta,beta)-cuts coloring of PFGs, and to design an algorithm for finding the cut chromatic numbers of PFGs. The first result is a definition of the (alpha,delta,beta)-cut in picture fuzzy graphs (PFGs) where (alpha,delta,beta) are elements of a level set of the PFGs. Further, some properties of the cuts are proved. The second result is a concept of PFG coloring and the chromatic number of PFG based on the cuts. The third result is an algorithm to find the cuts and the chromatic numbers of PFGs. Finally, an evaluation of the algorithm is done through Matlab programming. This research could be used to solve some problems related to theories and applications of PFGs.

Dr. Manick Annamalai
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Ontario, Canada

BIOIMAGING TECHNIQUES FOR FOOD SAFETY AND QUALITY ASSURANCE

Food safety is the most important quality parameter measured throughout the food supply chain. Visual inspection and lab-based analytical methods have been predominantly used for measuring various food quality. However, visual inspection is a laborious and subjective method of food inspection. On the other hand, analytical methods require expensive equipment, skilled personal, and chemical reagents. Computer vision based non-destructive testing techniques are becoming popular from farm-level to consumers-level. In computer vision technique, the images of an object is obtained through any systems such as RGB color camera, near infrared camera, thermal camera, X-ray camera and so on. The images are analyzed, and prediction or classification models are developed using machine learning techniques such as artificial neural network (ANN), deep learning neural network (DNN), convolution neural network (CNN) and so on. These techniques are easy to implement in food handling facilities. Also, objective results and 100% inspection may be possible using image-based quality assurance systems.

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Dean
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FROM 'COMPOUND AND DISPENSE' TO 'COMPOUND, PRINT AND DISPENSE' – HOW 3D PRINTED DRUGS WILL REVOLUTIONISE PHARMACY PRACTICE

A possible scenario in the near future - you have a prescription from the doctor which you receive via your smartphone. You then take it to a pharmacy where you will have your medications compounded, 3D printed and dispensed by the pharmacist, just like a print-ondemand service, currently offered for clothing and housewares. You may choose the colour, shape and size of your tablets, and perhaps to have several medications embedded within one single tablet so that it is convenient for you to swallow just one, instead of the usual handful of tablets. For refills, you simply return to the pharmacy and have them printed. Forget about the queue at the hospital. Even better, if you have enough money, procure a drug 3D printer and print the medications at home. Then, simply e-consult the pharmacist on the proper use of the medication.

Dr. Sherry Rachel Jacob
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RECENT DEVELOPMENTS IN PLANT GENETIC RESOURCES MANAGEMENT

Plant Genetic Resources (PGR) are the vital components of any crop improvement programme since it contributes the sources of trait diversity that is essential for development of improved cultivars with better resilience to climatic challenges. Globally, about 1,750 individual genebanks and 11 CGIAR genebanks are involved in the management of ex situ germplasm collections, for conservation and use. However, genebanks around the world are known to be underutilized by researchers and breeders primarily due to the accumulation of huge quantity of germplasm accessions of unknown value and genetic composition. Recent developments in crop improvement and genomics, along with the advent of high throughput technologies have now altered the scope of PGR utilization, significantly. Genome Wide Association Studies, Genomic Selection, Pan-Genome and Super Pan-genome approaches are some such areas. The current PGR policy scenario also calls for critical attention owing to the debate on Digital Sequence Information and its implications on PGR Management.

Dr. Ramkant Bhardwaj
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West Bengal

ADVANCE IN FIXED POINT THEORY

It is standard technique to adopt mathematical tools to analyse different characteristics of the structure and its many divisions performance. As a result, dealing with uncertainty and erroneous data in a variety of situations is very natural. Managing ambiguities and vagueness, whether they are inherent in the statistics or brought about by the mathematical procedures used to obtain the solution made up of various scenarios, can be difficult in many ways. To tackle the unpredictability linked with actual-world information scenarios, Molodtsov in designed soft sets as a mathematical concept. Fixed point results are useful in dealing with the solution of different problems related to real situations. The fundamental goal of the proposed work is to establish some fixed point results using different types of contractions in Soft Rectangular b-metric space by generalising the notion of rectangular metric space and b-metric space. In addition, some congruous examples are provided to clarify the concept of said space structure. Obtained results extend and generalize many existing results in the literature.

Dr. Utpal Jana
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MOLECULAR IMAGING: A TOOL FOR DRUG DELIVERY

Molecular imaging and drug delivery allows the combination of imaging moieties and therapeutic component, that provides a real-time readout on the in vivo efficacy of a therapeutic agent and facilitate the visualization of the drug inside the body. Exosomes are naturally secreted lipid vesicles and its biocompatible nature has made them a promising natural nano-carrier for the delivery of various life-threatening medicines. Recently, molecular imaging is considered a promising tool for the precise delivery of the drug to the target site. Imaging techniques bridge the gap between pre-clinical and clinical research. With the advancement of imaging technology, imaging moiety is coupled with therapeutics agents to deliver. The recent development of this multifunctional system will help for a better understanding of the early diagnosis of diseases and monitoring therapy response and also guide in drug discovery or development.

CONTENTS

List of Abstracts- Paper Presentation

EFFECT OF ORGANIC MANURES ON GROWTH AND YIELD PARAMETERS OF AFRICAN MARIGOLD (TAGETES ERECTA)

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African marigold (Tagetes erecta) is one of the most important flower crops having a great industrial and commercial value. An experiment entitled "Effect of organic manures on growth and yield parameters of African marigold (Tagetes erecta) was carried out in the Faculty of Agriculture, Annamalai University. The treatment includes organic inputs such as farmyard manure (25 t ha-1), vermicompost (5 t ha-1) and oilcake (2 t ha-1). Among the twelve treatments, the performance of plants treated with (FYM @ 25 t ha-1+ Vermicompost @ 5 t ha-1) resulted in superior plant height (63.42 cm), plant spread (54.31cm), number of primary branches (13.68), secondary branches (24.17) , number of leaves (154.86) and the yield of about (28.97 kg ha-1). Hence it is concluded that combined application of organic manures had a good synergetic effect on growth and yield parameters of African marigold.

Keywords: FYM, Vermicompost, Oilcake

SYNTHESIS, CHARACTERISATION,AGGREGATION INDUCED ENHANCED EMISSION (AIEE) AND COMPUTATIONAL STUDY OF 2-(2,6-BIS(-4-HYDROXY-3-METHOXYSTYRYL)-4H-PYRAN-4-YLIDENE) MALONONITRILE

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A novel A2B-type diol with DDP 2-(2,6-dimethy-dicyanomethylene-4H-pyran) incorporated monomer was successfully synthesized in quantitative yield. The structure of the monomer was confirmed by FT-IR, 1H-NMR and Mass spectra. Aggregation induced emission was observed for the monomer in THF-water mixture and a bathochromic shift (290 – 335 nm) was recorded. 1.5 fold enhancement in emission intensity was recorded when comparing THF solution (fw = 0%) to aggregation (fw = 90%). The bathochromic shift of aggregation induced emission was studied computationally using semiempirical calculation with Avogadro - MOPAC 2016 coupled software's and the probable mode of aggregation of monomer molecules was studied and recorded.

STUDY ON ASSESSMENT OF POLLUTION INDEX OF GROUNDWATER FROM CHENNAI DISTRICT, TAMIL NADU

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Groundwater is the major fresh water resource available in the accessible form for human consumption. The demand for groundwater has been rising steadily over the years due to growing population, urbanization, industrialisation and agricultural activities. Thus it is essential to protect our groundwater resources from contamination through periodic assessment of its quality. The objective of the present study is to evaluate the pollution index of groundwater (PIG) of ground water samples from Chennai district of Tamil Nadu in the year 2021. Physicochemical data of water samples from 38 representative bore wells situated across the Chennai district were used to arrive at the PIG values. Water quality parameters such as pH, Total Dissolved Solids (TDS), Total Hardness(TH), Ca^{2+}, Mg^{2+}, Na+, K+, HCO3-, Cl-, $SO_4$2-, NO_3- and F- are used to assess and evaluate PIG of the study area. The calculated index in the pre monsoon period (PRM) and post monsoon period (POM) of the study area lies in the range 0.4 – 6.5 and 0.2 – 7.3 respectively. The study area was identified in to various zones based upon the calculated values of PIG as, zone of insignificant pollution (PIG <1; with 71% samples in PRM and 68% in POM), low pollution zone (PIG: 1 to 1.5; with 21% samples in PRM and 26% in POM), moderate pollution zone (PIG: 1.5 to 2.0; with 3% samples in POM), high pollution (PIG: 2.0 – to 2.5; with 3% samples in PRM), and very high pollution (PIG: >2.5; with 5% samples in PRM and 3% in POM). The assessment of the study area thus reveals that majority of groundwater samples falls in zones of insignificant pollution and low pollution.

Key words: pollution index of groundwater, groundwater, total dissolved solids, total hardness, pre monsoon and post monsoon.

INFLUENCE OF HUMIC ACID ON GROWTH, YIELD AND QUALITY PARAMETERS OF OKRA [ABELMOSCHUS ESCULENTUS (L.) MOENCH]

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A field experiment was conducted at Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal with an aim to study the effect of HA on okra plants along with different doses of FYM and recommended fertilizers. The experiment was laid out in randomised block design with three replications. There were sixteen treatments comprising of organic sources with various levels of humic acid. The results revealed that the treatment T15 (FYM plus 100% RDF along with 0.2% HA) showed superiority in growth and yield parameters. Among the different treatments, T15 (FYM plus 100% RDF along with 0.2% HA) recorded the highest mucilage content (3.81%). It is apparent that the lower dose of HA is favorable in inducing the growth and development in okra.

Keywords: Okra, Humic acid, FYM, Yield, Crude protein, Mucilage content

CLIMATE RISK ASSESSMENT AND FARMERS' PREFERENCES

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Climate change refers to any changes in the climate of a particular area or location over a period of time. Climate changes include increase in temperature i.e. global warming, decrease of rainfall or change in the distribution of rainfall which leads to rising of sea levels, occurrence of extreme events and which in turn affects the agriculture. Though Indian agriculture faces many challenges, the real challenge lies in climate change. One of the major challenge due to this climate change is the changing rainfall pattern which leads to flood and drought, that causes decline in area and production of agricultural crops. Climate resilient agriculture can be a promising solution to overcome this issue. Climate Resilient Agriculture includes agricultural practices that increase the productivity and resilience and enhance the achievement of food security and development goals. The present study was focused on climate risk analysis and smart practices followed by the famers. For this study, Namakkal district was selected which falls under high risk zone of Tamil Nadu according to Crop Insurance Report (2016-17). Climate risk analysis is worked out by using 10 years rainfall and yield data of the selected crops. To analyze the effect of rainfall on yield in agriculture, Nerlovain lagged adjustment model was used. This shows the rainfall impact on yield. In study area, NICRA scheme is being implemented by KVK to facilitate development measures for farmers. Regarding Farmer risk perception, Cent percent of farmers had a perception on “agriculture sector has become more vulnerable and extreme events are affecting the farming”. Majority (90.00 per cent) of them had a perception about “temperature is increasing every day due to climate change”. About 86.67 per cent of them had perception about “extreme weather events in the last few years have affected the adaptation and mitigation practices”.

Key Words: Climate risk, Climate Resilient agriculture, Rise assessment. NICRA scheme

STUDIES ON EFFECT OF TILLAGE PRACTICES ON SOIL WEED SEED BANK

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A pot culture experiment was carried out in Annamalai University Experimental Farm, Annamalai Nagar, Tamil Nadu, India to estimate the soil weed seed densities in different soil depths of experimental field. The experiment was laid out in RBD with four replications. The details of the treatment are T1 - Conventional tillage (Farmer’s practice), T2 - Chemical tillage (Two ploughings + glyphosate + one puddling), T3 - Reduced tillage (Two ploughings + one puddling), T4 - Conservation tillage (Three ploughings) and T5 – Control. Soils were collected from different soil depth viz., 5 cm, 10 cm, 15 cm and 20 cm from the field before tillage practices and after cropping. The emergence of weed seedlings was observed cumulatively upto 15 days in each treatment. Before imposing the treatments, collective soil sample were collected and this was used as the control. The study showed that the horizon of weed emergence is the top 5 cm layer as it showed the highest weed seedlings of 55.10 and 56.35 kg-1 of soil in 2020 and 2021, respectively when compared to 10 cm, 15 and 20 cm of soil depths. Among the treatments, chemical tillage (two ploughings + glyphosate + one puddling) (T2) reduced the emergence of weed seedlings when compared to other treatments. High number of weeds registered under conservation tillage (three ploughings) (T4) in our study.

Keywords: Weed seed, Chemical tillage, Reduced tillage.

ASSESSMENT OF SOIL ORGANIC CARBON POOLS AND STOCK IN SOILS OF PARANGIPETTAI BLOCK, CUDDALORE DISTRICT OF CAUVERY DELTA ZONE

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Estimation of soil organic carbon pools and stock is important for understanding C budgeting, assess land-use changes and it serves as soil quality indicator. The present study was conducted in major cropping systems of Parangipettai block, Cuddalore district of Cauvery Delta zone. The results of the study revealed that Very Labile, Labile and Less Labile carbon ranged from 2.02 to 5.38, 1.23 to 5.06 and 2.51 to 5.01 Mg ha-1 respectively. The soil organic carbon, soil inorganic carbon varied from 7.07 to 15.43 Mg ha-1 and 0.53 to 3.93 Mg ha-1 respectively. The soil carbon indices of lability of carbon, lability index (LI), carbon pool index (CPI), carbon management index (CMI) ranged from 0.09 to 0.28, 0.73 to 2.17, 0.39 to 0.90 and 32.71 to 160.12 respectively. The soil carbon stock ranged from 7.02 to 12.53 t ha-1 and was in the order of Rice-pulses > Rice-Cotton > Casuarina plantation. The study showed that major portion of SOC is occupied in the active pool which helps in rapid turnover of carbon. SOC present in the soil is susceptible to changes in management practices such as tillage, cropping pattern, application of organics and inorganic fertilizers, climatic conditions.

Keywords: Soil carbon, labile carbon, carbon indices, soil carbon stock

ASSESSMENT OF SOIL ORGANIC CARBON POOLS AND STOCK IN SOILS OF PARANGIPETTAI BLOCK, CUDDALORE DISTRICT OF CAUVERY DELTA ZONE

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Estimation of soil organic carbon pools and stock is important for understanding C budgeting, assess land-use changes and it serves as soil quality indicator. The present study was conducted in major cropping systems of Parangipettai block, Cuddalore district of Cauvery Delta zone. The results of the study revealed that Very Labile, Labile and Less Labile carbon ranged from 2.02 to 5.38, 1.23 to 5.06 and 2.51 to 5.01 Mg ha-1 respectively. The soil organic carbon, soil inorganic carbon varied from 7.07 to 15.43 Mg ha-1 and 0.53 to 3.93 Mg ha-1 respectively. The soil carbon indices of lability of carbon, lability index (LI), carbon pool index (CPI), carbon management index (CMI) ranged from 0.09 to 0.28, 0.73 to 2.17, 0.39 to 0.90 and 32.71 to 160.12 respectively. The soil carbon stock ranged from 7.02 to 12.53 t ha-1 and was in the order of Rice-pulses > Rice-Cotton > Casuarina plantation. The study showed that major portion of SOC is occupied in the active pool which helps in rapid turnover of carbon. SOC present in the soil is susceptible to changes in management practices such as tillage, cropping pattern, application of organics and inorganic fertilizers, climatic conditions.

Keywords: Soil carbon, labile carbon, carbon indices, soil carbon stock

ENCIPHERING TECHNIQUE USING A SELF INVERTIBLE KEY MATRIX AND THE MINIMAL SPANNING TREE OF CERTAIN GRAPHS

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Message encryption techniques are now the most important safeguards for our data and communications. The use of networks and the internet has sped up the development of message encryption technology. If sensitive, private messages are shared over unsecured networks, there is a possibility of an attack, theft, or hacking of the communications. It has been revealed that using cryptographic techniques is essential for shortening this period. The Caesar Cipher, Hill Cipher, and other examples are only a few of the many symmetric enciphering methods. The enciphering technique described in this article encrypts and decrypts the input messages to construct a complex cipher text using a self-invertible key matrix and an adjacency matrix of the minimum spanning tree of certain graphs. Since we are employing the self-invertible matrix as a key matrix, we can decode the ciphertext without computing the inverse of the key matrix.

Key Words: Graph Encryption, Minimum Spanning Tree, Adjacency Matrix, spanning tree-based encryption, Self-Invertible Matrix.

AN OVERVIEW OF ARTIFICIAL INTELLIGENCE IN DRUG DISCOVERY AND DEVELOPMENT – ROLES, LIMITATIONS AND FUTURE DIRECTIONS

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Artificial intelligence (AI) has the potential to revolutionize the drug discovery process, offering improved efficiency, accuracy, and speed. However, the successful application of AI is dependent on the availability of high-quality data, the addressing of ethical concerns, and the recognition of the limitations of AI-based approaches. In this article, the benefits, challenges and drawbacks of AI in this field are reviewed, and possible strategies and approaches for overcoming the present obstacles are proposed. The use of data augmentation, explainable AI, and the integration of AI with traditional experimental methods, as well as the potential advantages of AI in pharmaceutical research are also discussed. Overall, this review highlights the potential of AI in drug discovery and provides insights into the challenges and opportunities for realizing its potential in this field.

Keywords: Artificial Intelligence, Drug development, limitation, roles.

BIOENGINEERING OF TEXTILE MATERIALS THROUGH DC AIR PLASMA AND SUBSEQUENT INDUCTION OF HERBAL NANOPARTICLES TO CONTROL ODOR

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This research presents a new solution to combat body odor, by the fabric worn daily which would be effective and simple. Freshly produced sweat does not lead to any odor. Therefore fabrication of textiles with antimicrobial compounds to prevent the growth of bacteria could be sufficient to produce an odor free textile. The leaf and flower of medicinal plant (Artabotrys hexapetalus) were collected and subjected to different solvent extraction, methanolic extract showed the highest zone of inhibition among all the extracts. The antimicrobial activity of the combinatorial extracts showed maximum inhibition against Staphylococcus epidermidis, Brevibacterium sp., Pseudomonas aeroginosa, Escherichia coli and Klebsiella sp.,. The two different extracts of leaf and flower were combined by using Fractional Inhibitory Concentration technique (FIC). With that combinatorial extract minimal inhibitory concentration was calculated (MIC). The physical and chemical size of nanoparticles was observed through DLS method. The process parameters of the DC air plasma were optimized using standard wicking (AATCC 79) test. The hydrophilicity of the plasma treated and untreated samples were determined using standard wicking test. The synthesized nanoparticles were coated onto the fabric using pad dry cure method. The antifungal activity of the treated fabrics were assessed using AATCC 30 showed maximum inhibition of 16 mm in polyester, 18 mm in polycotton and 23mm in cotton fabrics against Candida albicans, whereas no zone of inhibition was observed in untreated fabrics. The studies confirmed that the maximum increase in hydrophilicity of the plasma treated fabrics.

Keywords: DC Air plasma, Bromhidrosis, Smart textiles, Combinatorial herbal nanoparticle, Brevibacterium.

FACILE SOL-PRECIPITATION SYNTHESIS AND CHARACTERIZATIONS OF PURE AND NI DOPED CADMIUM SULPHIDE (CDS) NANO-SPHERES

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Cadmium Sulphide (CdS), a direct band gap semiconductor, can be widely used for photo electronic devices. Pure and Ni-doped CdS nano-spheres are prepared by facile sol-precipitation route. The prepared samples are subjected to various characterization studies such as powder XRD, SEM, TEM, EDX, UV and PL analysis. The high crystalline and ultra-fine nature of the CdS peaks that reflect the cubic crystal structure with lattice parameter a = 5.821Å. The sphere-like morphology of the prepared samples is observed from SEM and TEM analysis with the average particle size range of 10-15 nm. The composition of elements like Cd, S and Ni is confirmed by the EDX analysis. The prepared pure sample exhibited very good optical behaviour which is confirmed from the UV and PL studies. Further, the effect of the Ni dopant on the size, morphology and optical properties of CdS nanomaterials are also comparatively investigated.

Keywords: Semiconductor, CdS, Nano-spheres, Sol-precipitation method, Optical properties

GREENER SYNTHESIZED TEAK LEAF CARBON DOTS AND ITS METHYLENE BLUE ADSORPTION APPLICATIONS:

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Owing to most water being contaminated due to waste from the dye sector, environmental pollution has become a major concern for people all over the world. The most often used cationic dye is MB dye, these synthetic dyes need to be removed from water using an appropriate highly efficient adsorbent. As a consequence, we synthesize Teak Leaves Carbon Dots (TL-C-ds) utilising a more environmentally friendly ultrasonication technology. UV-Vis spectroscopy was used to explore the optical properties, FT-IR spectroscopy was used to establish their functional properties, while the purity of the sample was detected using EDAX and the charge of TL-C-ds was identified using ZETA POTENTIAL instrument, the surface morphology was studied using FESEM, Particle size and Crystalline nature was identified using HRTEM, and XRD analysis. TL-C-ds were used as the adsorbent for the cationic MB dye in varied batch size experiment were used for the adsorption performance. The Freundlich, Langmuir, and Temkin model isotherm models were assessed along with the kinetics, and it was revealed that the Langmuir model was more reliable and follow second order kinetics model and calculated thermodynamical parameter (ΔG) was determined to be negative. The percentage of removal was found to be 50.1% and highest adsorption capacity was found to be 735.2 mg g-1. From all constants obtained from isotherms, adsorption was shown to be spontaneous, exothermic, and physisorption. The electrostatic force of attraction between water-soluble anionic TL-C-ds nano-adsorbent and water-soluble Cationic MB dye mix to form a water-insoluble adduct. Desorption may be accomplished using ethyl alcohol, MB dye dissolved from the adduct, and TL-C-ds nano-adsorbent settling to the bottom. Using these techniques, we can regenerate and adsorb exorbitant Cationic organic molecules.

Key Words: Teak Leaves Carbon Dots (TL-C-ds), Isotherms, Thermodynamical parameter (ΔG), and Electrostatic force of attraction.

NANOSTRUCTURED ZNO PARTICLES BY THERMAL DECOMPOSITION ROUTE AND THEIR ELECTROCHEMICAL PROPERTIES

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Nanostructured zinc oxide (ZnO) has received much attention due to potential applications such as optoelectronic devices, gas sensors, photocatalysis, lithium ion storage batteries etc. In this current work, ZnO nanoparticles are prepared by thermal decomposition route. The structural, morphological, optical and electrochemical characteristics of the prepared ZnO samples are studied using powder XRD, SEM, TEM, UV, PL and CV analysis. The powder XRD analysis exhibited the hexagonal crystal structure of ZnO sample. The ultrafine spherical-like particles are observed from the SEM and TEM analysis with average crystallite size range of 25-30 nm. The electrochemical experiments are carried out by using cyclic voltammetry (CV) studies with 1 M KOH as electrolyte on the prepared nanostructured ZnO materials.

Keywords: Semiconductor, Nanoparticles, Thermal decomposition method; Electrochemical properties

A REVIEW TO ASSESS THE EFFECTIVENESS OF PROBIOTIC SPECIES TO CONTROL AQUATIC MORTALITY

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Probiotics have received a lot of interest recently in aquaculture as a substitute for the use of antibiotics in the control of aquatic illness. However, bacterial cells are mainly reliant on the aquaculture where they develop, and the usage of those probiotic species has given significant results. Therefore, it is preferable to isolate bacteria from aquaculture where they proliferate better. The genera Vibrio and Bacillus as well as the species Thalassobacter utilize contain bacteria that have been effectively employed as probiotics. The majority of studies have identified these strains from various penaeid species. The majority of studies have identified the bacterial species which act as probiotic strains gut of shrimp. Two of the most promising preventative strategies created in the last few years in the battle against illnesses due to the presence of micro-organisms which act as probiotics that will act as an immune suppressant and the main mechanism by which they exhibit their mode of action is by mean of competitive inhibition. Additionally, probiotic bacteria were shown to be able to manufacture certain digestive enzymes, which may enhance shrimp digestion and boost their capacity to withstand stress and general health. However, the use of probiotics in aquatic environments continues to be debatable since there is a lack of reliable evidence and in-person examples of the efficacy mainly in the surrounding environment. The present review will highlight the perspective of the usage of shrimp gut microbiota as an approach for the enhancement of aquaculture species

ANTI-TUMOUR EFFICACY OF TRANSFERRIN-CONJUGATED LIPOSOMES LOADED WITH RUBITECAN ANTITUMOR DRUG DELIVERY SYSTEM

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Abstract: Rubitecan an oral topoisomerase inhibitor has oral absorption of 25-30% showing a low bioavailability due to low permeability and poor water solubility. The approach involves formulation of a new transferrin conjugated liposomes loaded with rubitecan as potential antitumor agent and prepared by the film dispersion method. Rubi-Lipo/Transferrin has demonstrated a prolonged and controlled release characterization. Rubi-Lipo/Transferrin invitro cytotoxicity assay and anticancer efficacy were evaluated after incubation in HeLa cells and HepG2 cells. The intracellular-uptake was correlated by laser scanning confocal microscopy and flow cytometry. The present study was successful in design a stable liposomal delivery carrier for Rubitecan with a suitable size, high drug entrapment efficiency, sustained release characterization and tumor-targeted activity. Furthermore, hemolysis experiments preliminarily verified as part of safety protocol after intravenous administration. Overall, this research study inferred Rubi-Lipo/Transferrin to be a promising delivery vehicle for Rubitecan in future cancer therapy.

Keywords: Rubitecan, Transferrin, invitro cytotoxicity

MATHEMATICAL INCENTIVE SUPPLY CHAIN INVENTORY MODEL FOR DETERIORATING PRODUCTS WITH CONSTANT DEMAND

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Supply chain management is critically important in producing delivery goods and services with cost effective in timely manner. In other words, an inventory problem is mainly concerned with making decision that minimizes the total cost of a system. In this paper, we develop the deterministic production of an inventory model for the buyer-manufacturer process with quantity discount and completely backlogged shortages. The manufacturer - buyer beneficial is the focus of the paper which makes more profit. Determination of saving percentage when holding cost and shortage cost increases at the same time shows that benefit for the manufacturer is more than the benefit of the buyer. Graphical representation illustrates this model.

.Keywords: Production, Inventory, Deteriorating Products, Constant Demand

GROWTH AND CHARACTERIZATION OF GLYCINE SALICYLIC ACID

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The crystals of organic molecules offer attractive physical properties which is different from conventional solids due to vander waals and dipole interactions etc. The single crystal of glycine salicylic acid, an organic nonlinear optical material, has been grown by slow evaporation technique. Single crystal X-ray diffraction studies were carried out and the unit cell parameters were compared with the literature values. The grown crystals were subjected to spectral, thermal, and optical studies.

Keywords: Single crystal, Vander waals interaction, Optical studies

BIOLOGICAL DEGRADATION OF AZO DYE: A BENCH STUDY

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The generation of various pollutants, including water waste and solid waste that contaminates river water and other spheres, is a side effect of industry expansion. While chromium is utilized in many various industries, including refractory, pigments, electroplating, and others, the tanning industry is the main source of chromium pollution. High toxicity and mobility of chromium allow it to pass through cell walls and induce a variety of cancers and many other diseases. For cleaning and controlling the pollution from toxic metals in recent years, one ecologically acceptable alternative technique has been used is the isolation of novel dye-degrading bacteria from chromium-containing tannery effluent and use of those novel bacteria to degrade dyes present in the industrial effluent.

The goal of this study was to isolate and characterize potential bacteria from tannery effluent that may degrade dyes. Further, the ability of these bacteria to decolorize dyes present in leather industry effluent was investigated. Restrain were identified based on morphological, cultural, physiological, and biochemical characteristics. Within 48 hours of incubation, two possible isolates that were isolated completely decolored the yellow and brown dye used in the dye decolorization investigation. The corresponding isolates, however, saw only modest decolorization of the red and black dye. Moreover, the treated water can be used for irrigation purpose.

Keywords: Chromium, dye, degradation, novel bacteria, effluent.

ANTIDIABETIC EFFECT OF POLYHERBAL FORMULATION IN STREPTOZOTOCIN – NICOTINAMIDE INDUCED DIABETIC RATS

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Diabetes mellitus is cured by many medicinal plants. The aim of this study is to select and scientifically validate a traditional Polyherbal formulation. Traditional medicine is gaining more attention in diabetes due to its efficacy and safety. We therefore performed research on in vivo studies to assess the antidiabetic effect of PHF in STZ – NA induced diabetic rats. Medicinal plants utilized in folk medicine are standard applicants. Therefore, this work assessed the antidiabetic action of hydroalcoholic extract from the whole plant Michelia champaca bark, Scoparia dulcis whole plant and Ziziphus mauritiana leaf (HEMSZ). These ethno medicinal properties of HEMSZ were scientifically validated in vivo assays. The acute and sub-acute toxicity studies of the PHF did not show any toxic symptoms. , the results obtained from both acute and Subacute toxicity studies of Poly herbal formulation (200 and 400 mg/kg) could thus give insight to its safety in humans. The antidiabetic activity of the PHF (200 and 400 mg/kg) was screened against STZ (65 mg/kg) and NA (110 mg/kg) induced DM in rats with fasting BGL at 220 mg/dL were considered diabetic. PHF showed significant antidiabetic activity at 200 and 400 mg/kg, respectively, and this effect was comparable with that of glibenclamide.

Keywords: Antidiabetic activity Biochemical estimation, histopathologic analysis. Michelia champaca bark, Scoparia dulcis whole plant and Ziziphus mauritiana leaf.

PREVALENCE, SEVERITY, TREATMENT SUMMARY AND MORTALITY OF DIABETES IN COVID 19 PATIENTS - A SYSTEMATIC REVIEW

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Diabetes mellitus is a major comorbidity amomg patient with Covid 19. The study is to review and analyze the data regarding the association between diabetes in Covid-19, Severity, Treatment summary and mortality. STUDY DESIGN: Systematic review. RESULTS AND DISCUSSION: Among 13 studies, 1155 patients had Diabetes mellitus as major comorbidity. In that majority were male (57.1%) and female were 42.9%. Among 5297 subjects the prevalence of comorbidities varies from (1-12.6%) for smokers, (8 to 41.6%) for HTN, (7.4 to 70.8%) for DM, (1.6 to 23.0%) for CVD, (0.7 to 2.9%) for CKD, (0.5 to 4.6%) for CLD. By comparing the ICU admission patients of Covid-19 with DM and without DM, it shows that Covid patients with Diabetes mellitus have more risk of ICU admission (36.8%). In prevalence of survivors versus non-survivors in Covid patients with diabetes, the survivor rate (62.2%) is higher than non-survivors (13.4%). It illustrates that Covid 19 with diabetes have less mortality rate. CONCLUSION: Initial studies found that the male patients had Diabetes mellitus as major comorbidity in Covid19. The studies of Covid 19 shows high prevalence of diabetes makes it as a major comorbidity in patients with Covid-19. And by comparing the ICU admission patients of Covid19 with Diabetes and without diabetes, studies show that Covid associated Diabetes patients have more risk of ICU admission. Then comparing the prevalence of survivors versus non-survivors shows that the Covid19 patients with diabetes also have less mortality rate.

Keywords: COVID-19, comorbidities, Mortality, Severity, SARS-CoV 2, DM.

PLANT MEDIATED SYNTHESIS OF NICKEL OXIDE NANOPARTICLES USING MIMOSA PUDICA LEAF EXTRACT: PHOTOCATALYTIC DEGRADATION OF CATIONIC DYE

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In this present study, nickel oxide nanoparticle was synthesized using an aqueous extract of the Mimosa pudica plant as a stabilizing and capping agent, and they were prepared using bio synthesis method. The synthesized iron oxide nanoparticles were characterized by the following techniques such as TGA, XRD, FT-IR and SEM. According to TGA, the calcination temperature of synthesized nickel oxide nanoparticles was found to be 350°C. Based on XRD results, the nickel oxide nanoparticles occur in a Face centered cubic phase (fcc), and the average crystallite size of the iron oxide nanoparticles was determined to be 15 nm. The peak at 675 cm-1 is due to the stretching vibration of Ni-O from FT-IR analysis. The SEM results showed that NiO nanoparticles has a nanosphere-shaped surface morphology. The synthesized NiO nanoparticles have been used as photocatalyst for brilliant green, a cationic dye degradation from aqueous solution. The maximum degradation of dye (88%) by NiO nanoparticles was determined with respect to contact time. Hence, NiO nanoparticles are efficient photocatalysts for degradation of brilliant green dye.

Keywords: nickel oxide nanoparticles, leaf extract, photocatalyst, degradation, cationic dye.

NEW DEVELOPMENT OF NOVEL FUNCTIONAL POLYESTERS CONTAINING CHROMONE CURCUMIN UNITS: POTENTIAL ANTI-CANCER DRUG, SUPRAMOLECULAR ARCHITECTURE.

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A series of six novel polyesters (P1-P6) were obtained via by direct polycondenzation with hydroxyl functional-appended chromone and curcumin based monomers (M1, M2 and M3) were synthesized and characterized structurally by spectroscopically and thermogravimetrically. The synthesized polymers were soluble common organic solvent such as N, N-dimethylformamide, THF, DMAc and NMP. The molecular weight of the polymers was found to be ranged from 3.390× 105 – 1.1×105 g/mol by GPC-MALS. X-ray diffraction pattern of polyesters indicates P1, P2 and P3 are amorphous in nature, whereas polymer P4, P5, and P6 shows crystalline nature. The synthesized molecules can be extended into 2D and 3D supramolecular networking through π-π stacking, H-bonding and hydrophobic contacts by the receptor VEGFR2 kinase. The cell viability effects of polymers on the growth of cell lines A549, HeLa and VERO were evaluated in vitro by MTT assay. The polymer P3 displayed potent anticancer activity compared to the other polymers. Hence, the overall present study paves the way for designing new drugs for anticancer and antimycobacterial activities with elevated inhibitory potency.

Keywords: Supramolecular architecture, 4-arylidene, GPC-MALS, anticancer ctivity.

THE FORCING TRIANGLE FREE DETOUR CONVEXITY NUMBER OF A GRAPH

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Let G be a connected graph and S be a dΔf-convex set of G. A subset T S is called a forcing subset for S if S is the unique dΔf-convex set containing T. A forcing subset for S of minimum cardinality is a minimum forcing subset of S. The forcing triangle free detour convexity number f_cdΔf(S) of S is the minimum cardinality among the forcing subset for S and the forcing triangle free detour convexity number f_cdΔf (G) of G is the minimum forcing triangle free detour convexity number among all triangle free detour convex set of G. Some general properties satisfied by this concept are studied. The forcing triangle free detour convexity numbers of certain classes of graphs are determined. It is shown for every pair a,b of integers with $0 \leq a \leq b$ and $b \geq 2$, there exists a connected graph G such that f_cdΔf (G)= a and C_dΔf (G)=b. Also studied in forcing triangle free detour convexity number of total graph, middle graph, join of graphs and lexicographic product of graphs.

Keywords: convex, detour, triangle free detour path, triangle free detour convexity number, forcing triangle free detour convexity number, total graph, middle graph.

AMS Subject Classification: 05C12. 05C38

BACTERIOTHERAPY IN CANCER THEIR ROLES AND BOTTLENECKS: THE SYSTEMATIC REVIEW

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Successful treatment of cancer remains a challenge, due to the unique pathophysiology of solid tumors, and the predictable emergence of resistance. Traditional methods for cancer therapy including radiotherapy, chemotherapy, and immunotherapy all have their own limitations. A novel approach is bacteriotherapy, either used alone, or in combination with conventional methods, has shown a positive effect on regression of tumors and inhibition of metastasis. Bacteria-assisted tumor-targeted therapy used as therapeutic/gene/drug delivery vehicles has great promise in the treatment of tumors. The use of bacteria only, or in combination with conventional methods was found to be effective in some experimental models of cancer (tumor regression and increased survival rate). In this article, we reviewed the strategies, clinical trials, role of bacteria in cancer cells and future prospective for bacteria based tumour therapy.

Keywords: bacteriotherapy, cancer, strategies, role, clinical trials.

EFFECT OF ORGANIC MANURES ON GROWTH AND YIELD PARAMETERS OF AFRICAN MARIGOLD (TAGETES ERECTA)

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African marigold (Tagetes erecta) is one of the most important flower crops having a great industrial and commercial value. An experiment entitled “Effect of organic manures on growth and yield parameters of African marigold (Tagetes erecta) was carried out in the Faculty of Agriculture, Annamalai University. The treatment includes organic inputs such as farmyard manure (25 t ha-1), vermicompost (5 t ha-1) and oilcake (2 t ha-1). Among the twelve treatments, the performance of plants treated with (FYM @ 25 t ha-1+ Vermicompost @ 5 t ha-1) resulted in superior plant height (63.42 cm), plant spread (54.31cm), number of primary branches (13.68), secondary branches (24.17) , number of leaves (154.86) and the yield of about (28.97 kg ha-1). Hence it is concluded that combined application of organic manures had a good synergetic effect on growth and yield parameters of African marigold

Keywords : FYM,Vermicompost, Oilcake

CATARACT FORMING REGULATORY GENE EXPRESSION STUDIES IN SENILE CATARACT SAMPLE

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Human senile cataract is a leading cause of vision loss and the most common reason for eye surgery in the elderly. It is a vision-impairing disease which is characterized by gradual progressive clouding and thickening of the lens of the eye. It is the world's leading cause of treatable blindness. Epidemiological studies of affected siblings and twins indicate that genetic factors may account for as much as 50% of the risk for age-related cataract. p27 & p53 genes are involved in regulatory network during the cataract formation and coordinate the cellular response to protect cells from damage. Also these genes play an important role on cataract formation. In this study, total RNA was isolated from the cataract tissue sample. Further, p27 & p53 gene expression studies were carried out by the method real time-PCR. Results concluded that p27 & p53 gene was two-fold down regulated in the senile cataract sample. These genes coordinate the cellular response to protect cells from damage.

Key Words: cataract, cellular response, blindness, p53, real time-PCR, total RNA.

EFFECT OF GROWTH RETARDANTS ON DWARFING PERFORMANCE OF ORNAMENTAL FLOWERING PLANTS

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An experiment was carried out to study the effect of growth retardants on dwarfing performance of ornamental flowering plants at Adhiparasakthi Horticultural College, Ranipet, Tamil Nadu, India, during 2021. The experiment was laid out in Factorial Completely Randomized Design (FCRD) with 14 treatments and three replications. The experiment includes two ornamental plants (Bougainvillea and Nerium) and two growth retardants viz., paclobutrazol (100ppm, 200 ppm and 300 ppm as soil drench) and cycocel (500 ppm, 1000 and 1500 ppm). The results revealed that, the application of growth retardants had a positive influence on growth and flowering parameters. The bougainvillea plants treated with 200 ppm of paclobutrazol as soil drench proved superior in respect of growth and flowering parameters viz., plant height (30.23 cm), number of lateral branches (7.25), intermodal length (1.42 cm), stem diameter (11.29 mm), number of leaves (29.35), leaf area (12.42 cm2), plant spread (EW -24.28 cm, NS -21.25), days to flower bud appearance (96.22 days) and number of flowers per plant (45.42). In case of Nerium, the soil drench of paclobutrazol at 200 ppm resulted better performance for growth and flowering characters viz., plant height (25.25 cm), number of lateral branches (2.32), intermodal length (1.20 cm), stem diameter (11.32 mm), number of leaves (25.08), leaf area (12.83 cm2), plant spread (EW -18.17 cm, NS -15.41 cm), days to flower bud appearance (80.75 days) and number of flowers per plant (28.43).

Keywords: Ornamental plants, Paclobutrazol, Cycocel, Growth and Flowering

AIR MYCOFLORA OF A HOSPITAL PREMISE IN VIKARABAD, INDIA

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The airborne fungi may pose a challenge in many ways as an agent of contact, ingestion and respiration. The contact and ingestion of fungi or fungal spores can be easily avoided however, inhalation of fungal spores are inevitable and adversely affect the respiratory system. They may induce allergy, respiratory infection and acute lung infections. These fungi are found to grow in conducive environment wherever nutrition, moisture and other environmental factors favor. The hospital bound fungal spores are majorly important to study because of their unique environment where abundant of antibiotics are in use. In this study the hospital premise comprising reception, sample collection area, Pathology lab, Orthopedic wards, Gynecology wards, Pediatrics, Obstetrician, Intensive Care Unit, Operation theatre, Post operation ward, Casualty, Immunology department, Library, Canteen and Board room were investigated for the presence of indoor airborne fungi. The airborne fungi were studied using Andersen single stage viable sampler. The petridishes containing Potato Dextrose Agar were used for the exposure and isolation of airborne fungi. A total of 24 different species classified under 11 different genera along with non-sporulating colonies were isolated from the hospital premises. Among the genera, Aspergillus and Penicillium are represented by 6 species each. Among the species recorded, Cladosporium cladosporioides was found to be dominant followed by Fusarium sp. and Aspergillus flavus. Among the environment studied, Library was found harbor number of airborne fungi followed by canteen and reception area. The study in detail will be discussed.

Keywords: Airborne fungi, Hospital environment, Andersen sampler, Aspergillus, Penicillium.

SYNTHESIS OF NIO NANOPARTICLES FOR SUPERCAPACITOR APPLICATION BY HYDROTHERMAL METHOD

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Super capacitor devices are emerging as one of the promising energy devices for the future energy technology. In this regard (NiO) is considered one of the most promising positive anode materials. Nickel oxide nanopower has been successfully synthesized by hydrothermal method. The morphology and crystal structure of the nickel oxide nanopowder were characterized by XRD, FT-IR, SEM, EDAX, surface wettability study and BET. XRD study revealed the monoclinic phase of NiO. The FT-IR was used to confirm the presence of free Ni–O bond in NiO nanoparticles. The SEM analysis showed non-uniform aggregated nanoparticles. The EDAX was used for finding composition of the elements. The BET analysis was used for finding surface area and pore radius of NiO powder. The surface wettability study showed that contact angle was hydrophilic in nature..

IOTA LABELING FORDUPLICATE GRAPHOF SOME CYCLIC GRAPHS

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Although Hero of Alexandria, a Greek mathematician and engineer, is credited with being the first to present a calculation involving the square root of a negative number, it was Rafael Bombelli who established the rules for complex number multiplication in 1572. The concept had previously appeared in print, such as in the work of Gerolamo Cardano. At the time, imaginary and negative numbers were poorly understood and were regarded as fictitious or useless by few, similar to how zero was once regarded. Many other mathematicians were slow to adopt the use of imaginary numbers, including René Descartes, who wrote about them in his La Géométrie.Even before work of Carl Friedrich Gauss and Leonhard Euler (1707–1783), the use of imaginary numbers was not widely accepted (1777–1855). Caspar Wessel was the first to explain the geometric significance of complex numbers as points in a plane (1745–1818)

The concept of an axis of imaginary numbers in the plane was expanded upon by William Rowan Hamilton in 1843 to a four-dimensional space of quaternion imaginaries; wherein three of the dimensions are comparable to the imaginary numbers in the complex field.

Imagine that there is a number 'i' its equals $\sqrt{(-1)}$. A number i was designated as Iota in 1748 by the great mathematician L Euler, whose square value is -1. This Iota, also known as 'I' is a hypothetical unit. It serves as above motivation for the new concept of iota labeling to apply the some duplicate graph labels.

In this Article, we have established that the existence of the Iota product labeling in Duplicate graph of the Quadrilateral Snake EDG(QS_q),q≥2,Double Quadrilateral EDG(DQS_q),q≥2, and Triangular Ladder Snake Graph, EDG(TL_q),q≥2. and Circular Polygon graph DG(CPG_q),q≥2 are determined. It is also proved extended duplicate graph labeling of Quadrilateral, Double Quadrilateral, Triangular Ladder, and Circular Polygon graphs.

Key words: Iota-Quadrilateral-Double Quadrilateral – Triangular - Polygon - Duplicate graph labeling.

EVALUATION OF ACTINOBACTERIA AGAINST BLISTER BLIGHT DISEASE AND RED SPIDER MITE OF TEA IN THE FIELD

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The blister blight incited by the fungus Exobasidium vexans Massee is the most serious leaf disease in all tea-growing areas. The red spider mite (RSM), is a major pest of tea in most tea-producing countries These major diseases are generally controlled through agrochemicals. Continuous use of agrochemicals results in environmental pollution. The use of biological agents becomes the alternate method to eradicate these diseases in an eco-friendly manner. Six possible actinobacteria, namely AAS2, AAS7, APSA1, APSA4, APSA5, and CAS4, were recovered from soil samples of the Anamallais and Coonoor. The potential actinobacteria were screened for their antagonistic potential against tea pathogens and acaricidal activity against red spider mites under in vitro conditions. The spores of E. vexans were examined under microscope for germination. The culture filtrate of CAS4 effectively inhibited the spore germination of E. vexans. Two isolates of actinobacteria exhibited higher mortality rate for red spider mites (RSM) – CAS4 showed 100% mortality followed by AAS7. The experiment was conducted in the field for red spider mites and blister blight disease. The present study revealed that the disease and mite population can be effectively controlled by CAS4.

Keywords: Actinobacteria, biological agent, agrochemicals, leaf diseases.

UNLOCKING THE POWER OF INNOVATIVE MOLECULAR MECHANICS AND DFT/AB-INITIO METHODS TO UNRAVEL THE MULTI-FACETED HEALTH BENEFITS OF NOVEL MOLECULES

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Advances in computational chemistry have revolutionized drug discovery and development by enabling researchers to predict and optimize the properties and behaviour of molecules before they are synthesized and tested in the lab. In this study, we have employed a comprehensive approach combining molecular mechanics simulations and density functional theory/Ab-initio calculations to investigate the potential health benefits of novel molecules.

Our research focused on identifying and characterizing the antimicrobial, antioxidant and antidiabetic properties of a group of novel molecules. We used molecular mechanics simulations to study the molecular stability and reactivity of the compounds and DFT/Ab- initio methods to calculate their molecular interactions and binding affinities with molecular targets involved in insulin regulation.

Our results showed that the novel molecules have promising antimicrobial and antifungal activities against a range of pathogens. Additionally, our studies revealed that the molecules exhibit potent antioxidant properties through a variety of mechanisms and have significant potential as anti-diabetic agents by targeting molecular pathways involved in insulin signalling and glucose metabolism. The implications of our findings are far-reaching, as these novel molecules could be developed into new drugs that offer a range of health benefits. Moreover, the combination of molecular mechanics and DFT/Ab-initio methods used in our study could serve as a blueprint for designing and evaluating novel molecules with multi-faceted health benefits.

In summary, our research demonstrates the power of computational chemistry to unlock the potential of novel molecules for multi-faceted health benefits. The application of these innovative methods could lead to the discovery of new drugs that can combat a range of diseases and ultimately improve human health and well-being.

SYNTHESIS OF NIO NANOPARTICLES FOR SUPERCAPACITOR APPLICATION BY HYDROTHERMAL METHOD

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Super capacitor devices are emerging as one of the promising energy devices for the future energy technology. In this regard (NiO) is considered one of the most promising positive anode materials. Nickel oxide nanopower has been successfully synthesized by hydrothermal method. The morphology and crystal structure of the nickel oxide nanopowder were characterized by XRD, FT-IR, SEM, EDAX, surface wettability study and BET. XRD study revealed the monoclinic phase of NiO. The FT-IR was used to confirm the presence of free Ni–O bond in NiO nanoparticles. The SEM analysis showed non-uniform aggregated nanoparticles. The EDAX was used for finding composition of the elements. The BET analysis was used for finding surface area and pore radius of NiO powder. The surface wettability study showed that contact angle was hydrophilic in nature..

INSILICO APPROACH ON COMPOUNDS ISOLATED FROM HYDROALCOHOLIC EXTRACT OF SYRINGODIUM ISOETIFOLIUM BY LIQUID CHROMATOGRAPHY – MASS SPECTROMETRY ANALYSIS

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All over the world Cancer is the second leading cause of death. Early detection and treatment of cancer extends millions of people life. Current strategy explains that they were 20 million peoples were diagnosed with cancer. The efficacy of cancer treatment is much lowered due to its negative aspects, for example nausea, hair loss edema, fatigue, constipation, diarrhea, mouth throat problems, nerve problems and pain. Nowadays, natural remedies have been overwhelming success for various diseases in our society. The secondary metabolites present in the herbs possess most of the pharmacological activities which double our life span. Syringodium isoetifolium is one of the major tropical seagrasses which belongs to the family cymodoceaecea, and otherwise called as Noodle grass. Previous study confirms the presence of phytocompounds and its antioxidant properties. Many phytocompounds present in the seagrass S.isoetifolium which has been identified by LC-MS analysis. The current study is focused on the interaction between the compounds identified in HAE of S.isoetifolim with the breast cancer protein such as HER2 Kinase receptor and HSP90 by insilico study. The above-mentioned protein has been downloaded from the protein data bank (PDB). Molecular Docking studies of HAE of S.isoetifolium with major compounds like 7-Hydroxycoumarine, 4- Hydroxycoumarine, Arecoline, Nootkatone, Phloretin and Zerumbone was done. The docking studies affirmed the restraint of target protein HER2 Kinase receptor to identify the anticancer activity of 4-Hydroxycoumarine, 7-Hydroxycoumarine, Arecoline, Nootkatone, Phloretin and Zerumbone. The order of binding energy was Nootkatone> Zerumbone > Phloretin > 4-Hydroxycoumarine >7-Hydroxycoumarine >Arecoline.

Keywords: Cancer, S.isoetifolium, Insilico study, HSP 90, HER2 Kinase receptor, Nootkatone, Zerumbone.

HEALTH EDUCATION IN PATIENTS WITH MECHANICAL VALVE PROSTHESIS AND ITS CLINICAL OUTCOMES

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Valvular heart disease affects over 100 million patients worldwide and still rises due to an ageing population. Prosthetic (mechanical or bio prosthetic) heart valve replacement is an effective intervention for severe valvular heart disease, with over 30 million heart valves implanted each year globally. Despite having greater longevity, mechanical prosthesis requires vitamin K antagonists and regular check of prothrombin time (PT) and international normalized ratio (INR) to adjust anticoagulation intensity, yet it possess 1-2% bleeding risk and 60–75% of mechanical valve-related mortality. Thromboembolic and hemorrhagic events are one of the major complications over the course of long-term follow-up and 60% of INR values were not in therapeutic range and the current recommendation for target INR is 2.5-3.5 with mechanical valve if its exceeds 4.5, the risk of bleeding increases, and increases exponentially above 6.0 thus requires anticoagulation reversal. Asian population possesses higher risk of intracerebral bleeding than Caucasians. Poor anticoagulation control with substantial INR variation is the independent predictor of decreased survival following valve replacement. Several studies suggest that continuous health education on oral anticoagulation and INR self-monitoring after mechanical heart valve replacement enables patients to maintain a target INR range thus reducing the MACCE and complication rates.

Keywords: Prosthestic valve, International normalized ratio, Anticoagulation, Hemorrhage, INR self-monitoring

RESOLUTION AND DETERMINATION OF IMPURITIES IN CHLORPHENIRAMINE MALEATE AND DEXTROMETHORPHAN HYDROBROMIDE IN COMBINED DOSAGE FORM.

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It is unique, Robust, Rapid, Precise, Accurate, Selective and Reproducible RP-HPLC method for simultaneous determination of Chlorpheniramine Maleate, Dextromethorphan Hydrobromide and their related impurities in Cough syrup. This is unique method for determination of impurities in combined dosage form. The separation achieved using phosphate buffer pH 7.20 as mobile phases-A and Mixture of Acetonitrile and methanol as mobile phases on gradient method. The detection wavelength is 225 nm. Flow rate is 0.8mL/minute. Linearity was obtained in the range of LOQ to 150% of limit level concentration, 0.05 µg/mL-0.75 µg/ml for each Dextromethorphan HBr impurity A, B, C and D. The separation achieved on column YMC Triart C18, 250x 4.6 mm, 5µ. The column oven temperature was 40°C and injection volume was 50µL. The Correlation coefficient for all impurities found 1.000. According to ICH guideline Q2(R1), the Method were validated. Using this Chromatographic method, the Impurities determination of both the drug can be achieved easily in single method.

Keywords: Related substance, Chlorpheniramine Maleate, Dextromethorphan HBr, Validation;

MOLECULAR SCREENING OF INSULIN LIKE PROTEIN IN COMMERCIAL SPIRULINA SPECIES

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The prevalence of diabetes increased gradually in India and nearly 35.2% are on insulin therapy. Previous studies have reported that patients with diabetes were more likely to use complementary and alternative medicine (CAM) compared with other patient groups. Currently recombinant human insulin produced either in E. coli or S. cerevisiae is mainly used for treatment. Therefore, the crucial area of research is the hunt for safer and more suitable organisms. Microalgae are rich in nutrients and biologically active substances, such as proteins, polysaccharides, lipids, polyunsaturated fatty acids, vitamins and Spirulina is a naturally occurring freshwater cyanobacterium, enriched with proteins and essential nutrients. Studies reported that Spirulina has the ability to reduce blood sugar level but only limited studies available on the presence of insulin in Spirulina sp and data is not available on the insulin amino acid, gene sequencing and the strain improvement strategies. Thus, the aim of this study is to screen the presence of insulin like protein in commercially available spirulina powders. In current study insulin like protein was screened and confirmed by SDS-PAGE in spirulina powders. Positive samples will be investigated for whole genome sequencing to identify the presence of insulin or analog gene and further strain improvement strategies will be employed to enhance the production.

ADSORPTION OF OFLOXACIN ANTIBIOTIC FROM AQUEOUS SOLUTION ONTO CO3O4/SBA-15: A STUDY OF ISOTHERMS AND KINETICS

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In this study, the Co3O4/SBA-15 adsorbent was very effective in removing ofloxacin from the aqueous solution. An impregnation method was used to prepare the adsorbent. TGA, low-angle XRD, wide-angle XRD, DRS-UV-Visible, FT-IR, HRTEM, BET, and XPS analysis were used to characterize the Co3O4/SBA-15 (2 wt%, 4 wt%, and 6 wt%) and SBA-15, respectively. At a pH of around 5, the adsorbent dosage of Co3O4/SBA-15 (4 wt%) (20 mg), the contact time (70 minutes), the concentration of the ofloxacin solution (10 mg/L), and the temperature (room temperature) showed outstanding results in removing ofloxacin from aqueous solution. With a high value of the regression coefficient (r2 = 0.9999), the Freundlich isotherm model fits the best experimental data, suggesting a multi-layer or cooperative adsorption process. Ofloxacin's maximum adsorption capacity is 149.25 mg/g, and its kinetics may be described by a pseudo-second-order equation with a rate constant of k2 = 0.0006 g mg-1 min-1. In the reusability testing after the fourth cycle, ofloxacin was effectively removed. Therefore, Co3O4/SBA-15 (4 wt%) can be a very good adsorbent for the removal of industrial and environmental wastewater samples.

Keywords: ofloxacin, Co3O4/SBA-15, kinetics, isotherms, adsorbent

ASSESSMENT OF IN-VITRO WOUND HEALING OF VIOLACEIN: A PROMISING THERAPEUTIC AGENT AGAINST CLINICALLY SIGNIFICANT WOUND PATHOGENS

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Opportunistic skin pathogens and their resistance to pre-existing antibiotics are challenging task to the clinical world. A consistent development of therapeutic agents is required to overcome the complications associated with antimicrobial-resistant pathogens. Thus, microbial pigments are considered as an effective alternative to commercially available antibiotics. Violacein is a water-insoluble, violet-coloured pigment that exhibits antimicrobial activity. Violacein was extracted from Janthinobacterium lividum MCC 2953 using Yeast malt extract agar with pH of 7, temperature of 24oC and growth time of 48 hours. Violacein was further characterized using the Rf value of 0.76 in TLC, UV-Visible absorption spectra of 573 nm, retention time of 3.369 in HPLC, presence of amine and nitro group in FTIR, the molecular weight of 323 D m/z in GCMS, NMR spectral analysis together with amorphous structure in XRD. Further, violacein is known to possess the MIC and MBC of 125 μg/mL and 250 μg/mL, respectively. In addition, the synergistic activity of violacein with streptomycin was assessed, which confirmed the ability of the violacein to act as a potent drug. Moreover, in-vitro wound healing assay in mouse fibroblast cell lines (3T3) confirms the use of violacein to formulate an effective wound healing agent.

Keywords: Violacein, Janthinobacterium lividum, Antimicrobial activity, Wound healing, Mouse fibroblast cell lines

DESIGN AND DEVELOPMENT OF TRANSDERMAL DRUG DELIVERY SYSTEM BY SOLVENT EVAPORATION METHOD FOR WOUND HEALING USING TRADITIONAL MEDICINE

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Finding specific medications that are efficient at healing wounds and have few side effects is highly required. The past few years have seen a significant increase in transdermal drug delivery research. The growing number of medications that can be delivered to the systemic circulation through the skin portal in clinically effective concentrations is one of the factors fueling this growth. Therefore, the goal of the study is to develop a transdermal drug delivery system by using hydroalcoholic leaf extract of Phyla nodiflora, Chitosan, PEG, Hydroxypropyl Methyl Cellulose, and Methyl Cellulose by a solvent evaporation method. Later, it is evaluated for Color, Clarity, Flexibility, Smoothness, Weight, Thickness, Folding Endurance, pH, Swelling Index, Moisture Content, Drug content, and In-vitro Drug release. The Evaluation Parameters show that the Transdermal patch using herbal extract was found to be within acceptable limits. Hence the transdermal patch containing the plant extract will be suitable for wound healing applications. To achieve excellent products in the future, more clinical studies, research, and optimization of herbal formulations are required.

Key words: Phyla nodiflora, TDDS, Wound Healing, Solvent Evaporation

STUDY OF PSEUDOCAPACITIVE CHARACTERISTICS OF CU DOPED ZNO NANOPARTICLES SYNTHESISED BY HYDROTHERMAL METHOD

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Copper doped Zinc Oxide (Cu-ZnO) nanoparticles (NPs) were effectively synthesised by Hydrothermal method. The structural, morphology and optical properties were characterised using XRD, FTIR, SEM, TEM, and UV-DRS for the undoped and Cu-doped ZnO NPs with varying Cu doping molar concentrations from 1at% to 5 at%. The wurtzite crystal structure of synthesized samples was confirmed by XRD and TEM analysis. Further, the presence of functional groups in the prepared samples was confirmed by FTIR analysis. The surface morphology analysis of undoped and Cu-doped ZnO. NPs indicated the growth of spherical nano crystallites with fine particles. By the electrochemical analysis for all the samples at the scan rate ranging from 10 to 100 mV/s, it was observed that Cu-doped samples exhibited superior Pseudocapacitive property.

Keywords: Zinc Oxide, Cu doped ZnO, Hydrothermal, electrochemical analysis, Pseudocapacitive property

ANCIENT POET THIRUVALLUVAR, WAY BACK 2000 YEARS AGO HAD REGISTERED THAT WITHOUT WATER,THERE IS NO LIFE ON EARTH. WATER IS THE ELIXIR OF ALL LIFE FORMS.WE CANNOT EVEN IMAGINE DAY TO DAY LIFE WITHOUT WATER.

T. PUNITHAVALLI*

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In Tamil Nadu, all the above sources of water are used for drinking purposes after treatment. In Chennai, drinking water supply is being maintained by Chennai Corporation and is called metro water. Metro water reserves its sources from kosasthalai river and Krishna river being collected in Poondi reservoir, Sholavaram, Sembarambakkam and veeranam lakes. The above sources of water are subjected to various treatments like settling, clariflocculation, sedimentation, coagulation, lime dosing and finally disinfection. All the above activities are being carried out at Head Works in Kilpauk.

BIS grade 32 to 34% of Calcium HyopChlorite is used for every 1000 litres of water collected at OHT/ Sump with half an hour contact time before disrtribution. Alternatively, 20 ml of 4 to 6% Sodium Hypo Chlorite Solution is used for the same 1000 litres of water at OHT/Sump. Hypochlorous acid is the disinfectant that is formed on reaction of chlorine with drinking water. This kills all the pathogenic organisms that are present in drinking water. Besides the above, two Desalinatiton water plants at Nemili and Kattupakkam are also catering the drinking water needs of Chennai City.

Thus water supply system is a tedious program being carried out by Chennai Corporation and local administration effectively and efficiently. The monitoring and surveillance of water supply system is being carried out by the Directorate of Public Health and Preventive Medicine through the Water Analysis Laboratories at Chennai, Coimbatore, Trichy and Thirunelveli. They carry out sanitary survey, Spot tests for Residual Chlorine, Fixing up of Sampling points of drinking water sources and its distribution for periodical Surveillance and monitoring. Further they assess the suitability of water resources for Human Consumption and its Hygeinic Status.

THE CURRENT PROGRESS OF SULPHUR AND NITROGEN CONTAINING PHENOTHIAZINE HETEROCYCLIC NUCLEUS

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The phenothiazine hetero-cyclic nucleus is one of the most important and trusted heterocyclic ring, which is consist of sulphur and nitrogen as a heteroatoms. It was discovered during the 1940s, and were found various natural and medicinal compounds. The recently derivatives of phenothiazine derivatives were exhibiting significant activities such as, antibacterial, tranquillizer, antiparkinsonian, anticancer, antiviral, anti-inflammatory, antifungal, antihistaminic, anti-filarial, anti-malarial, trypanocidal, anticonvulsant, analgesic, immunosuppressive and multidrug resistance reversal properties. In the current study, an attempt had been made to systematize the recent research discoveries of many newer phenothiazine derivatives including synthetic method, their structures and evaluated biological activities. This review provide the two decades of research work on different pheno thiazine derivatives.

Keywords: Phenothiazine; Current progress; Two-decades; Biological activity.

DEVELOPMENT OF METHOD VALIDATION FOR RELATED SUBSTANCES IN LENALIDOMIDE INJECTION WITH HPLC METHOD

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A validated HPLC method was developed for the determination of Lenalidomide(LLE) in pharmaceutical formulation. Isocratic elution at a flow rate of 1.0ml/min was employed on Zorbax SB C18 5µm × 4.6 mm, 150mm, or similar is used for this chromatography analysis and the column temperature is maintained as ambient. Buffer solution for this analysis is taken as Acetonitrile as 65v/v Buffer as 35v/v. Flow rate was identified at 1.2ml/min. 50.0µl sample was injected. The run time is 15 minutes to Sample, blank, placebo, system suitability, sensitivity solution furthermore 45minutes to diluted standard. The Approximate retention time was founded for LLE is 1.20minutes. The% R.S.D LLE was identified. The mean Percentage recovery for LLE is found within the specification limit. The method was validated as per the ICH guidelines. Thus, the proposed HPLC method can be successfully applied for the routine quality control analysis of formulations. The method developed is simple and is better than the methods reported in the literature.

Key words: Lenalidomide; HPLC method; validation and limit of quantization

DETERMINATION OF GENOTOXIC IMPURITIES IN NILOTINIB USINGLC-MS METHOD

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A validated HPLC method was developed for the determination of Nilotinib (Nob) in pharmaceutical formulation. Isocratic elution at a flow rate of 1.0ml/min was employed on Zorbax SB C18 5µm × 4.6 mm, 150mm, or similar is used for this chromatography analysis and the column temperature is maintained as ambient. Buffer solution for this analysis is taken as Acetonitrile as 35v/v Buffer as 65v/v. Flow rate was identified at 1.3ml/min. 50.0µl sample was injected. The run time is 20 minutes to Sample, blank, placebo, system suitability, sensitivity solution furthermore 60minutes to diluted standard. The Approximate retention time was founded for Nob is1.30minutes. The% R.S.D Nob was identified. The mean Percentage recovery for Nob is found within the specification limit. The method was validated as per the ICH guidelines. Thus, the proposed LC-MS method can be successfully applied for the routine quality control analysis of formulations. The method developed is simple and is better than the methods reported in the literature.

Key words: Genotoxic impurities; Nilotinib; Liquid Chromatography-Mass Spectrometry (LC-MS) method; validation and limit of quantitation

DETECTION OF BEGOMOVIRUS IN PLANTS USING FUNCTIONALIZED GOLD NANOPARTICLES

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Plant viruses are a major threat to the crop production and results in severe crop losses. Begomoviruses are one such plant viruses that affects a wide variety of crops. There is a need for early detection of pathogens to ensure the crop safety. Though many antigen-antibody and molecular techniques are available for the detection, time-consumption and the need of high-cost equipment are few of the major drawbacks. The presence of a very low titre of virus in the plant tissues needs a highly sensitive and specific method enabling accurate and early detection. Functionalized gold nanoparticles were used for the detection of begomovirus in the leaf samples of chilli and tomato plants, and the invention was filed for an Indian patent. The present proposal is the extension of the study to detect the presence of other plant pathogens including begomovirus in the plants (other than chilli and tomato) in the earliest possible development stage of the plant using functionalized gold nanoparticles, ensuring they are healthy and free from the plant pathogen, and extrapolating the findings towards the development of a detection kit enabling on-field detection of the plant pathogen / begomovirus in the plant samples. In the present proposed study, attempts will be made to employ functionalized gold nanoparticles to detect the other dreadful plant pathogens of staple food crops. The expected outcome of the study is to develop a commercial kit enabling the detection of the begomovirus on-field.

DEVELOPMENT OF CARRAGEENAN AND ACACIA NILOTICA BASED HYDROGELS FOR WOUND DRESSING APPLICATIONS

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Wound healing is a dynamic process by which skin or other body tissue repairs itself after trauma. The development of an efficient wound dressing that deals with a combination of polymers and herbal extracts is commonly called “hydrogels”. These hydrogels can donate water to the wound site and thus help in maintaining a moist environment, which helps in faster wound healing and protecting the body from wound infection. Plants and their extracts have enormous potential in the treatment of wounds. The aim of the present study is to develop an effective hydrogel which deals with a combination of polymers (chitosan (CS) and carrageenan (CRG)) and herbal extracts for wound dressing. The stability of CS-CRG was developed by varying the pH (3-12) during gel preparation. Then the formulated hydrogels were loaded with Acacia nilotica and it was characterized physically and biologically by dispersion study, fluid absorption, swelling behaviour and hemocompatibility. The results showed that the hydrogels were stable and maintained the moisturising effect at pH 4. The synthesized hydrogels exhibited significant antibacterial activity against Klebsiella sp., followed by Acinetobacter and Bacillus sp. Based on the results, the synthesized hydrogels are found to be highly acceptable for wound dressing applications.

Keywords: Hydrogel, chitosan, wound dressing and herbal extract..

SYNTHESIS OF G-C3N4 AND GO DOPED BISMUTH FERRITE FOR CORROSION STUDIES

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Bismuth ferrite is one of the most extensively investigated multiferroic magneto-electric compounds in which 6 lone pair electrons of Bi are believed to be responsible for ferroelectricity while partially filled d orbital of Fe leads to magnetic ordering. Bismuth ferrite synthesized by sol-gel method followed by Graphitic Carbon Nitride (g-C3N4) also synthesized addition to that Graphene Oxide prepared by Hummers Method. Into the Graphitic Carbon Nitride, Bismuth ferrite and Graphene Oxide were doped then it is characterized by spectral techniques such as SEM and XRD. Newly synthesized nano material will be subjected to corrosion studies over mild steel.

Keywords: g-C3N4, Bismuth ferrite, Graphene Oxide, nano

FACILE SYNTHESIS OF CORE-SHELL NANO PARTICLES COFE2O4@ SIO2AND ENHANCEMENT OF PHOTOCATALYTIC PROPERTIES

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Facile synthesis of $CoFe_2O_4@SiO_2$ is achieved via three steps of sol-gel auto combustion, co-precipitation and sol-gel nitrate-citrate route. Powder XRD patterns of the samples confirmed its phase purity and structure respectively. Average crystallite sizes of the sample exhibit the particles were at nano range of 35.4 nm. SEM images of the sample show different size and shape of the particles and aggregation due to SiO2 coating. Crystallite sizes were in nano scale and in good agreement with powder XRD results. EDAX spectra of the samples have confirmed the purity of the sample prepared in each stage and well agreement with atomic weight percentage which was shown that the double coating of CoFe2O4 with SiO2. Particle size analysis is also supported average particle size of sample. From zeta potential analysis, It is clearly seen that the stability of the collaidal suspension. Optical absorbance measurements over the range 200-800 nm show the increased wavelength from 225 nm – 270 nm and in the wavelength range from 270-650 nm, the absorbance of the visible and NIR light constant or nearly flat band and decreased to 800 nm. This postulate is further supported considering that photocatalyic acitivity be studied at range of 600 – 700 nm. The photocatalytic activity is investigated by UV-visible light absorption of the methylene blue dye solution which is pollutant model. The photocatalytic degradation efficiency is achieved to 75 % in 60 minutes. The band gap value is calculated as 4.15 eV using Tauc's equation.

FORMULATION OF ELECTROSPUN NANOFIBERS FILM FOR WOUNDCARE APPLICATION USING PVA / CHITOSAN / SILK SERICIN

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The wound dressing was formulated with the protein Sericin (SS) as main substance made into nanofibers(NF) with electrospinning technique along with natural and synthetic polymers of chitosan (ch) and polyvinyl alcohol (PVA). The synthesized NF were characterized both physically and biologically. The ratio of electrospun film with PVA /Ch / SS were 50:30:10.The topography of the developed NF was measured using Scanning Electron Microscopy in the range of 150nm in diameter.The film of NF showed potent anti bacterial activity , hemocompatability , 80% cell viability at levels of 200 micrograms/ml and HET CAM test had no allergic reaction .The results showed that the silk sericin based NF will be significantly used for wound dressing.

KEYWORDS : Wound dressing; Silk sericin; nanofiber film; electrospinning; anti bacterial activity.

ENHANCING ANTI-TUMOR EFFICACY OF 5-FLUOROURACIL AND METFORMIN NANOPARTICLES IN COLORECTAL CANCER

K. Bharathi Priya, Dr.C.N. Nalini, Dr.Grace Rathnam

Introduction: Cancer and Diabetes mellitus and are common diseases worldwide. There is considerable evidence that people with type 2 diabetes mellitus (DM2) have an increased risk of developing several cancer types, among them CRC. Meta analysis results indicate that diabetic patients have a 1.3 fold risk of developing CRC as well as risk of dying from it.

Methodology: A 0.5 mg/ml chitosan solution was prepared by dissolving 0.25 g of chitosan in 500 ml of acetic acid (2 %, v/v) followed by the addition of sodium hydroxide solution (20 wt%) to adjust the pH to 4.7. 5 ml stock solution of metformin and fluorouracil at a certain concentration was added into the chitosan solution. Glutaraldehyde (GL) reserve liquid (5 ml) was dripped slowly into chitosan solution under stirring until nanoparticles were separated.

Percentage yield was found to be 76.5%, drug content was 98.02±1.4, drug loading was 75.34±1.1 and encapsulation efficiency was 89.34±0.88. DSC and FTIR studies exposed that there is no interaction between the drug and polymer. Scanning Electron Microscopy (SEM) revealed that the microspheres were spherical and porous. The drug release was found to be in controlled manner from the formulation.

Metformin hydrochloride and 5- Fluorouracil loaded chitosan nanoparticles were found to have excellent drug delivery and can have better treatment outcomes.

Key words: Colorectal cancer, Metformin, 5-Fluorouracil, nanoparticles, Diabetes mellitus

SYNTHESIS, CRYSTAL STRUCTURE, DFT, DOCKING AND BIOLOGICAL ACTIVITY STUDIES OF PIPERAZINE BASED ORGANIC MOLECULE

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A small organic molecule based on piperazine is prepared using microwave techniques. The compound is characterized using FTIR, FT-Raman, 1H and 13C NMR, UV- visible and elemental analysis techniques. Single crystal X-ray diffraction confirms that the title compound crystallizes in a monoclinic crystal system with space group of P 21/n. The unsual C-H... π interaction facilitate the crystal packing proved by the Density Functional Theory (DFT) and Hirshfeld surface analysis. The molecule showed an excellent result against Bacillus susbtilis with the value of 6.25 µg/ml. The antioxidant behaviour of the crystal (piperazine) showed strong antioxidant property. The insilico docking studies on breast cancer cell line MCF-7 protein confirms that the crystal showed excellent binding affinity value of -7.1 kcal/mol. The in vitro anticancer studies on the breast cancer cell line MCF-7 showed promising result.

Keywords : piperazine, anticancer, Raman, DFT, antimicrobial.

FACILE SYNTHESIS OF CORE-SHELL NANO PARTICLES COFE2O4@ SIO2AND ENHANCEMENT OF PHOTOCATALYTIC PROPERTIES

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Facile synthesis of CoFe2O4@SiO2 is achieved via three steps of sol-gel auto combustion, co-precipitation and sol-gel nitrate-citrate route. Powder XRD patterns of the samples confirmed its phase purity and structure respectively. Average crystallite sizes of the sample exhibit the particles were at nano range of 35.4 nm. SEM images of the sample show different size and shape of the particles and aggregation due to SiO2 coating. Crystallite sizes were in nano scale and in good agreement with powder XRD results. EDAX spectra of the samples have confirmed the purity of the sample prepared in each stage and well agreement with atomic weight percentage which was shown that the double coating of CoFe2O4 with SiO2. Particle size analysis is also supported average particle size of sample. From zeta potential analysis, It is clearly seen that the stability of the collaidal suspension. Optical absorbance measurements over the range 200-800 nm show the increased wavelength from 225 nm – 270 nm and in the wavelength range from 270-650 nm, the absorbance of the visible and NIR light constant or nearly flat band and decreased to 800 nm. This postulate is further supported considering that photocatalyic acitivity be studied at range of 600 – 700 nm. The photocatalytic activity is investigated by UV-visible light absorption of the methylene blue dye solution which is pollutant model. The photocatalytic degradation efficiency is achieved to 75 % in 60 minutes. The band gap value is calculated as 4.15 eV using Tauc's equation.

ANTIDIABETIC EFFECT OF POLYHERBAL FORMULATION IN STREPTOZOTOCIN – NICOTINAMIDE INDUCED DIABETIC RATS

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Diabetes mellitus is cured by many medicinal plants. The aim of this study is to select and scientifically validate a traditional Polyherbal formulation. Traditional medicine is gaining more attention in diabetes due to its efficacy and safety. We therefore performed research on in vivo studies to assess the antidiabetic effect of PHF in STZ – NA induced diabetic rats. Medicinal plants utilized in folk medicine are standard applicants. Therefore, this work assessed the antidiabetic action of hydroalcoholic extract from the whole plant Michelia champaca bark, Scoparia dulcis whole plant and Ziziphus mauritiana leaf (HEMSZ). These ethno medicinal properties of HEMSZ were scientifically validated in vivo assays. The acute and sub-acute toxicity studies of the PHF did not show any toxic symptoms. , the results obtained from both acute and Subacute toxicity studies of Poly herbal formulation (200 and 400 mg/kg) could thus give insight to its safety in humans. The antidiabetic activity of the PHF (200 and 400 mg/kg) was screened against STZ (65 mg/kg) and NA (110 mg/kg) induced DM in rats with fasting BGL at 220 mg/dL were considered diabetic. PHF showed significant antidiabetic activity at 200 and 400 mg/kg, respectively, and this effect was comparable with that of glibenclamide.

KEYWORDS Antidiabetic activity Biochemical estimation, histopathologic analysis. Michelia champaca bark, Scoparia dulcis whole plant and Ziziphus mauritiana leaf.

SYNTHESIS AND OPTICAL STUDY OF COPPER DOPED COBALT OXIDE NANOPARTICLES BY CHEMICAL PRECIPITATION METHOD

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The particles which are from 1 to 100 nm in size are termed as nanoparticles. To understand the collective properties of nanoparticles, it is necessary to control the particle size, spacing and ordering. Individual molecules are not regarded as nanoparticles, rather these are the particles which demonstrate size dependent properties. The properties of a nanoparticle substantially differ from those of bulk forms of the same materials. Nanotechnology is an enormously powerful technology, which holds a huge promise for the design and development of many types of novel products.

The aim of this work was to form copper doped cobalt oxide nanoparticles with prescribed properties and to study their absorption spectra. The PXRD patterns of the copper doped cobalt oxide nanoparticles was recorded by using a powder X – ray diffractometer, with a diffraction angle between 20° to 80° . The crystalline size was calculated by using Debye Scherrer's formula. The chemical compound composition and functional group corresponding to the sample was identified by FTIR spectrum. The UV – Visible absorption spectrum showed strong absorption peak and nearly transparent nature of the particles at visible region.

Keywords: Optical properties, Nanoparticles, PXRD.

HIGH SODIUM ION MOBILITY OF PEO-NA2H4B2O8-NA3ZR2SI2PO12 COMPOSITE SOLID ELECTROLYTE FOR ALL-SOLID-STATE SODIUM-ION BATTERIES

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Rechargeable all-solid-state sodium-ion batteries (ASSBs) are becoming more popular in small scale portable electronic devices as well as in large-scale energy storage systems due to their plentiful supply and inexpensive cost of sodium. The extensively used non-aqueous liquid electrolytes in ASSBs are flammable, thermally unstable, and potentially dangerous. In order to create all-solid-state sodium-ion batteries, this study provides a composite solid electrolyte technique that combines the adaptability of a polymer electrolyte and the high ionic conductivity of a ceramic electrolyte. A composite electrolyte contains a poly(ethylene oxide) matrix, Na2H4B2O8 salt and a ceramic Na+ ion conductor (Na3Zr2Si2PO12) dispersed in it has been fabricated. The resulting composite electrolyte PEO-Na2H4B2O8-Na3Zr2Si2PO12 exhibits high Na+ ion conductivity, dendrite suppression, decreased interfacial issues, and an elastic property. The morphology and composition of prepared composite electrolyte have been characterized by various physicochemical characterization techniques such as X-ray diffraction, transmission electron microscopy and energy dispersive x-ray spectroscopy. The results of electrochemical analyzes such as cyclic voltammetry, impedance and charge-discharge tests showed that PEO- Na2H4B2O8-Na3Zr2Si2PO12 composite electrolyte has higher electrochemical stability. All-solid-state sodium-ion batteries with a sodium metal anode and a NaFePO4 cathode exhibit stable long-term cycling performance with the PEO- Na2H4B2O8-Na3Zr2Si2PO12 composite electrolyte.

Keywords: All-Solid-State-Sodium-ion battery, PEO, Na2H4B2O8, Na3Zr2Si2PO12, Composite electrolyte.

SYNTHESIS AND ANTIMICROBIAL ACTIVITY OF SOME NOVEL AZETIDINONE DERIVATIVES

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The heterocyclic nucleus is essential to medicinal chemistry and is a critical building block for the creation of a variety of therapeutic medicines, such as broad-spectrum antibiotics. In the present investigation, the synthesis and antimicrobial evaluation of four new Azetidinone compounds namely viz., 2-(3-chloro-2-(3,4-dimethoxyphenyl)-4-oxoazetidin-1-yl)terephthalic acid (1), 2-(3-chloro-2-(3-nitrophenyl)-4-oxoazetidin-1-yl)terephthalic acid (2), 2-(3-chloro-2-(3,4-dimethoxyphenyl)-4-oxoazetidin-1-yl)terephthalic acid (3) and 2-((furan-2-ylmethylene)amino) terephthalic acid (4). The newly synthesized compounds were characterized by elemental analysis, FT-IR and Mass spectral analysis. All the synthesized compounds were screened for their antimicrobial evaluation. Some of the compounds exhibited promising antimicrobial activity. From the present study it may be concluded that synthesized compounds are fruitful in terms of their structural novelty and marked biological activities.

Keywords: Synthesis, Azetidinone and Antimicrobial activity.

CYTOCHROME P450 MEDIATED CLINICAL PHARMACOKINETIC ALTERATIONS OF CO-ADMINISTERED CONVENTIONAL DRUGS WITH PIPERINE- A SYSTEMATIC REVIEW AND META-ANALYSIS

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Piperine is a main bioactive compound found in Piper nigrum (Black pepper) and Piper Longum (Long pepper) and it has bio-enhancing activity of conventional drugs. The current review is a quantitative synthesis of alteration on the pharmacokinetic parameter of cytochrome P450 (CYP450) substrates when co-administered or pre-treated with piperine in healthy volunteers.Percentage mean difference with standard deviation was used to assess the magnitude of difference in the following outcome measures: Cmax, Tmax, AUC0-∞, AUC0-24, T1/2, clearance (CL), elimination rate constant and ADR following administration of piperine with conventional CYP subtrates. RevMan 5.4.1 Software was adopted to evaluate the heterogeneity (I2 Statistics). A total of 67 studies were identified as per the search strategy, of which five promising studies were included in the present study after the proper abstract screening. The pooled percent mean difference [95% CI] observed that there was an increase in the pharmacokinetic parameters of CYP subtrates [Cmax (P<0.001), AUC0-∞ (P <0.001), AUC0-t (P<0.001), and T1/2 (P <0.001)] when administered with piperine. In this review, we concluded that piperine increases the bioavailability of CYP Subtrates by inhibiting the cytochrome P450 enzyme. The concurrent use of piperine may provide clinical benefit by enhancing the bioavailability of poorly absorbed CYP substrates.

Keywords: Piperine, conventional drug, Cytochrome P450, pharmacokinetic activity, Bioavailability.

ENHANCING ANTI-TUMOR EFFICACY OF 5-FLUOROURACIL AND METFORMIN NANOPARTICLES IN COLORECTAL CANCER

K. Bharathi Priya, Dr.C.N. Nalini, Dr.Grace Rathnam

Introduction: Cancer and Diabetes mellitus and are common diseases worldwide. There is considerable evidence that people with type 2 diabetes mellitus (DM2) have an increased risk of developing several cancer types, among them CRC. Meta analysis results indicate that diabetic patients have a 1.3 fold risk of developing CRC as well as risk of dying from it. To formulate and evaluate 5-fluorouracil and metformin nanoparticles and to study its stability.

A 0.5 mg/ml chitosan solution was prepared by dissolving 0.25 g of chitosan in 500 ml of acetic acid (2 %, v/v) followed by the addition of sodium hydroxide solution (20 wt%) to adjust the pH to 4.7. 5 ml stock solution of metformin and fluorouracil at a certain concentration was added into the chitosan solution. Glutaraldehyde (GL) reserve liquid (5 ml) was dripped slowly into chitosan solution under stirring until nanoparticles were separated.

Result: Percentage yield was found to be 76.5%, drug content was 98.02±1.4, drug loading was 75.34±1.1 and encapsulation efficiency was 89.34±0.88. DSC and FTIR studies exposed that there is no interaction between the drug and polymer. Scanning Electron Microscopy (SEM) revealed that the microspheres were spherical and porous. The drug release was found to be in controlled manner from the formulation.

Metformin hydrochloride and 5- Fluorouracil loaded chitosan nanoparticles were found to have excellent drug delivery and can have better treatment outcomes.

Key words: Colorectal cancer, Metformin, 5-Fluorouracil, nanoparticles, Diabetes mellitus

IN SILICO ANALYSIS AND CHARACTERIZATION OF CALLINECTES SAPIDUS AND CLIBANARIUS VITTATUS ATPASES AND GTPASES HOMOLOGY MODELING

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ATPases are enzymes that catalyze the hydrolysis of a phosphate link in adenosine triphosphate (ATP) to generate adenosine diphosphate (ADP). GTPase-activating proteins (GAPs) regulate heterotrimeric G proteins by raising the rates at which their subunits hydrolyze bound GTP and, as a result, return to an inactive state. The study is conducted to give a comparative approach to physicochemical properties and modeling of ATPases and GTPases of Blue crab (Callinectes sapidus) and Hermit crab (Clibanarius vittatus). The physicochemical characteristics of Blue crab showed a molecular weight of about 59450.99 Da, theoretical electrical point of 5.12, extinction coefficient of 10500, aliphatic index of 0.773, Instability index of 57.59, a total number of negatively charged and positively charged residues (0-0), and grand average of hydropathicity o.773, and for Hermit crab, the molecular weight ranged 7109.83 Da, theoretical electrical point 5.43, extinction coefficient 1125, aliphatic index of 17.44, Instability index 30.48, the total number of negatively charged and positively charged residues (0-0), and grand average of hydropathicity 0.500 were computed. All proteins were classified as transmembrane proteins. In secondary structure prediction, all proteins were composed of random coils as predominant, followed by extended strands, alpha helix, and beta-turn. The three-dimensional structure of both proteins was predicted and verified as good structures. All model structures were evaluated to be accepted and reliable based on structural evaluation and stereochemical analysis.

Key words: Callinectes sapidus, Clibanarius vittatus, Modeling, Physicochemical characteristic

CRUDE OIL DEGRADING MARINE BACTERIUM BACILLUS LICHENIFORMIS EBPL0613, ISOLATED FROM ULLAL BEACH, MANGALORE, KARNATAKA.

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Crude oil hydrocarbons are considered as one of the organic pollutants of high concern due to their wide dispersal and persistence in nature. we aim to isolate potential crude degrading bacteria. A total of 39 bacteria were isolated from six different soil samples taken from Ullal Beach, Karnataka, India. It is designated as EBPL0612 to EBPL0650 and screened for production of enzymes. In this study, the screening of 39 isolates revealed that ten of them are best in lipase concurrently. These are further screened for bio surfactant production. Among EBPL0613 showed the best degradation rate. Polyphasic taxonomical approach revealed and found to be Bacillus licheniformis. It was further screened for lipase assay and protein estimation. Bacillus licheniformis possess moderate lipase activity, exhibited only 76 U/mL and 24 U/ml respectively after 48 & 72 hours of incubation in crude oil substrate and for tween 20 substrate it exhibits only 36 U/ml & 34 U/ml respectively after 48 & 72 hours of incubation. The qualitative analysis of biodegradation is carried out at highest degradation rate, 55% was recorded by Bacillus licheniformis . Crude oil characteristics after biodegradation were analysed by FT-IR analysis. The present findings indicate the application potential of these bacterial isolates in the crude oil biodegradation.

Keywords: Lipase, Petroleum hydrocarbon, Bio surfactant, Biodegradation, Crude oil

EVALUATION OF PHYTOCHEMISTRY, PHARMACOLOGICAL ACTIVITY, AND ASSESSMENT OF INVITRO CYTOTOXIC ACTIVITY OF TINOSPORA CORDIFOLIA AGAINST HELA (CERVICAL CARCINOMA) CELL LINE

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Natural products with therapeutic value have gradually attained importance in clinical research due to their well-known medicinal properties with no or minimal side effects as compared to synthetic drugs. Tinospora cordifolia is known for its gigantic application in the treatment of various diseases shown in traditional Ayurveda literature. The principal goal of the present communication was to spotlight its biological and anticancer activity in ethanol extract of Tinospora cordifolia (EETC) such as its phytochemicals, anti-inflammatory, antioxidant, ion chelating nature, MTT, AO/EB assay (Cells excluding dyes were considered to be viable), LDH and morphological studies under a microscope were analyzed. Initially, phytochemical analysis was performed for qualitative analysis of phytochemicals from the whole plant extract which helps in enhancing the above biological activities. The work focuses on the preclinical analysis of in vitro anticancer activity against cervical carcinoma using HeLa cells which were exposed to different concentrations of EETC in a dose-dependent manner to destroy cancer cells effectively. Under microscopy, the morphology of HeLa cells has been examined with different dosages of EETC, which inhibits the proliferation of cancerous cells, and cell viability is noticed. Our present study results demonstrate that ethanol extract destroys cancer cells in a very effective manner and deserves attention as an antineoplastic agent and EETC containing the above biological properties helps people to live a healthy life.

Keywords: Tinospora cordifolia; Ascorbic acid; Aspirin; MTT; AO/EB.

FORMULATION AND IN-VITRO EVALUATION OF OZENOXACIN LOADED NIOSOMES

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The present study was focused on formulating and evaluating Ozenoxacin containing niosomal formulation for in vitro studies. Niosomal formulations were prepared by using different ratio of surfactant (Tweens80 and span 80) and cholesterol by thin film hydration method and were evaluated for in vitro characteristics, stability studies. tween80 containing niosomal formulation displayed highest entrapment efficiency with desired particle size. SEM analyses showed that niosomal formulation was spherical in shape. Niosomes containing tween80 displayed higher percentage of drug release after 8 h as compared to other formulations. F-4 formulation was found to be stable at the end of the study on storage condition. The present study suggested that niosomal formulations provide sustained and prolonged delivery of drug with enhance bioavailability.

Keyword: niosomal formulation, Ozenoxacin, bioavailability, thin film hydration technique, in-vitro drug release studies.

CARBON SUPPORTED MIXED METAL OXIDE (MMO) AS ELECTROCATALYST FOR OXYGEN REDUCTION REACTION (ORR) IN MICROBIAL FUEL CELL AIR-CATHODE

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Microbial fuel cells (MFCs) have emerged as a promising technology for sustainable energy generation. However, the performance of MFCs has been limited by the use of air cathodes, which can suffer from oxygen transport limitations and electrochemical degradation. In recent years, there has been growing interest in developing alternative cathode materials to improve MFC performance. Mixed metal oxide (MMO) cathodes have shown promise as effective alternatives to conventional air cathodes. MMO cathodes consist of a conductive substrate coated with a thin layer of mixed metal oxides, which can catalyze the reduction of oxygen to water with high efficiency. The development of spinel MMO cathodes for MFCs, with a focus on their electrochemical performance and stability is reported. Results indicate that spinel MMO cathodes can significantly improve MFC performance, with higher power output, better stability, and cost effective compared to conventional air- cathodes. In addition, the facile synthesis route also favors scale up of the spinel based MMO air- cathode. Overall, this study suggests that the development of MMO based cathodes is a promising approach to enhance the performance and scalability of MFC technology for sustainable energy generation.

Keywords: Microbial Fuel Cell, oxygen reduction reaction, ORR, air-cathode, mixed metal oxide, renewable energy.

AN ANALYSIS OF PRODUCTION AND PRICE RELATIONSHIP FOR COTTON IN TAMIL NADU: A DISTRIBUTED LAG MODEL APPROACH

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Cotton is a principal raw material for the world's textile industry. Increased global production, and improved productivity are mainly contributing for world supply. World demand for cotton continued to be erratic, and some groups lobbied for increased price-supports, but an upward trend began in the 1980s. World production of cotton in the early 1990s stood at 18.9 million metric tons annually. The leading producers include China, India, USA, Pakistan, Brazil, and Turkey. Cotton textile commands a significant share in exports from India. It accounts for nearly 22% of the total exports.In this study, the relationship between prices and production and distributed under free market conditions in Tamilnadu were studied using Koyck model of distributed lag models. According to the results, cotton production in Tamilnadu has been influenced by the lag value of average price formed in the market. The most striking result of the study is that the time required for the changes in the cotton prices in Tamil Nadu to have an effect on potato production is 302 days. This result shows that the farmers are very enthusiastic for growing this crop, which is largely grown as a cash crop.

Keywords: cotton production, cotton prices, distributed lag model, Koyck model

FORMULATION AND IN-VITRO EVALUATION OF OZENOXACIN LOADED NIOSOMES

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The present study was focused on formulating and evaluating Ozenoxacin containing niosomal formulation for in vitro studies. Niosomal formulations were prepared by using different ratio of surfactant (Tweens80 and span 80) and cholesterol by thin film hydration method and were evaluated for in vitro characteristics, stability studies. tween80 containing niosomal formulation displayed highest entrapment efficiency with desired particle size. SEM analyses showed that niosomal formulation was spherical in shape. Niosomes containing tween80 displayed higher percentage of drug release after 8 h as compared to other formulations. F-4 formulation was found to be stable at the end of the study on storage condition. The present study suggested that niosomal formulations provide sustained and prolonged delivery of drug with enhance bioavailability.

Keyword: niosomal formulation, Ozenoxacin, bioavailability, thin film hydration technique, in-vitro drug release studies.

QUALITATIVE ANALYSIS AND LOSS ASSESSMENT IN PRESERVATION OF FOOD GRAINS

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Storage of food Grains is an equally important task as harvesting,because if the produced is not stored properly using appropriate measures it may get spoilt or attacked by insects, Rats and Microorganisms. These losses play a critical role in influencing the life of millions of smallholder farmers by impacting the available food volumes and trade-in values of the commodities. Unutilized food also results in extra CO2 emissions, eventually affecting the environment. The Rice and Wheat samples were collected from different seasons from different types of temperature and places and analysed the losses of food grains incurred by insects through qualitative methods.

Rice and wheat samples was collected fromdifferent storage structures and dunnage using polypellates ,wooden crates and Bamboo mates .The samples are collected from all sides with bag spear, in some cases from bottom vent (out let) of store. In case where grains were stored on the floor, samples were taken from upper, lower and other sides of bulk. All these primary samples were thoroughly mixed on plastic sheet and weighed to 1kg. These samples were placed in plastic bag to make it able to retain the Moisture of grain and avoid contamination. Insect damaged, broken and healthy grain count: After removing the weeds and grass, sample of cleaned grain weighing 25 gram was drawn from each replication of the respective different commodities of rice and wheat variety. The grains were classified and counted for percent insect damaged, broken and healthy one has been calculated and comparative study of losses incurred in the storage grain has been analyzedin different types of storage structures and also in different seasons in various types of Storage Godowns. The result using polypellates has reduced the storage losses of Rice and wheat in comparing to wodden crates and bamboo mates and the Result will be discussed in detail.

ISOLATION AND CHARACTERIZATION OF MARINE ACTINOMYCTES

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The novel therapeutic agents were frequently produced from marine actinomycetes and are still being explored due to their vast diversity. Since the marine environmental condition are extremely different from the other ones, marine actinomycetes might produce novel bioactive compounds. We have collected marine samples soil and shells from NH4 beach, Chennai, Tamil Nadu, India. In this research we have isolated marine actinomycetes from the soil and shells. From this we got growth in three culture plates which is isolated from marine soil prepared in different Nacl concentrations (3% and 5%). The characteristics of the actinomycetes were screened using Isp mediums (International streptomyces project). Further the morphological and physiochemical properties of the isolates will be characterized. The extracellular crude secondary metabolites will be extracted from the culture filtrate of all the marine actinomycetes isolated and will be testing for the antimicrobial, anti-inflammatory and anticancer. Potential adopting standard method. The purpose of the present work was to show that the marine actinomycetes are potential source of bioactive compounds.

Key words: Marine Actinomycetes, Secondary metabolites, Anti-inflammatory and Anticancer

ON FRACTIONAL CHROMATIC NUMBER OF SPECIAL FAMILIES OF HALIN GRAPHS

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The fractional chromatic number of a graph, χ_F (G), is the infimum of all rational numbers a/b such that there exists a proper a/b-coloring of G. from this definition, it is not immediately clear that χ_F (G) must be a rational number for an arbitrary graph. A complete cubic tree, in which all leaves are at the same distance from the root vertex. In this work, we determine the fractional chromatic number of the Halin graph.

Keywords: Graph coloring, clique, fractional coloring, fractional chromatic number

AGRONOMIC BIOFORTIFICATION OF ZINC - AN FEASIBLE APPROACH FOR ALLEVIATING MALNUTRITION

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Malnutrition is increasing progressively and found to affect more than half of the world's population posing serious threat globally. Deficiency of Zn on an average was found affecting one-third of world's population, ranging from 4 to 73% in various countries Hotz and Brown (2004). Human health by zinc malnutrition impairs physical growth, immune system and learning ability, combined with increased risk of infections, DNA cell damage and tumor cell development (Prasad 2007). Biofortification an effective process focuses on enhancing the nutrient bioavailability in crops finally increasing the concentration of essential nutrients on edible tissues with yield increment. Among different techniques viz., breeding, microbiological, agronomic industrial fortification, agronomic or pharmaceutical supplementation for alleviating the nutritional imbalance feasibility sustains on agronomic biofortification. The Consultative Group on International Agricultural Research evidenced the time consuming and costliness of modern plant breeding techniques from investigating the genetic potential for increasing the bioavailability of Fe and Zn in staple food crops viz., rice, wheat, maize, common beans, and cassava Less time for achieving and wider adoption by all farming community and feasibleness with no additional production cost sustaining farmers income gains momentum in the present hour for agronomic biofortification .Agronomic biofortification, short term solution for increasing the micronutrient availability is achieved through micronutrient fertilizer application to the soil and/or foliar application directly to the leaves of the crop (Madhu Choudhary and Rajwanti Saran 2020).. Zn fertilization of different cereals (maize, sorghum, barley, wheat) and dicotyledonous (soybean, safflower, pea, common bean, canola, common vetch) crops showed increased yields and grain Zn concentrations (Cakmak et al., 2010). Field studies in India showed that the use of Zn-enriched urea on rice could increase yields and grain Zn concentrations threefold (Phattarakul et al., 2012).

Keywords: Malnutrition, Zinc, Biofortification, Feasibility

AN INNOVATIVE GREEN SYNTHESIS APPROACH OF CHITOSAN NANOPARTICLES USING CITRULLUS COLOCYNTHIS SEED AQUEOUS EXTRACT AND ITS ANTIBACTERIAL ACTIVITY

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Green synthesis is a new field of nanobiotechnology that offers economic and environmental advantages over standard chemical and physical processes. Materials that are nontoxic, environmentally friendly, and biosafe are used to conduct sustainable procedures. The current study suggests using Citrullus colocynthis seed extract as part of a novel biologically based approach for the manufacture of chitosan nanoparticles (CNPs). The goal of the current study was to determine the phytochemical composition of Citrullus colocynthis seed aqueous extract and the antibacterial activity of its chitosan nanoparticles (CCS-CNPs) against bacterial pathogens like Pseudomonas aeruginosa, Staphylococcus aureus, and E. coli using agar disc diffusion methods. The effectiveness of the bioconversion process was demonstrated by analysis of CNPs using a UV-visible spectrophotometer, SEM, TEM, EDXS, zeta potential, FTIR, and XRD. As a result, the findings might suggest that the aqueous extract of Citrullus colocynthis seed loaded chitosan nanoparticles be used as a successful nanomaterial to suppress microbial infections. Moreover, in vitro and in vivo research is required for the medicinal uses of CCS-CNPs.

Keywords: C. colocynthis S, plant extract, chitosan nanoparticles, antibacterial.

IN VITRO ANTIVIRAL POTENTIAL OF INDIAN MEDICINAL PLANTS AND NANOPARTICLES AGAINST PPRV AND GPV

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In an attempt to discover new antiviral agents from natural herbal products, ethanolic extract of Indian medicinal plant Myxopyrum Serratulum and its nanoparticle were assessed for their antiviral activities by in vitro method using peste des petits ruminants virus (PPRV) and Goat pox virus (GPV) in the Vero cell system. Results demonstrated that both extract and nanoparticle exhibited antiviral activity with different degrees of potency. This indicates that active principle(s) of extract either inactivated the virus or inhibited the viral release. These results suggest that ethanolic extract of Myxopyrum Serratulum and its nanoparticle could be a potential natural antiviral agent for management of PPR and GPV disease and also a traditional phyto-antiviral inventory for viral disease control.

Keywords: Myxopyrum Serratulum A.W.Hill, Nanoparticle, Antiviral activity, Peste des petits ruminants virus and Goat Pox virus.

PHYTOCHEMICAL CHARACTERIZATION AND ANTI MICROBIAL ACTIVITY OF METHANOLIC EXTRACT OF GRANGEA MADERASPATANA WHOLE PLANT

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The extract of aerial parts of Grangea maderaspatana (L.) Poir., obtained by steam distillation was analyzed by gas chromatography and gas chromatography coupled with mass spectroscopy. Twenty one constituents were identified, constituting 91.5 % of the oil. It was characterized by the dominant presence of sesquiterpenoids (sesquiterpenoid hydrocarbons 35.1 % and oxygenated sesquiterpenoids 28.4 %). Most abundant compounds are γ-gurjunene (26.5%), terpinyl acetate (20.8%) and hinesol (11.7%). The in vitro antioxidant potential of the oil was evaluated using, DPPH radical scavenging, metal chelating and reducing power assays. The oil showed antioxidant potential with significant reducing power (ASE/mL 2.01 ± 0.00), chelating activity (IC50 1.80 ± 0.15) and DPPH radical scavenging activity (IC50 2.90 ± 0.96). Antimicrobial activity of the oil was tested against one gram positive, four gram negative bacteria and two fungi using agar well diffusion method. The ZOI values of the oil were in the range of 2.67 ± 0.58 to 11.00 ± 0.00 mm and MIC of the oil was ranged from 5 to 30 µL/ mL for tested microorganisms. The activity was more pronounced against Candida albicans (ZOI = 11.00 ± 0.00 mm, MIC = 5 µL/mL) followed by Streptomyces candidus (ZOI = 9.33 ± 0.58 mm, MIC = 5 µL/mL), while the oil was least effective against Aeromonas hydrophila and Klebsiella pneumoniae.

KEY WORDS: Grangea maderaspatana, essential oil, antioxidant activity, antimicrobial activity, terpenoid composition.

AN ECO-FRIENDLY SYNTHESIS OF CHITOSAN/CITRATE/CELLULOSE COMPOSITE THIN FILM AND ITS ANTIOXIDANT APPLICATIONS

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The major challenge of research is the development of advanced materials from natural, biodegradable, and biocompatible polymeric materials. This is to provide eco-friendly and biodegradable materials for the next generation. Chitosan and cellulose are used as packaging materials that have shown excellent antibacterial activities against pathogenic and spoilage bacteria.

In this work, a simple fabrication of cross-linked biodegradable composite has been prepared from citric acid-based polyester (CAP), chitosan (ch.), and cellulose (Ce) for food packaging applications. The pure, isolated cellulose particles were obtained by using a manilla outer coat. Cellulose particles were subjected to chemical treatment such as acid and bleaching using H2SO4 and H2O2, respectively, thus obtaining pure cellulose particles. Spectroscopic techniques, namely FT-IR, were employed. The presence of the ester group on cellulose and Chitosan was studied by obtaining the ester(c=o) peak at 1710 cm-1. The extract was subjected to XRD studies. The scanning electron microscope (SEM) was used to study the surface morphology of cellulose and its composite. We observed increased antioxidant activity and better thermal properties upon incorporation of cellulose into CAP-Ch. Composite. This composite has better properties compared to the chitosan-polyester composite. This composite exhibited the strongest antibacterial activity against tested bacteria, especially Staphylococcus aureus and Escherichia coli. The prepared composite has potential applications as protective coatings for food packaging.

Keywords: Polyester, Cellulose, Chitosan, antioxidant, food packaging.

COMPUTATIONAL ANALYSIS OF FDA APPROVED DRUGS FOR COMPLIANCE OF PHARMACOKINETIC PRINCIPLES

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Aim and objective: The main aim of the study was to analyze the pharmacokinetics properties such as absorptio n,distribution,metabolism, excretion and toxicity of various compounds on human body. Since in vitro and in vivo evaluation are costly and laborious ,thus insilico techniques have been used to estimate these properties.This studies are focused on the FDA approved drugs for compliance of pharmacokinetics principle using computational.

Material And Methods: 15 FDA approved anticancer drugs were chosen for the study and it was obtained from PUBchem database. SWISS ADME, PROTOX-II,ADMET Lab 2.0 online web servers were used for analyzing pharmacokinetic parameters.

Results: Physiochemical properties include Lipinski rule of five predicts the poor absorption or permeation is more likely when there are more than 5 : 5-H bond donor , 10-H bond acceptor, Molecular weight > 500 Dalton and log p >5, TPSA ≤ 140 for good bioavailability, BBB penetration logBB> 0.3 considered as it cross BBB and log BB<-1 are poorly disturbed. From the study, it is observed that , All the compounds obeys Lipinski rule expect 3 drugs namely Docetaxel, Vinblastine, Pemetrexed , their molecular weight are above 500 Daltons. According to blood brain barrier penetration Bisulfan, Fludarabine, Capecitabine, Altretamine have log BB>3 it indicates they may cross the blood brain barrier.

Thus we conclude insilico screening gives first look for a potent molecule and once potency is validated, the study can move forward to clinical phases which will be a time consuming process and prevents failure of drugs in clinical phases.

PREPARATION OF ORGANIC TEXTILE DYE AND MORDANTS USING CALOTROPIS GIGANTEA AND CITRUS MEDICA

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The textile industry releases millions of gallons of effluent that contains colour and organic compounds from dyeing and finishing processes as dangerous toxic waste. All contribute to the effluent being highly toxic and cause disturbance to the aquatic life. The extracts from flowers have the capacity to give colours to textile. Calotropis is a perennial bush growing almost anywhere in the wild and is also considered to be an invasive species. It consists of clusters of waxy flowers which consists of cardiac glycoside known as calotropin. Calotropin has the capacity to give brownish yellow color pigment. In order to avoid the use of synthetic textile mordants, citron bark which consists of citric acid can act as a mordant. Calotropin pigment and mordant from the bark of citron tree is extracted with the help of two polar and non-polar solvents using Automatic Soxhlet extractor and Ultrasonicator. Thin layer chromatography (TLC) is performed as the next step to select the appropriate solvent for the further purification process. To obtain the mordant and calotropin pigment, extract will be purified using column chromatography. The extracts will then be analyzed by using Fourier Transform Infrared Spectroscopy (FTIR) and GC-MS to identify the functional groups of the Calotropis and mordant. The extracts will then be subjected to different formulation tests to obtain the product as a textile dye. This product focuses on bringing environmental sustainability by reducing the usage of harmful synthetic textile dyes and mordants.

Key words: Automatic Soxhlet extractor, Thin layer chromatography, FTIR, GC-MS

EMPLOYMENT OF DUAL CHAMBER AND TUBULAR UPFLOW MICROBIAL FUEL CELL (MFC) FOR ENERGY GENERATION FROM WASTEWATER

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Microbial fuel cells (MFC) is a promising sustainable and cleaner technology to meet increasing energy needs, especially using wastewaters as substrates, which can generate electricity and accomplish wastewater treatment simultaneously. Retting wastewater constitutes an assortment of toxic and recalcitrant compounds which are dispersed directly into estuaries and rivers. Seafood processing wastewater is well known for its elevated organic content and contributes for the major pollution of water bodies in the coastal regions. MFC are examined for the synchronized power production and organic removal employing two wastewater namely retting and seafood processing wastewater. In the first phase of experimentation, dual chamber MFC with graphite sheet as electrode procured highest COD removal of 91% and volumetric power density of 3.5 W/m3 at HRT of 20 days.

In the second phase of experimentation, the tubular upflow MFC with graphite sheet as electrode was evaluated for the treatment of the retting wastewater in different loading rates for a total period of 270 days. The maximum power density of 254 mW/m2 was achieved during the treatment of retting wastewater with CE (Columbic efficiency) of33 %. In the third phase of the experimentation, tubular upflow MFC with activated carbon fibre felt (ACFF) electrode utilizing seafood processing wastewater as substrate was evaluated at different organic loading rate (OLR) for a period of 205 days. The predominant bacterial communities of anode biofilm were identified as Stenotrophomonas sp.

Keywords: Microbial fuel cell, hydraulic retention time, Power density, upflow MFC

DAMP PROOF COURSE (OR) WEATHERING COURSE

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The damp proof course (DPC) is generally applied at basement levels, which restricts the movement of moisture through walls and floors. The selection of materials for the damp proof course and its various methods of applications in buildings is discussed. The choice of material to function as an effective damp proof course requires a judicious selection. It depends upon the climate and atmospheric conditions, nature of the structure, and the situation where DPC is to be provided. In order to prevent the entry of damp or moisture in the building, the damp proof course (D.P.C) is provided at various levels of the entry of damp into building. At present, generally all the buildings are given the treatment of damp-proofing. Thus, the provision of damp-proof course prevents the entry of moisture from walls, floors and basement of a building. Currently, various remedial damp-proof courses are available which can be utilized. However, it is important to select the appropriate damp proof course which will be well suited to the construction of the property.

Keywords: - Damp-proof, climate, atmospheric conditions, construction

PHYTOSCREENING, PHARMACOLOGICAL ACTIVITY, AND CYTOTOXIC ASSESSMENT OF AZIMA TETRACANTHA AGAINST HEPG2 HUMAN HEPATOCELLULAR CANCER CELLS: AN INVITRO STUDY - AZIMA TETRACANTHA'S PHARMACODYNAMIC AND CYTOTOXIC ASSESSMENTS.

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Medicinal herbs have long been used to treat a wide range of ailments. In the present study, the antioxidant potency of ethanolic extract was investigated, by determining the secondary metabolites such as flavonoids, tannin and phenolic compounds. The free radical scavenging activity of Ethanolic extract of Azimatetracantha(EEAT) was assessed by using 1, 1-diphenyl-2-picrylhydrazyl (DPPH), nitric oxide radical (NO), Hydrogen peroxide scavenging assay. Anti-inflammatory property also studied by invitro method such as Inhibition of albumin denaturation and HRBC membrane stabilization. Reducing power also assessed by using Iron chelating property. The Cytotoxicity was investigated against HepG2 cell lines using in vitro techniques such as MTT assay, morphological exams under a light microscope and a fluorescence microscope, DNA fragmentation, and LDH measurement .The results show that the EEAT contains significant antioxidant values. Similar observations were seen in scavenging the free radicals by the EEAT. It exhibits anti-inflammatory and antichelating activity also. Azima tetracantha ethanolic extract had significant cytotoxic activity against HepG2 cells, as measured by cellular death, in a dose-dependent manner. The findings of this study add to our understanding of Azima tetracantha's anticancer activity against HepG2 cells and support its application in the treatment of liver cancer. Thus, the therapeutic property of the plant A.tetracantha can be attributed to its phytoconstituents and its bioactive compounds.

Keywords: Azima tetracantha, Flavanoids, Inflammation ,MTT, HepG2 cells.

GREEN SYNTHESIS OF ZINC OXIDE NANOPARTICLES AND FORMATION OF COMPOSITE WITH SCHIFF BASE FOR THE APPLICATION OF CORROSION INHIBITION FOR MILD STEEL

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The present study is aimed to find a suitable alternative for traditional and hazardous corrosion inhibitors. ZnO was prepared by green methodology, then it was composite with Schiff's base for the application of corrosion inhibition of mild steel. Synthesized ZnO-SB composite was characterized by following techniques UV, FT-IR and XRD. ZnO-SB coated on mild steel and the corrosion studies examined by Weight Loss Method. The results indicated that ZnO-SB composite exhibited superior mixed-type corrosion protection to mild steel at different time, pH and concentration of inhibitors owing to the formation of compact and ordered ZnO-SB composite adsorption on mild steel surface.

Key Words: ZnO, Schiff's Base, Composite, mild steel

FORMULATION AND EVALUATION OF ANTI ACNE ACTIVITY OF POLYHERBAL GEL

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Acne as a family of skin disorders is one of the most prevalent dermatologic diseases in the world. Comedonal, nodular and papulopustular are the three main types of acne. People with the age group of 12-24 are more prone to acne and about 85 percent of the population are being affected. The present review followed the herbs currently used and those with a high potency future development of anti-acne products. Acalypha indica of family Euphorbiaceae is commonly used to treat psoriasis, sores, pimples, scars, scabies and other skin diseases. Ocimum basilicum of family Lamiaceae acts as an antioxidant and antimicrobial agent. It is used to treat ring worms, eczema, leukoderma, erythema and heart diseases. In addition to screening phytocompounds containing flavonoids, alkaloids, essential oils, phenolic and phenolic compounds, tannin, xanthone and its derivatives, diterpene acid, phenylpropanoidglycosides, acetoside, PUFA etc. The polyherbal gel is prepared from the ethanolic extraction of the leaves of Acalypha indica and Ocimum basilicum both has the synergistic property. In-vitro antibacterial activity was performed against Propionibacterium acnes and Staphylococcus epidermis, a causative organism for acne vulgar for the developed formulations using agar diffusion method. The measured zones of inhibition of the formulation were compared with standard marketed tropical herbal preparation for acne.The aim of the study is to evaluate the anti- acne property of leaves of Acalypha indica and Ocimum basilicum.

KEY WORDS: Acne, anti-acne gel, Acalypha indica, Ocimum basilicum, Ethanolic extraction.

EFFECT OF CERIUM ON LANTHANUM PHOSPHATE (LAPO4) NANOPARTICLES

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In the present work, Lanthanum phosphate. LaPO4 nanoparticles have been synthesised using co - precipitation method at room temperature. An attempt was made to study the effect of cerium on LaPO4. The structure and lattice parameters were determined using X-Ray Diffraction method. The XRD analysis reveals that the doping of LaPO4 with Cerium changed the volume of the crystal structure. Further the samples were subjected to EDAX, SEM, PL, Fluorometry analysis

Key words: Coprecipitation method, Lanthanum Phosphate, Cerium, XRD, Nanoparticles

RECOVERY OF BIO-CRUDE FROM MICROALGAL BIOMASS USING HYDROTHERMAL LIQUEFACTION

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The narrow perspective proposal for environmental problems like pollution and GHG (greenhouse gas) emission by fossil fuels is by using conventional and non-conventional biomass for production of bio-crude. Low lipid content and protein rich algae (Arthrospira Plantensis) are considered an efficient bio-crude a known source for their higher productivity rate, adaptation and ease of cultivation. The Hydrothermal Liquefaction (HTL) process in which the algal biomass can be directly utilized in wet state. Activity of A. Plantensis was tested for the HTL process in nil catalyst condition at temperature range around 523-573K and a consecutive residence time range of 30-60 minutes. The maximum bio-crude yield from the A. Plantensis algae was obtained at 548K and residence time of 45 minutes. Chemical compounds in the bio-crude and aqueous phase products were detected using Gas Chromatography-Mass Spectroscopy (GC-MS) showing the main compounds to be ketone and nitrogen containing compounds where in aqueous phase the oxygenated compound would prevail and the carbon, hydrogen, nitrogen and sulphur in the bio-crude could be determined by CHNS elemental analysis.

KEYWORDS: Thermochemical process, Hydrothermal Liquefaction, Algal biomass, bio-char, bio-crude.

OPTIMIZATION OF LEVELS OF CATIONS AND ANIONS IN TRANSITION BUFFALO DIET FOR IMPROVING PRODUCTION PERFORAMNCE AND NUTRIENT INTAKE

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The study on influence of dietary cation-anion difference (DCAD) on performance of transition buffaloes was carried out into two phases. During first phase, 20 prepartum buffaloes were divided into 2 equal groups and fed ammonium chloride with basal ration @ -50 (low negative; LN) and -100 (high negative; HN) mEq/kg of dry matter, respectively for 25 days before calving. In second phase, same animals after calving were divided into 4 groups. Buffaloes that received LN DCAD were divided into 2 groups (LN-LP & LN-HP) and were fed disodium hydrogen phosphate with basal ration @ +200 (low positive; LP) and +400 (high positive; HP) mEq/kg of DM for 60 days after calving. Similar grouping was done for buffaloes that received HN DCAD (HN-LP & HN-HP). During prepartum trial HN DCAD diet had better in vitro parameters, ME intake, plasma inorganic phosphorus level and lower urinary pH (p0.05). Daily milk yield, milk component yield, plasma total protein, urea and cholesterol were reported highest in HN-HP group (p but highest fat%, fat yield was recorded in HN-LP group with better efficiency of milk production (p and lowest cases of hypocalcemia and ketosis. On comparing two positive DCAD levels irrespective of prepartum treatment, nutrient digestibility and plasma calcium were significantly higher with LP DCAD (p with minimum cases of hypocalcemia and ketosis. Daily milk yield (10.19 vs 9.42 kg/d), milk component yield, plasma total protein and phosphorus level was significantly higher with HP DCAD ($p<0.05$).

Keywords: Daily milk yield, hypocalcemia, ketosis, nutrient intake, transition buffaloes

ANALYSIS OF POLYPROPYLENE FIBRE UNDER TENSILE TEST CONDITION

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The emergence of cracks over the course of the material lifetime can be blamed for the premature failure of polymers and its composites. When a material develops cracks, the material may ultimately fail catastrophically. Cracks must be located and repaired. The performance, dependability, cost-effectiveness, and safety of polymer constructions are to be ensured. The most recent technique for finding cracks in polypropylene structures, with an emphasis on where it is spread. The failure mechanism is still a topic of ongoing debate in the scientific community. The three-point bending test method is used to look into the polypropylene fracture mechanism. Three-point bending test results show that there is a significant damage zone in front of the notch. An extensional flow mixture (EFM) system was researched in order to achieve better distributive and dispersive mixing. The EFM compounding process demonstrated lower melt viscosities at high shear rates when compared to the other composites. The elastoplastic fracture mechanics technique will be applied because the region near the fracture tip has a sizable plastic zone.

Keywords: Fracture mechanics, polypropylene, cracks, three-point bends, notch.

ECO FRIENDLY GOLD NANOPARTICLES SYNTHESIS BY MEDICINAL PLANTS AND ITS ANTIMICROBIAL, ANTICANCER AND ANTIOXIDANT PROPERTIES

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Production of antibacterial, anti-biofilm, antifungal, anticancer & cytotoxic potential agents through the following plant extracts Brassica oleracea (broccoli), spinacia oleracea (spinach) and psidium guajava (guava) leaves by synthesizing with gold nanoparticles. Green- synthesized nanoparticles eliminate the need for a stabilizing and show shape and size-dependent biological activities. Biomolecules in plant extract are involved in reduction of metal ions to nanoparticles and eco-friendly synthesis process. The incubation process is done with gold nanoparticles and observed that the colour of the extract changed from pale yellow to purple. Green-synthesized nanoparticles eliminate the need for a stabilizing and show shape and size-dependent biological activities. The Green-synthesized nanoparticles are then characterized by the UV spectrophotometer and Fourier transform infrared analysis. Here, we describe some of the plant extracts involved in nanoparticle synthesis, characterization method includes anticancer, antibacterial, antifungal, anti-biofilm and cytotoxic activity. The anticancer activity of AuNPs was determined by breast cancer cell which are resistance to antineoplastic agents and used as research tool for studying the mechanism associated with the development of drug resistance. The antimicrobial activity in Guava (psidium guajava) showed maximum zone of inhibition compared to other two leaf extracts as spinach and broccoli where it show a less zone formation with AuNPs.

Keywords: Gold nanoparticles, antimicrobial, anticancer, anti-biofilm and cytotoxic potential activities.

UNLOCKING THE POWER OF INNOVATIVE MOLECULAR MECHANICS AND DFT/AB-INITIO METHODS TO UNRAVEL THE MULTI-FACETED HEALTH BENEFITS OF NOVEL MOLECULES

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Advances in computational chemistry have revolutionized drug discovery and development by enabling researchers to predict and optimize the properties and behaviour of molecules before they are synthesized and tested in the lab. In this study, we have employed a comprehensive approach combining molecular mechanics simulations and density functional theory/Ab-initio calculations to investigate the potential health benefits of novel molecules.

Our research focused on identifying and characterizing the antimicrobial, antioxidant and antidiabetic properties of a group of novel molecules. We used molecular mechanics simulations to study the molecular stability and reactivity of the compounds and DFT/Ab- initio methods to calculate their molecular interactions and binding affinities with molecular targets involved in insulin regulation.

Our results showed that the novel molecules have promising antimicrobial and antifungal activities against a range of pathogens. Additionally, our studies revealed that the molecules exhibit potent antioxidant properties through a variety of mechanisms and have significant potential as anti-diabetic agents by targeting molecular pathways involved in insulin signalling and glucose metabolism.

The implications of our findings are far-reaching, as these novel molecules could be developed into new drugs that offer a range of health benefits. Moreover, the combination of molecular mechanics and DFT/Ab-initio methods used in our study could serve as a blueprint for designing and evaluating novel molecules with multi-faceted health benefits. In summary, our research demonstrates the power of computational chemistry to unlock the potential of novel molecules for multi-faceted health benefits. The application of these innovative methods could lead to the discovery of new drugs that can combat a range of diseases and ultimately improve human health and well-being.

SYNTHESIS AND CHARACTERIZATION OF BUTYLENE GLYCOL BASED ISOPHTHALATE COPOLYESTERS

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Aliphatic-aromatic copolyesters were prepared from combinations of 2,3-butylene glycol, isophthaloyl dichloride, 1,5-dihydroxy naphthalene and 2,5-ditertiarybutylhydroquinone in a temperature range of 140–160°C under inert atmosphere of nitrogen using solution polycondensation method in o-dichlorobenzene. The copolyesters were found to be soluble in a wide range of commonly used organic solvents that included chloroform, DMSO, tetrahydrofuran and dimethyl formamide. The polyesters were characterized by UV-Visible, FT-IR and 1H NMR spectroscopy, elemental analysis, solution viscosity in o-chlorophenol and thermogravimetric analysis. The repeating units of these polyesters were ascertained using the spectral data. The effect of incorporation and the influence of aromatic rigid spacers containing substituted rings coupled with an aliphatic flexible spacer and bent rigid spacer in the polyester backbone was studied based on the properties of the polyisophthalates. Gel permeation chromatography was utilized to analyze the molecular weight distribution and poly dispersity in the synthetic polyesters. TGA experiments were performed to expose the thermal behaviour and the activation energies were evaluated and compared using Murray - White, Coats - Redfern and Doyle methods. SEM micrographs made for the polyesters at diverse places on the surface with varying magnifications provides useful information concerning the structure and surface morphology of the copolyesters. Three dimensional molecular structures of the polymers were studied by wide Angle X-ray diffraction (WAXD) technique and the patterns revealed the degree of crystallinity in the copolyesters.

Key words: Polycondensation, spacers, TGA, SEM, WAXD

TOTAL TWO OUT DEGREE EQUITABLE DOMINATION NUMBER FOR DIFFERENT GRAPHS

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Let G be a simple, finite and undirected graph. The out degree of v with respect to D is denoted by ∩od∩_D (v), and it is defined as ∩od∩_D (v)=|N(v)∩(V-D)|. Based on the concept of out degree we introduce a new domination called total two out degree equitable domination number. In this paper, the total two out equitable domination number is defined and determined for some general graphs called complete graph, star graph, path, cycle, wheel, double star, fan, triangular snake graph, helm graph and crown graph and Semi Total-Point Graph and some of their properties. It has an interesting application in construction of roads.

Keywords: Two Out Degree, Two Out Degree Equitable Domination Number, Equitable Domination Number, Isolated vertices, Semi Total-Point Graph.

PLANT GROWTH PROMOTION FROM RHIZOSPHERE SOILS BACTERIA AND ITS CHARACTERIZATION

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Pathogenic microorganisms affecting plant health are a major and chronic threat to sustainable agriculture and ecosystem stability worldwide. The chemical fertilizers used in the agriculture to increase yields, kill pathogens, pests, and weeds, have a big harmful impact on the ecosystem. Because of current public concerns about the side effects of agrochemicals, there is an increasing interest in improving the understanding of cooperative activities among plants and rhizosphere microbial populations. So, there is an urgent need of fertilizer from biological sources and is accepted worldwide. Plant growth promoting rhizobacteria (PGPR) are a group of bacteria that can be found in the rhizosphere, in association with roots which can enhance the growth of plant directly or indirectly. The main goal is to promote the organic fertilizers to reduce pollution, as well as to protect the farmer's friendly earthworm and microorganisms in the soil to preserve the environment of an ecological nature. As PGPR are environmental friendly and offer sustainable approach to increase production of crops and human health. They play an important role to increase in soil fertility, plant growth promotion, and suppression of phytopathogens for development of ecofriendly sustainable agriculture. Here, the samples were collected from different location of Vellore, TamilNadu (India). Totally 3 soil samples were collected from the rhizosphere soil (a).Groundnut, (b).Tulsi, (c). Indian dandelion flower .The obtained strains some to show positive from the PGPR tests in IAA, ammonia, siderophores production, and HCN production. Even check whether the obtained strain showed positive result in LYTIC ENZYMES TEST are 1.Amylase, 2. Protease, 3.Lipase, 4.Cellulase. And study the antimicrobial properties of bacterial strain. The obtain strain showed a good potentiality as plant growth promotion that might be tried with further crops on wider scale.

KEYWORDS: Plant growth promoting rhizobacteria, Bio-fertilizers, IAA, HCN and antimicrobial study.

GREEN SYNTHESIS AND ENHANCED ANTIBACTERIAL ACTIVITIES OF ZINC OXIDE NANAPARTICLES USING POMEGRANATE PEEL EXTRACT

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Zinc oxide nanoparticles have exhibited promising biomedical applications based on its anticancer, antibacterial, drug delivery as well as bioimaging activity. The basic mechanism of bactericidal nature of ZnO nanoparticles includes physical contact between ZnO nanoparticles and the bacterial cell wall. This study aim to present of nanoparticles synthesized from extracts of pomegranate peel using chemical precipitation method. The crystallization of the nanoparticles are characterized by powder x-ray diffractometer (XRD) and the grain size are calculated by using Scherrer's formula. The fourier transform infra red (FTIR) spectrum confirmed the formation of zinc oxide nanoparticles. The antibacterial studies of synthesized ZnO nanoparticles are carried out by using Kirby Bauer method. The synthesized nanoparticles have been examined against the pathogenic culture shows the antibacterial activity of ZnO nanoparticles.

Keyword: ZnO nanoparticles; antibacterial; X-ray diffraction; chemical precipitation

IN-VITRO CYTOTOXICITY ASSAY OF AQUEOUS EXTRACT OF RAGS OF ARTOCARPUS HETEROPHYLLUS

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Extraction of rags of Artocarpus heterophyllus were performed and phytochemical test of rags of Artocarpus heterophyllus was analysed and in vitro cytotoxicity assay were also performed.The Cytotoxicity of rags of Artocarpus heterophyllus on 3T3L1 cell lines were determined by the MTT assay. The aqueous extract of rags has been screened using in-vitro assay for Cytotoxicity activity (MTT assay) with different concentrations. Measurements were performed and the concentration required for a 50 % inhibition of viability (IC50) was determined graphically. The results of the present study demonstrated the potent cytotoxic activity of the rags of Artocarpus heterophyllus.

The cytotoxic effect of aqueous extract of rags of Artocarpus heterophyllus inhibited the cell growth of the following cell lines aqueous extract of Artocarpus heterophyllus was tested against the cell lines 3T3-L1 using MTT assay the in vitro activity of the extract. The aqueous extract of rags Artocarpus heterophyllus exhibited maximum cell death (72%) at the concentration of 250 µ/ml at the concentration 0.78mg/ml the extract exhibited minimum cell death of 42.95%. All the tested concentration such as 0.78, 1.5, 3.1, 6.2, 12.5 ,25,50,100 and 250 µ/ml exhibited feeble to maximum cell death. In vitro cytotoxicity assay of aqueous extract of Rags of Artocarpus heterophyllus was performed and the extract showed significant cytotoxicity activity. This drug can be used as a potent anti-cancer drug by evaluating detailed activity on anti-cancer.

Key words : Artocarpus heterophyllus,Phytochemical analysis, Cell lines, MTT assay

LOW COST SYNTHESIS OF NICKEL OXIDE NANOPARTICLE USING MOLLUGO LEAF EXTRACT AND ITS BIOLOGICAL ACTIVITIES

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Green Chemistry approach is a promising method in synthesizing the nanoparticle due to its rapid rate, less toxicity, easy to maintain, cost effective and environmental friendly, plant medicated synthesis of nanoparticle have an enormous benefits compared to physical and chemical methods. In this work, Nickel Oxide nanoparticle has been synthesized using aqueous leaf extract. The formed nanoparticles were characterized by UV, FT-IR, SEM and XRD. The UV spectra confirmed the presence of Nickel Oxide nanoparticles in the medium and it shows the absorption peak arises from 320-430 nm denote the development of NiO Nanoparticles. The peak at 422.08 cm-1 confirms the presence of Ni-O vibrations. FTIR analysis confirmed the presence of functional groups for NiO and NiO NPs surface bioactive capping agents. The morphology was confirmed by SEM mapping studies also conform the synthesized nanoparticle was NiO. The elemental composition of the synthesized NiO NPs was confirmed by EDX analysis. The weight percentage of Nickel and Oxygen atoms were 55.06 and 44.94 respectively. The XRD pattern confirmed the formation of Nickel Oxide Nanoparticle. From the observed main diffracted peak, the average crystalline size can be calculated using the Scherer equation and the synthesized NiO nanoparticles was 100.53 nm. The biological activities of synthesized NiO nanoparticles were observed higher activity than standard drug.

Keywords: Nickel Oxide, Leaf extracts, SEM, biological studies.

APPLICATION OF INTERNET OF THINGS ON MONITORING OF ENVIRONMENTAL PARAMETERS: A PROTOTYPE STUDY.

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Today, environmental monitoring is critical for humans to offer a safe and prosperous way of life. With the massive increase in population and pollution caused by manufacturing, transportation, and other sources, individual well-being suffers, affecting the health of the entire population instantly. Individuals have become more conscious of their surroundings in recent years. This awareness is driving the need for a dependable environmental monitoring system. Environment monitoring using traditional manually controlled technology involves the use of specialized specialists, is inaccurate, and necessitates human engagement, which escalates the cost. To solve these challenges, this study develops an Internet of Things (IoT)-based environmental monitoring and controlling system. Several criteria such as air quality, water quality, and surrounding quality are analysed to monitor the environment. The system includes sensors that are used to measure environmental parameters, a microcontroller called Node MCU that receives data from the sensors and sends it to the cloud, Firebase as a cloud to store the measured data from the sensors, and a mobile app to view the sensor data. The MIT app inventor is then used to create a mobile app. The developed environmental monitoring system can save people's lives from dangers in the environment.

Keywords: Environment, Quality, Internet of Things, Firebase, Cloud, Mobile application

A REVIEW ON: HUMAN PAPILLOMAVIRUS (HPV) INFECTED FEMALES AND CERVICAL CANCER AMONG FEMALES

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In this review, an endeavor has been made to present an overview of Human Papillomavirus (HPV). Human papillomavirus is sever infection in the reproductive track which is most common. HPV virus does not need the penetrative sex but it can be sexually transmitted. A well identified way of passing of this virus is the skin to skin genital contact. Much of the cases of HPV infection cures itself and most of pre step of cancerous lesions solved automatically. There is a trouble for all women's that HPV infection may become more sever and step progress of pre-cancerous to cervical cancer which is really unwanted. According to World Health Organisation (WHO) "cervical cancer is the 4th common cancer among women's , with an evaluated 570,000 new cases in 2018. Nearly 90% of the 311,000 deaths worldwide in 2018 resulted in Low and Middle Income Countries (LMICs)[6]. There are previsions like vaccines that defend again the HPV (18) and (16) are suggested by the WHO and for use in many countries that have been certified. This virus have symptoms like genital warts, they can form on the anus,vulva, groin area and cervix. Burning, itching and many like that discomforts can cause from this warts. Most common HPV linked disease that is Cervical Cancer. Cervical cancer is traceable to HPV infection almost in all cases.

KEYWORDS: HPV, Human Papillomavirus ,Cervical Cancer, Sexually Transmitted Disease.

BIOGENIC SYNTHESIS AND CHARACTERIZATION OF ZN CH3COO USING BRASSICA OLERACEA AND MIMOSA PUDICA LEAVES FOR ANTI-MICROBIAL, ANTI- INFLAMMATORY, ANTI-OXIDANT AND ANTI-DIABETIC.

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This study reports the synthesis of Zinc acetate nanoparticles using the aqueous solution of Mimosa Pudica leaf extract and Brassica Oleracea leaf extract. The star compound brocoli leaf, sulfurophane glucosinolate, supports enzymes involved in both phase 1 and 2 detoxification as well as may lower excess estrogen in the body. It also provides antioxidant benefits and quenches free radicals, making it a great choice for supporting detoxification and hormone balance. The nanoparticles, represented as broc-Zn CH3COO and Mimosa- Zn CH3COO, were obtained after calcination. Zinc acetate is used in lozenges to treat the common cold. Used in treating zinc deficiencies. Used to treat Wilson's disease. Used in the manufacturing of polymers. The nano particles will be characterized using Fourier transform infra-red (FTIR), scanning electron microscopy (SEM), UV visible spectroscopy (UV). Anti- Microbial studies were conducted for ZNCH3COO against bacterial and fungal pathogen strains. Both the leaves inhibited bacterial and fungal assay and formed zones against pathogens. The also discusses the problems and future perspectives of green synthesis methods and the related issues host and over looked but the scientific community in the green approach to nanostructures. The nanostructure materials prepared via green synthesis have a huge application in bio medicine , pharmaceutical and this will become a major research area in the next few years.

Keywords: zinc acetate, green synthesis, Mimosa pudica, Brassica Oleracea, FTIR, UV.

SCALE UP STUDY OF PRODIGIOSIN PRODUCTION BY 32 FULL FACTORIAL DESIGN FROM SERRATIA MARCESCENS ISOLATED FROM INDIAN MARINE REGION

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Prodigiosin (PGD) is bacterial pigment produced by the Serratia, Pseudomonas and Streptomyces species and is bright pink or red in colour. It has antimalarial, immune-suppressive properties. The aim of current research is to use 32 full fractional design for optimizing nutritional and physical Parameters of Serratia marcescens A2 for Prodigiosin production into 14L Fermenter. In addition, this research elucidates the molecular mechanism involved in the anti-proliferative effect of Prodigiosin on retinoblastoma cancer cells. The experiments were performed in a 14L bioreactor (SCIGENICS INDIA Pvt Ltd, India) with a working volume of 10L. The fermentation runs were carried out in batch mode. The incubation period and peanut concentration were chosen for optimization analysis by 32 design. The microbe showed excellent adaptability conditions and the pigment production was also increased proportionally. After 50hrs of the incubation, the pigment production reached its maximum level, (10250mg/L). In comparison, this yield observed in the flask was 5.4 folds higher than the yield observed in the flask. In the current study, a higher level of pigment production was achieved without using adsorbents. This study is well developed and optimized, the substrates used are available at very low cost and ready to go form and it shows optimum quantities within 50 hours for the production of Prodigiosin at present and in Future studies also.

Keyword: Prodigiosin, Bacterial pigment, Fermenter, Scale up process, Anti-cancer activity.

SYNTHESIS, CRYSTAL STRUCTURE, DFT, DOCKING AND BIOLOGICAL ACTIVITY STUDIES OF SMALL ORGANIC MOLECULE

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The small organic molecule based on Aniline was characterized using FTIR, FT-Raman, 1H and 13C NMR, UV- visible and elemental analysis techniques. Single crystal X-ray diffraction confirms that the title compound crystallizes in a orthorhombic crystal system. The unsual C-H... π interaction facilitate the crystal packing proved by the Density Functional Theory (DFT) and Hirshfeld surface analysis. The molecule showed an excellent result against Bacillus susbtilis with the value of 25 µg/ml. The antioxidant behaviour of the molecule showed strong antioxidant property. The silico docking studies on breast cancer cell line MCF-7 protein confirms that the molecule showed excellent binding affinity value of -4.5 kcal/mol. The in vitro anticancer studies on the breast cancer cell line MCF-7 showed promising results.

Key words : amine, anticancer, Raman, DFT , antimicrobial.

QBD DRIVEN ECO FRIENDLY HPLC METHOD FOR SIMULTANEOUS ESTIMATION OF SELECTED ANTIOXIDANTS IN HUMAN PLASMA

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A simple high-performance liquid chromatography method with combined approach of Analytical QbD and green chemistry principles for simultaneous estimation of selected antioxidants (GSH, SIL and CUR) in human plasma has been developed. The separation was achieved using Eclipse XDB C18 (4.6 X 150mm, 3.5 µm) column using UV detection 215nm. The mobile phase consisted of water (pH 6.7 adjusted with 0.1% orthophosphoric acid) : Ethanol with flow rate 1.07ml/min. In extraction procedure volume of the extracting solvent, centrifugation speed and time were chosen as factors for screening through QbD approach using a regular two level fractional factorial design to find their significance on the response i.e, percentage recovery. Calibration curve was linear between the concentration range of 2-160 ng/mL, 56- 4480ng/ml and 1.8-150ng/ml for GSH, SIL and CUR respectively. For the validation of the developed method, USFDA recommendations were followed, and all the results obtained met the acceptance criteria.

Keywords: Analytical QbD, Green analysis, HPLC, antioxidants

NEW DEVELOPMENT OF NOVEL FUNCTIONAL POLYESTERS CONTAINING CHROMONE CURCUMIN UNITS: POTENTIAL ANTI-CANCER DRUG, SUPRAMOLECULAR ARCHITECTURE.

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A series of six novel polyesters (P1-P6) were obtained via by direct polycondenzation with hydroxyl functional-appended chromone and curcumin based monomers (M1, M2 and M3) were synthesized and characterized structurally by spectroscopically and thermogravimetrically. The synthesized polymers were soluble common organic solvent such as N, N-dimethylformamide, THF, DMAc and NMP. The molecular weight of the polymers was found to be ranged from 3.390× 105 – 1.1×105 g/mol by GPC-MALS. X-ray diffraction pattern of polyesters indicates P1, P2 and P3 are amorphous in nature, whereas polymer P4, P5, and P6 shows crystalline nature. The synthesized molecules can be extended into 2D and 3D supramolecular networking through π-π stacking, H-bonding and hydrophobic contacts by the receptor VEGFR2 kinase. The cell viability effects of polymers on the growth of cell lines A549, HeLa and VERO were evaluated in vitro by MTT assay. The polymer P3 displayed potent anticancer activity compared to the other polymers. Hence, the overall present study paves the way for designing new drugs for anticancer and antimycobacterial activities with elevated inhibitory potency.

Keywords: Supramolecular architecture, 4-arylidene, GPC-MALS, anticancer ctivity.

IN SILICO APPROACH TO IDENTIFY NOVEL THIAZOLIDIN-4-ONES AGAINST ACINETOBACTER BAUMANNII

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Introduction: Acinetobacter baumannii has emerged as an important pathogen for nosocomial infections having high morbidity and mortality. This pathogen is notorious for antimicrobial resistance to many common antimicrobial agents including fluoroquinolones, which have both intrinsic and acquired resistance mechanisms. Fluoroquinolones targeting the bacterial topoisomerase II (DNA gyrase and Topo IV) show potent broad-spectrum antibacterial activity by the stabilization of the covalent enzyme-DNA complex. However, their efficacy is now being threatened by an increasing prevalence of resistance.

Methods: Novel Thiazolidin-4-one derivatives were designed to perform molecular docking studies using Autodock-1.5.6 and identified the hit molecules. The hits were further evaluated for their drug likeliness using the Swiss ADME web server.

Results: In this study, 56 compounds were designed as thiazolidine-4-one derivatives which act as antibacterial agents were determined against multi-drug resistant Acinetobacter strains which have ciprofloxacin (CIP) resistant and GyrA mutation. Afterwards we performed docking studies with Topo IV (pdb:2XKK). The binding affinity of the designed ligands towards Topo IV was selected based on binding affinities and interaction patterns. Almost all the compounds have good binding affinities in the range of 10.8 to 6.5 compared with that of cognate ligand 7.2 for Topo IV, respectively.

Conclusion: The results reveal that Thiazolidin-4-ones as Topo IV and among 56 compounds, except 6 compounds all compounds showing good binding affinities may produce significant antibacterial activity for further enhancement.

Keywords: DNA gyrase, Autodock, Discovery studio, Swiss ADME; topoisomerase IV.

A CROSS-SECTIONAL STUDY ON THE USAGE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE IN DIABETES PATIENTS IN A SOUTH INDIAN TERTIARY CARE HOSPITAL

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This study aims to estimate the prevalence of complementary and alternative medicine (CAM) use in diabetic patients in a South Indian tertiary care teaching hospital. *Need for the Study*: Majority of the patients are not reporting to their physicians regarding their alternative medicine use along with the contemporary medicines. Clinical pharmacists play a major role in identifying CAM usage, encouraging the patients to report to their respective physicians. By knowing the frequency of alternative medicine use, an expected herb-drug interaction can be minimized.

Subjects and Methods: A cross-sectional study observed in 169 diabetic patients.

Results: Among 169 diabetic patients, 41.4% of diabetic patients were CAM users. Fenugreek (23.07%) and Keezhanelli leaves (16.9%) were used widely. The majority of the CAM users were above 55 years (57.3%) old and belonged to Class III, which is lower middle class (37.9%) concerning to socioeconomic status. There was a significant association between the CAM users and non-CAM users in age and socioeconomic status ($P < 0.017$ and $P < 0.042$), respectively. Many patients chose CAM therapy (41.4%) as they were not satisfied with existing conventional treatments.

Conclusion: Patients need to be encouraged to disclose their CAM usage to the health-care providers to avoid drug interactions. The clinical pharmacists and other health-care professionals play a significant role in finding out drug interaction between existing conventional medicine and alternative therapies used by diabetic patients for their glycaemic control. By knowing the common risk factors, further complications can be minimized to improve the patient quality of life.

SYNTHESIS AND CHARACTERIZATION OF MANGANESE(III) PORPHYRIN AND MANGANESE(V) PORPHYRIN OXO SPECIES FOR THE APPLICATION OF C-H ACTIVATION AND EPOXIDATION REACTIONS

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Heme Proteins use the heme cofactor, a Metalloporphyrin, to carry out a variety of processes such as dioxygen binding and transport, electron transfer, and oxygenation. The oxidation of organic substrates into viable products has been extensively explored and exploited with high valent metal oxo short lived species. One example is the fact that cytochrome P450 enzymes (CYP450) and high valent Fe oxo porphyrin π cation radicals (Compound 1) are thought to transfer their oxygen atom to organic substrates via a catalytic cycle of dioxygen activation and oxygen atom transfer. The synthesis, spectroscopic characterization and electrochemistry of Mn(III) and Mn(V)-Oxo compounds will be carried out and the effect of axial ligand to the rate of the reaction, product formation are also will be studied. In natural systems like metalloenzymes, Manganese(V) oxo species will be generated and this intermediate perform various organic transformations such as epoxidation of olefin, functionalization of alkane C-H bonds etc.

SP MEAN E-CORDIAL LABELING

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Let G=(V,E) be a finite simple graph. Let f be a function from the edge set E to {0,1}. For each vertex v, define f(v)=∑{f(uv)/uv|≤E} (mod2). The function f is called an E-Cordial labeling of G, if the number of edges labeled 0 and the number of edges labeled 1 differ by at most one and the number of vertices labeled 0 and the number of vertices labeled 1 differ by at most one. A graph the admits E-Cordial labeling is said to be E-Cordial graphs. Based on the above definition we introduce a function f,E(G)→{1,2} we associate two integers S=∑|≤f(uv)|≤ and P=∏|≤f(uv).|≤ For each vertex u assign the label |≤(S+P)/2|≤ mod (2). Then f is called SP mean E-Cordial labeling if |v_f (0)-v_f (1)|≤1 and |e_f (1)-e_f (2)|≤1 where v_f (0),v_f (1) is the number of vertices labeled by 0 and 1 also e_f (1),e_f (2) be the number of edges labeled by 1 and 2 respectively. A graph G is called SP mean E-Cordial graph if it satisfies the SP mean E-Cordial labeling. In this research work we investigate SP mean E-cordial labeling of some general graphs and special graphs.

Keywords: Mean, E-Cordial labeling, Complete Graph, Wheel

THE UPPER STRONG MONOPHONIC NUMBER OF A GRAPH

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A strong monophonic set M≤V(G) is said to be a minimal strong monophonic set of G if no proper subset of M is a strong monophonic set of G. The maximum cardinality of a minimal strong monophonic set of G and is denoted by ≤ sm ≤ + (G). Some general properties satisfied by this concept are studied. The upper strong monophonic number of some standard graphs are determined. Connected graphs of order n≥2 The upper strong monophonic number 2 or p are characterized. It is shown that for every pair of integers a and b with 2 ≤ a ≤ b, there exists a connected graph G such that sm(G)= a and ≤sm ≤ ^+ (G) = b.

Keywords: upper strong monophonic number, strong monophonic number, monophonic number.

MULTIPLE LOW-DOSE THERAPIES AS AN EFFECTIVE STRATEGY TO TREAT HEPATIC AND RENAL TOXICITIES ON DMBA-INDUCED RAT MAMMARY CARCINOGENESIS

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Breast cancer prevention and treatment are connected to the hallmark of epidemiology and involve the usage of agents that suppress, postpone, or reverse the process of carcinogenesis caused by mutation accumulation and enhanced proliferation. Phytochemicals derived from plant sources are becoming important in toxic-free chemotherapeutic agents and pleiotropic effects in medical treatments to abate toxic responses associated with drug-mediated hepatorenal injuries. The present investigation explores the chemotherapeutic impact of Chlorogenic acid, Caffeic acid, Quinic acid and Tamoxifen (Standard drug) investigated in mammary cancer-bearing rats treated as follows: DMBA, CGA, CA+QA, CA+QA administered in conjunction with TAM, and TAM. Kidney, Liver Biomarkers, Lipid Profile, Lipoprotein, Lipid Metabolizing Enzymes, Oxidative Stress Parameters, Xenobiotic Metabolizing Enzymes and Hepatorenal histopathology were the tests that were conducted. Here, we revealed that DMBA-treated rats showed Triplet combination therapy (CA+QA+TAM) and TAM supplementation protected against the negative effects of DMBA, indicating that the combined benefits of several low-dose therapies might be used as effective chemotherapeutic medications and reduce the adverse effects of TAM. In conclusion, Triplet combination therapy should be regarded as a unique approach, Caffeic and Quinic acid may act as chemo-protecting drugs improving the prognosis of patients receiving TAM chemotherapy.

Keywords: Phytochemicals, low doses, DMBA toxicities, Oxidative stress, Triplet therapy

BIO ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR THE DETERMINATION OF LASMIDITAN BY RP-HPLC IN HUMAN PLASMA – AN AQBD APPROACH

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The present research describe the systematic development and validation of a simple, rapid, sensitive and cost-effective RP-HPLC bioanalytical method for the estimation of Lasmiditan in human plasma employing analytical quality by design (AQbD). AQbD approach of quality risk management was applied for identifying the critical method parameters (CMPs) and subsequently method optimization was performed employing Design-Expert Software by selecting mobile phase pH, flow rate and % organic modifier as CMPs and evaluated for critical analytical attributes such as retention time, peak tailing and theoretical plates. The developed method was then transferred to bio analysis employing protein precipitation for extraction of drug from human plasma. Chromatographic optimization was chosen by mathematical and graphical search techniques and design space was demarcated. Validation studies indicated linearity between 20 and 800 ng/mL (r2 = 0.999), whereas accuracy and precision showed good percent recovery (98.798 %). Sensitivity evaluation revealed LOQ of 20 ng/mL which reached the level of drug possibly found in human plasma. In a nutshell, the present work demonstrates significant merits of AQbD approach for holistic process understanding and bioanalytical method development and validation with enhanced robustness and performance which can be applied for pharmacokinetic and therapeutic drug monitoring in clinical laboratories.

Key words: Lasmiditan, RP-HPLC, Method development, ICH Guidelines, Validation

RECYCLABLE POTENTIAL FOR THE TREATMENT OF DAIRY INDUSTRY EFFLUENT

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ABSTRACT The dairy industry is the largest polluter of water generating Produced wastes (sludge and effluents) from food industries, including dairy industry, contain high levels of organic matter, fatty acids and notable nitrogenous compounds. The main pollutant in milk processing wastewater is whey due to its high organic and volumetric load. It represents about 85–95% of the milk volume and 55% of the milk components. Whey consists of carbohydrates (4–5%), mostly lactose. The present study was carried out to investigate the biodegradation process of dairy effluents using some locally isolated bacteria. The disposal of large quantities of this wastewater with or without treatment and continuous pile of solid Waste from the industrial and domestic source rapidly causes deterioration of the environment. The effects of the presence of these wastes include contamination of drinking water, killing of Aquatic life, increased danger in swimming and objectionable physical conditions such as off Odors and accumulation of debris. The dairy effluents are responsible for causing foul odor and turbidity in the water. The organic concentration present in the effluent becomes toxic for the aquatic ecosystem. The main objective of the study was planned to identify the microbes which are effective for the biological degradation of dairy wastewater. Reduce the organic content of the waste-water, Remove nutrients that could cause pollution of receiving surface waters or groundwater, and remove or inactivate potential pathogenic microorganisms or parasites. The wastewater sample was subjected to microbial analysis to isolate the specific bacteria. Nine bacterial species were isolated from dairy wastewater samples The unique bacteria are isolated from dairy waste water and treated against them which are disposed of by the dairy industry. Organisms are capable of degrading the Dairy waste water because they have the capacity to remove odor,color,and turbidity. Further the Treated effluent can be used for Agriculture. Keywords: Organic pollution,bacteria, dairy waste, effluent

DOUBLE MEAN LABELING ON CIRCULANT GRAPH OF ORDER WITH DISTANCE

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In this research article we applied the concept of Double Mean Labeling (DML) to the circulant graph on dimension with distance. We proved this result by labeling the vertex under graph isomorphism and then executing the definition, Double Mean labeling under Successor Vertex Set to get distinct edge labeling. also, we split this labeling into two algorithms, one is naming the vertices without numerical values and the other is labeling the vertices by the values, then we get the edge labels according to DML concept. Thus, the resultant edge labels are distinct.

Keywords and Phrases. Graph Labeling, Mean Labeling, Mean Graph, Pendant Double Mean Labeling, Double Mean Labeling, Successor Vertex Set, Circulant Graph.

ASSESSMENT OF ANTIOXIDANT AND ANTI-INFLAMMATORY ACTIVITY OF POLYHERBAL DECOCTION: SUKKUMALLI KASHAYAM-AN IN VITRO STUDY

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These days, interest has increased in finding naturally occurring antioxidants and anti-inflammatory agents to replace synthetic drugs which are restricted due to their carcinogenicity and toxicity.The present study was aimed to evaluate the antioxidant and anti-inflammatory activity of aqueous extract of sukkumalli kashayam (SMKE). The free radical scavenging potential of SMKE was demonstrated by DPPH, FRAP and anti-inflammatory activity was determined by HRB membrane stabilization assay, proteinase inhibitory assay and protein denaturation inhibition assay. The quantification of phytophenolic compounds like total phenol reported 1151.867 mg GAE/g with gallic acid as standard and total flavonoid content showed 115.433 mg QUE/g with quercetin as standard. The radical scavenging activity by DPPH method reported 17.713% at 200µg,19.968% at 400 µg, 26.462% at 600 µg, 47.933% at 800 µg and 59.312% at 1000 µg,FRAP exhibited 10.692% at 200 µg, 21.236% at 400 µg, 30.226% at 600 µg,40.400% at 800 µg and 52.608% at 1000 µg with quercetin as standard. The anti-inflammatory activity by HRB membrane stabilization assay showed 9.91% at 200µg, 19.29% at 400µg, 28.50% at 600µg, 36.26% at 800µg and 45.71% at 1000µg, proteinase inhibitory assay reported 13.57% at 200 µg,21.83% at 400 µg, 31.78% at 600 µg, 35.66% at 800 µg and 38.24% at 1000 µg, and protein denaturation inhibition assay determined 0.74% at 200 µg, 14.7% at 400 µg, 22.79% at 600 µg, 28.68% at 800 µg and 41.91% at 1000 µg with diclofenac as standard. The reports of the study revealed the antioxidant and anti-inflammatory potential of SMKE in a dose dependent manner.

KEYWORDS: Sukkumalli Kashayam, DPPH, FRAP ,HRBC

PREPARATION AND CHARACTERIZATION OF CA-DMSO-PVA MEMBRANE BY INTEGRATING NANOPARTICLES TO ENHANCE SURFACE CHARACTERISTICS

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The membrane technology serves as a better and cost-effective technique in effluent treatment in comparison to traditional techniques. Cellulose Acetate, Dimethyl Sulfoxide and Polyvinyl Alcohol are chosen as the key components. In order to enhance performances such as mechanical strength, stability, and pore size certain nanoparticles like TiO2, CaO, CdO, and ZrO are doped with polymers. Pure water flux shows that PCD membrane doped with TiO2 had a flux range of 225–275 L m −2 h −1 compared to that of pure PCD membrane's flux range of 25 L m −2 h −1. The range of flux shows that nanoparticles doped membranes are more efficient in rejection rate. Increase in density range of pure PCD membrane (2500 – 2900 kgm-3) to that of nanoparticle doped membrane (2519 – 2645 kgm-3) was observed. PCD membrane doped with TiO2 nanoparticle recorded the highest tensile strength of 42 MPa and tensile modulus withstanding capability up to 172 MPa. PCDZr0.2 membrane possessed a contact angle of 54.07º to that of pure PCD membrane's contact angle i.e., 80.23°. This decrease in contact angle indicates enhanced hydrophilicity of nanoparticledoped PCD membrane. Enhanced anti-fouling nature was observed in membranes doped with nanoparticles which ultimately resulted in a boost to the membrane performance.

Keywords: Membrane fabrication, nanoparticles, phase inversion technique.

IMMUNOINFORMATICS BASED STUDIES PREDICTS CD151-LARGE EXTRACELLULAR LOOP(LEL) AS A POTENTIAL VACCINE CANDIDATE FOR TRIPLE NEGATIVE BREAST CANCER

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Triple-negative breast cancer (TNBC) is a highly aggressive heterogeneous subtype of Breast Cancer.Its treatment is highly challenging due to drug resistance and tumor recurrence. Researchers are currently exploring several potential vaccine candidates for TNBC. Vaccine candidates for TNBC are still in the early stages of development and are not yet available for use in clinical practice. CD151, a cell surface protein, is a key driver of TNBC and its large extracellular loop (LEL) contains binding sites for other proteins, which regulates drug resistance, metastasis, and immunosuppression. Targeting CD151 as a vaccine candidate could potentially enhance the immune system's ability to recognize and attack cancer cells. Short peptide sequences are more immunogenic than full-length proteins because they can stimulate a stronger immune response. Short peptides are more easily presented to the B cells by APCs and are more easily recognized by T cells. This study aims to predict the potential short antigenic peptide sequence in the LEL of CD151 as a cancer vaccine candidate.Machine learning and artificial neural network based in silico approaches predicted that B cell epitopes, having a high probability of immunogenicity, mainly lie in the LEL of CD151. Online web server-based approaches for predicting MHC class I and class II binding peptides within CD151 also showed, short peptide sequences within LEL have a high binding capacity to MHC class I and class II proteins. A comparative study on the antigenicity and allergenicity of full length CD151 and CD151-LEL sequences predicted that CD151-LEL has high antigenicity and low allergenicity compared to the full length protein.Our study mainly shows that short peptide sequences within CD151-LEL are potential antigenic and immunogenic epitopes, and they can bind both MHC class I and class II proteins.Overall this study predicts CD151-LEL as a potential vaccine candidate for TNBC.

Keywords: CD151, Large Extracellular Loop, vaccine, B cell epitopes,MHC class I and class II proteins, antigenicity, and allergenicity.

IN SILICO COMPUTATIONAL SCREENING OF SUKKU MALLI KASHAYAM AGAINST COVID-19

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The emergence of Covid-19 in early 2020 has started to spread across the globe ceaselessly; it is a life-threatening viral disease to mankind caused by severe acute respiratory syndrome coronavirus-2. The absence of specific synthetic drugs against covid-19 has paved a way for scientists to look for naturally occurring substances that possess antiviral properties with fewer side effects. The objective of the present study is to screen the presence of potent bioactive compounds in sukkumalli kashayam against covid-19, by insilico model. GCMS analysis of sukkumalli kashayam extract (SMKE) reported the presence of 14 bioactive compounds. ADMET properties of the bioactive components were predicted by SwissADME and 6 compounds were selected to perform molecular docking. The result of the study showed that coumarin-8-ol,7-methoxy-4-methyl- was found to have a better binding energy of -7.96 Kcal/mol for spike protein while 4H-1-Benzopyran-4-one,7-hydroxy-2-phenyl- and flavone demonstrated an effective binding energy of -7.34 and -7.32 Kcal/mol for Mpro of SARS-Cov-2 respectively. The study concluded that sukkumalli kashayam could be a promising candidate against covid-19.

Keywords: Sukkumalli kashayam, GCMS analysis, spike protein, Mpro, covid-19, In silico

SALICYLIDENE-BASED TURN ON FLUORESCENCE DUAL RESPONSIVE CHEMOSENSORS FOR THE SELECTIVE DETECTION OF ZN2+ AND AL3+ CATIONS, AND F⁻ ANION

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Four Schiff-base chemosensors such as bis(5-bromosalicylaldehyde)carbohydrazone (R1), bis(5-bromosalicylaldehyde)thiocarbohydrazone (R2), bis(3-ethoxysalicylaldehyde) carbohydrazone (R3) and bis(3-ethoxysalicylaldehyde)thiocarbohydrazone (R4) were synthesized and characterized. The sensing properties of the receptor molecules were investigated against the biologically important inorganic cations (K+, Mg2+, Ca2+, Al3+, Mn2+, Fe3+, Co2+, Ni2+, Cu2+ and Zn2+) and anions (F^-, Cl^-, Br^-, I^-, $HSO4^-$, $PO4^-$, $ClO4^-$, $N3^-$and $NO3^-$) by colorimetric, absorption, fluorescence, 1H NMR and DFT studies. The receptors showed selective turn on fluorescence responses for Zn2+, Al3+ and F^-ions. The fluorescence intensities for Zn2+ ion is 39 and 47 fold higher, whereas that for Al3+ ion is 6 and 36 fold higher than the receptors R1 and R3, respectively. The fluorescence intensities for F^-anion is 17 and 12 fold higher than the receptors R2 and R4, respectively. The simultaneous addition of both Zn2+/Al3+ cations and F^-anion decreases the fluorescence intensity. The fluorescence reversibility was studied by adding Zn2+ and EDTA, sequentially to the receptors. The 1H NMR titrations confirmed the deprotonation of N–H protons present in the receptors. Further, the sensing mechanism was also supported by theoretical calculations. The obtained results indicate the enhanced selectivity of receptors toward Zn2+ cation and F^-anion when compared to other tested cations and anions.

A RETROSPECTIVE OBSERVATIONAL STUDY ON ASSOCIATION BETWEEN NATRIURETIC PEPTIDES AND CARDIOVASCULAR RISK IN PATIENTS WITH TYPE 2 DIABETES MELLITUS.

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CVD is the major cause of morbidity and mortality in individuals withT2DM. Although many promising cardiac markers have been identified, it is unlikely that a single Natriuretic peptides biomarker will aid in T2DM patients with CVDs. Hence we attempted to provide a brief review on the association between natriuretic peptides and Cardiovascular risk in T2DM by using the UKPDS -10 years risk stratification tool. Objective: Aim of the study was to assess the association betweeen natriuretic peptides (MR- pro-ANP& NT Pro-BNP) and CVD in T2DM patient. Method: A retrospective observational study was conducted in a tertiary care hospital, with a sample size population of 74. This study was carried out for a period of 6 months. Results: Out of 74 patients in our study,we found a significant correlation between UKPDS Risk Score, CVD and natriuretic peptides in T2DM. The following results was found in our study 1) Association between HbA1c vs UKPDS 10 years cardiac risk score (P value = 0.026) 2) Association between HbA1c vs NT-Pro BNP (P value=0.017) 3) Association between HbA1c vs MR-Pro ANP (P value=0.002) 4) Association between UKPDS 10years cardiac risk score vs NT-Pro BNP (P value=0.000) 5) Association between Age vs NT-Pro BNP (P value=0.044) 6)Association between Age vs MR-Pro ANP (P value=0.033) 8)Association between UKPDS 10 years risk score vs CVD (P value=0.038) Conclusion: Our data shows that there is a significant correlation between Natriuretic peptides and CVD hence, higher Natriuretic peptides levels in T2DM are directly associated with cardiovascular risk.

KEYWORDS : Cardiovascular disease(CVD),Type II Diabetes Mellitus (T2DM), The United Kingdom Prospective Diabetes Study (UKPDS).

ASSESSMENT ON THE PATTERN OF DRUG INFORMATION QUERIES IN A TERTIARY CARE HOSPITAL, CHENNAI.

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The drug information services help to assist health care workers to address the patient specific drug related needs and promote rational drug use. The objective of the study is to assess the pattern of drug information queries in a tertiary care hospital from the Physician, Nurses, Pharmacists, Students and other health care professionals. In a one-year period, a total of 588 drug information queries has been received, documented and replied by the drug information centre and retrospectively analysed for various parameters including professional status of the requestor, mode of receipt and reply, type and purpose of query and reference details. Out of 588 queries received, majority were answered by Physicians (n=468; 79.59%), followed by Pharmacists (n=55; 9.35%), Nurses (n=15; 2.55%), also Technicians (n=9; 1.53%), Students (n=21; 3.58%), Patients (n=3; 0.5%) and other health care professionals (n=17; 2.90%). The secondary resources (Micromedex/Medscape) were used majorly, followed by Textbooks (n=117; 19.89%), Internet (n=103; 17.51%), Journals (n=23; 3.9%) and others (n=5; 0.85%). The most common drug related query was Pharmacological drug profile (n=149; 25.34%) and including Product identification (n=132; 22.44%), Product information (n=84; 14.28%), Adverse Drug Reactions (n=74; 12.58%), Therapeutic uses (n=55; 9.35%) and others (n=94; 15.98%). Analysis of data was carried out through Microsoft excel. Drug Information Services has been developed to promote rational prescribing pattern among prescribers, reduce medication errors and to provide better clinical outcome.

KEYWORDS: Drug Information Centre (DIC), Drug Information Services, Drug Information Query, Clinical Pharmacist.

ADVANCE IN FIXED POINT THEORY

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It is standard technique to adopt mathematical tools to analyse different characteristics of the structure and its many divisions performance. As a result, dealing with uncert ainty and erroneous data in a variety of situations is very natural. Managing ambiguities and vagueness, whether they are inherent in the statistics or brought about by the mathemati cal procedures used to obtain the solution made up of various scenarios, can be difficult in many ways. To tackle the unpredictability linked with actual-world information scenarios, Molodtsov in designed soft sets as a mathematical concept. Fixed point results are useful in dealing with the solution of different problems related to real situations. The fundamental goal of the proposed work is to establish some fixed point results using different types of contractions in Soft Rectangular b-metric space by generalising the notion of rectangular metric space and b-metric space. In addition, some congruous examples are provided to clarify the concept of said space structure. Obtained results extend and generalize many existing results in the literature.

A COMPARATIVE STUDY ON CAPRINI RAM VS DOH TOOL FOR THROMBOPROPHYLAXIS IN ICU SETTING AT TERTIARY CARE HOSPITAL

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The study aims to assess DVT prophylaxis using two models (Caprini RAM & DOH tool) in preventing DVT in postoperative or critically ill patients and for better predictability of disease. In a prospective observational study, we compared the Caprini RAM and DOH tool in the ICU setting on 229 patients (140 men and 89 women). 205 patients were considered in the study. out of which 97 had Caprini RAM and 108 had DOH tool. The data is analyzed using SPSS software, and the results are compared using the student t-test. Both GROUP A and GROUP B revealed that the majority of the patients (67.1% & 55.6%) were above 60 years and a large proportion of them required DVT prophylaxis. In GROUP A 93% of forms were complete with 79% accuracy. In GROUP B 83% were complete. The most appropriate prophylaxis received by patients was ENOXAPARIN SODIUM 40mg OD in around 30% of 97 patients and HEPARIN 5000IU BD in around 30% of 108 patients based on their Caprini scores and NICE guidelines respectively. The majority of patients in GROUP A did not require dosage adjustments, but in 20% of cases, it was necessary. On comparison with a paired t-test, it was statistically significant with a p-value less than 0.05. The DOH tool is better than Caprini RAM to be used in hospitals, for risk assessment of VTE in both medical and surgical patients for accuracy and predictability of the prophylaxis. Keywords: DVT, Risk assessment, Caprini RAM, DOH tool, pharmacological and mechanical prophylaxis.

BIO FERTILIZERS FOR CULTIVATION OF TRADITIONAL CROPS.

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In recent years, the use of chemical fertilizers has increased drastically for cultivating traditional crops, leading to various environmental and health issues. Hence, the focus is shifting towards the use of bio-fertilizers, which not only improves soil fertility but also enhances crop yield and quality. Bio-fertilizers are eco-friendly and sustainable alternatives that have the potential to revolutionize the agricultural industry. This paper aims to provide a comprehensive review of bio-fertilizers for the cultivation of traditional crops. It covers various aspects, such as the definition of bio-fertilizers, their types, and mode of action. The paper also discusses the benefits of bio-fertilizers in terms of improving soil health, reducing environmental pollution, and enhancing crop productivity. Additionally, it highlights the challenges and limitations of biofertilizers and ways to overcome them. Moreover, the paper provides a detailed analysis of the impact of bio-fertilizers on the cultivation of traditional crops, including cereals, legumes, fruits, and vegetables. It discusses the role of different bio-fertilizers such as Rhizobium, Azotobacter, Azospirillum, and Phosphobacteria in improving soil fertility and crop productivity. The review also provides an overview of the recent research in this field and their findings on the efficacy of bio-fertilizers. Finally, the paper concludes by emphasizing the importance of using biofertilizers for sustainable agriculture and the need for further research in this field. It suggests that the use of bio-fertilizers should be encouraged and promoted as an eco-friendly and sustainable alternative to chemical fertilizers. Overall, this review provides valuable insights into potential of bio-fertilizers for the cultivation of traditional crops, which can help in achieving food security and sustainable agriculture.

KEYWORDS: Traditional way of cultivation, Bio-fertilizers, as Rhizobium, Azotobacter, Azospirillum, Phosphobacteria

THE CURRENT RESEARCHER'S TRENDS "GENE THERAPY" – APPLICATIONS AND FUTURE PROSPECTIVE

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Gene therapy products are a group of unique therapeutic modalities that are still investigational in nature. Gene therapy products are intended to introduce genetic material into the body to replace faulty or missing genetic material, thus treating or curing a disease or an abnormal medical condition. The development of gene therapies, like other novel medical advances, has been confronted with a number of unexpected outcomes that have justifiably required a heightened level of regulatory scrutiny. The consequences of gene transfer into humans are still unknown and will require intensive investigation on the part of investigators and regulatory bodies. Recent enhancements in gene-delivery systems have resulted in better control of gene integration and expression. Some products have shown clear evidence of therapeutic efficacy. Regulatory approval of a number of gene therapy products is eminent in the next decade, bringing to fruition a new age in disease therapy. In this article we made an effort to summarize gene therapy applications, types, advantages and disadvantages and so on.

Keywords: Gene therapy, application, future prospective, several approaches.

AN APODICTIC REVIEW ON TRENDS AND APPROACHES IN SYNTHETIC AZO TEXTILE DYE REMEDIATION.

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The applications of dyes on textile materials like fibre, yarn with the goal of achieving colour with desired colour fastness is referred to as Dying process in textile industries. These synthetic chemical dyes include natural, synthetic, direct disperse, reactive, solvent dye. Some of these synthetic dyes are known to be potential carcinogens. The most significant groups of synthetic dyes are azo dyes. Azo dye is a direct dye (i.e.) these dyes colour the fibre directly. They tend to bioaccumulate in the environment and have hazardous effects in humans. It is also vital to ensure that the degraded products do not pose a threat to aquatic life or vegetation. Many approaches, including physic and/ or chemical processes, have been used in the treatment of industrial wastewater containing dye but such methods are often costly and not environmentally safe. Bioremediation is one of the most popular remediation approaches because of its cost effectiveness and eco-friendliness. Phytoremediation is one such bioremediation approach that has emerged as a green, passive, solar energy driven and cost- effective approach for environmental clean-up when compared to physical or chemical and even other biological methods. Recent researchers had also started studying the potential of plant microbe integrated remediation systems because of its higher efficacy in remediation. This review may provide insights on various remediation techniques used for azo dye remediation and insights on the potential of plant microbe integrated remediation systems for effective remediation of azo dyes.

Key words: Textile dye, Azo dye, Bioremediation, Phytoremediation.

THE WEAK 2-GEODETIC NUMBER NUMBER OF A GRAPH

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A geodetic set $S \subseteq V$ is called a weak 2-geodetic set of G if $d(u,v) \leq 2$ for every $u,v \subset S$. The minimum cardinality of a weak 2-geodetic set of S is the weak 2-geodetic number and is denoted by wG2(G). Some general properties satisfied by this concept are studied. The weak 2-geodetic number of certain classes of graphs are determined. Connected graphs of size n with weak 2-geodetic number n or n−1 or 2 are characterized. It is shown that for every positive integers a and b with $2 \leq a \leq b$, there exists a connected graph G such that g(G) = a and wg2(G) = b for some vertex x in G, where g(G) is the geodetic number of a graph G.

Keywords: geodesic, distance, geodetic number, weak 2-geodetic number.

A REVIEW ON " MODERN THERPIES ON EISENMENGER SYNDROME"

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The aim of present investigation was to develop surgical repair of an atrial septal defect (ASD) is a safe and effective operation with little to no morbidity and mortality. In an effort to reduce the trauma of surgery, current approches focus on less invasive surgical techniques. There are 3 major types of atrial septal defects are ostium secundum Defect, ostium primum defect and sinus venosus defect characteristics physical findings include a midsystollic pulmonary flow of ejection murmur accompanied by a fixed Split- second heart sound small defects may spontaneously close: langer defects may spontaneously persist and result in hemodynamic and clinical sequelae requiring precutaneous of surgical inte avention sever pulmonary arterial hype atension is a contraindication to closure.

In 1897, Viktor Eisenmenger descri bed a case of a patient with cynosis and dyspoe-a since childhood. An atrial septal defect is a birth defect of the heart which there is a hole in the wall (septum) that divides the upper chambers (atria) of the heart. A hole can vary own in size and may OF may require energy.

There are three main types of atrial septal defects (ASDS): ostium. Secundum (80%), ostium primum (10%). And sinus venosus (10%). Atrial septal defects were one of the very first congenital heart disease cardiac anom alies to be corrected by operative. Treatment Atrial septal defect (ASD) are common congenital heart defects characterised by insufficient/ absent tissue at the interatrial septum

Since the early reports of surgi cal atmal septal defect (ASD) dosude in 1948 (without direct visualization)

Keywords-Artrial septal defect, Ostiumprimum defect, Congenital heart disease, Ostium secundum defect.

IN-SILICO INVESTIGATION FOR DRUG REPURPOSING AGAINST COVID-19 DISEASE

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The recent COVID-19 outbreak has posed a significant threat to global public health. The concept of drug repurposing is the identification of therapeutically potent drugs from a library of pre-existing drugs. Although the Toll-like receptor (TLR) has recently been proposed as a drug target for SARS-CoV-2 treatment, the specificity and efficacy of such treatments are unknown. In this study, we attempted in-silico investigation of WHO recommended drugs such as ampicillin, azathioprine, benzyl penicillin, chloramphenicol, ethambutol, isoniazid, pyrazinamide, flucytosine, acylclovir, zidovudine, indinavir, remdesivir, amodiaquine, chloroquine for repurposing against COVID-19. The physicochemical, pharmacokinetics, medicinal and drug-likeness properties of the selected 14 drugs were studied using Swiss ADME. Further, molecular docking studies was performed against Mpro receptor of SARS-COV-2 virus. The drug indinavir showed the best results of molecular coupling and energy of link with four conventional hydrogen bond interactions with the receptor and with a very low negative value of binding energy among the 14 drugs. From the computational study, the drug indinavir can be considered as a suitable and more effective drug for the treatment of COVID-19.

KEY WORDS: In-silico, Physicochemical properties, Pharmacokinetics, Mpro, indinavir

AIR MYCOFLORA OF A HOSPITAL PREMISE IN VIKARABAD, INDIA

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The airborne fungi may pose a challenge in many ways as an agent of contact, ingestion and respiration. The contact and ingestion of fungi or fungal spores can be easily avoided however, inhalation of fungal spores are inevitable and adversely affect the respiratory system. They may induce allergy, respiratory infection and acute lung infections. These fungi are found to grow in conducive environment wherever nutrition, moisture and other environmental factors favor. The hospital bound fungal spores are majorly important to study because of their unique environment where abundant of antibiotics are in use. In this study the hospital premise comprising reception, sample collection area, Pathology lab, Orthopedic wards, Gynecology wards, Pediatrics, Obstetrician, Intensive Care Unit, Operation theatre, Post operation ward, Casualty, Immunology department, Library, Canteen and Board room were investigated for the presence of indoor airborne fungi. The airborne fungi were studied using Andersen single stage viable sampler. The petridishes containing Potato Dextrose Agar were used for the exposure and

isolation of airborne fungi. A total of 24 different species classified under 11 different genera along with non-sporulating colonies were isolated from the hospital premises. Among the genera, Aspergillus and Penicillium are represented by 6 species each. Among the species recorded, Cladosporium cladosporioides was found to be dominant followed by Fusarium sp. and Aspergillus flavus. Among the environment studied, Library was found harbor number of airborne fungi followed by canteen and reception area. The study in detail will be discussed.

Keywords: Airborne fungi, Hospital environment, Andersen sampler, Aspergillus, Penicillium

A STUDY ON ATTITUDE OF SCIENCE AND HUMANITIES STUDENTS TOWARDS THE USE OF ICT TOOLS IN TEACHING LEARNING PROCESS

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India has recently made considerable strides in using data and disseminating innovation, as seen by a vibrant and quickly expanding economy. Today, it is recognised as a global innovator in the information sector. These days, more and more of our exercises rely on information. Our lessons now have a different flavour as a result of globalisation, development, and a market-based economy, which calls for ongoing professional development for all professionals, including teachers. In any case, the field of education has lagged behind, notably in the area of teaching and learning. With the aid of the purposive sampling method, a sample of 1110 students was selected for the current study. For their statistical study, the researchers utilised the t-test. This study indicated a positive attitude toward the teaching and learning of ICT, and a substantial difference between urban and rural teaching and learning processes in terms of this attitude was discovered.

COMBINATION OF BERBERINE AND VEMURAFENIB REVEALS POTENTIAL THERAPEUTIC TARGETS IN COLON CANCER – AN IN VITRO STUDY

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Patients with Colorectal cancer (CTC) present with large invasive tumors and metastases, and often die within a few months. Current treatments for patients with aggressive CTC remain resistant and ineffective to traditional chemotherapeutic agents. Mutation of the BRAF gene is the most common genetic alteration often seen in Colon carcinomas and it has been reported that 29- 83% of Colon cancer was accompanied by mutations of the BRAF gene. Vemurafenib, an FDA approved drug and a selective BRAF inhibitor, is currently used in treating melanomas with BRAFV600E mutation and hence Vemurafenib can be considered for colon cancers with BRAFV600E mutation. In CTC with BRAFV600E mutation, Vemurafenib has minimal or no significant effect. Berberine (BBR) is an isoquinoline derivative alkaloid isolated from the rhizome, roots and stem bark of a number of Chinese herbs, the Berberine species and Rhizoma coptidis (Huanglian). BBR act as a potent anti-cancer agent by inhibiting tumor growth, survival and progression in most of the cancers. Hence the aim of the study is to explore synergistic therapeutic effect of Berberine and Vemurafenib on BRAF mutant colon cancer cell lines. Our study showed the combination of BBR and Vemurafenib has synergistic anti-cancer effects and provide the evidence that the combination of drugs suppressed the progression of BRAF mutant colon cancer growth by inducing significant apoptosis. BBR along with Vemurafenib act as an anti-metastatic agent by regulating EMT markers and BBR as a single agent act as an antiangiogenic by downregulating HIF 1 alpha and VEGF which was demonstrated by RT-PCR and Western blot. Further our work revealed a novel molecular target - cAMP signaling where BBR mediate its anticancer potential in colon cancer cells via cAMP signaling to inhibit angiogenis of colon cancer cells. To conclude, our findings demonstrate novel therapeutic targets and treatment strategies for CTC.

Key words: Colon cancer, Berberine, Vemurafenib, Drug, Targeted therapy, cyclic AMP signaling

PREPARATION AND CHARACTERIZATION OF CA-DMSO-PVA MEMBRANE BY INTEGRATING NANOPARTICLES TO ENHANCE SURFACE CHARACTERISTICS

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The membrane technology serves as a better and cost-effective technique in effluent treatment in comparison to traditional techniques. Cellulose Acetate, Dimethyl Sulfoxide and Polyvinyl Alcohol are chosen as the key components. In order to enhance performances such as mechanical strength, stability, and pore size certain nanoparticles like TiO2, CaO, CdO, and ZrO are doped with polymers. Pure water flux shows that PCD membrane doped with TiO2 had a flux range of 225–275 L m −2 h −1 compared to that of pure PCD membrane's flux range of 25 L m −2 h −1. The range of flux shows that nanoparticles doped membranes are more efficient in rejection rate. Increase in density range of pure PCD membrane (2500 – 2900 kgm-3) to that of nanoparticle doped membrane (2519 – 2645 kgm-3) was observed. PCD membrane doped with TiO2 nanoparticle recorded the highest tensile strength of 42 MPa and tensile modulus withstanding capability up to 172 MPa. PCDZr0.2 membrane possessed a contact angle of 54.07º to that of pure PCD membrane's contact angle i.e., 80.23°. This decrease in contact angle indicates enhanced hydrophilicity of nanoparticledoped PCD membrane. Enhanced anti-fouling nature was observed in membranes doped with nanoparticles which ultimately resulted in a boost to the membrane performance.

Keywords: Membrane fabrication, nanoparticles, phase inversion technique.

CARBAZONE/THIOCARBAZONE-BASED DUAL RESPONSIVE CHEMOSENSORS FOR THE SIMULTANEOUS DETECTION OF INORGANIC CATIONS AND ANIONS

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In this work, four highly sensitive and selective dual responsive chemosensors such as 1,5-bis(thiophene-2-carbaldehyde)carbohydrazone (R1), 1,5-bis(thiophene-2-carbaldehyde) thiocarbohydrazone (R2), 1,5-bis(indole-3-carbaldehyde)carbohydrazone (R3), 1,5-bis(indole-3-carbaldehyde)thiocarbohydrazone (R4) have been synthesized and characterized by various spectroscopic techniques. The initial sensing behaviour was tested by colorimetric signalling and paper strip titrations followed by FT IR, absorption, emission and DFT studies. The sensor molecules are equipped with analyte coordinating donor sites that exhibit charge transfer controlled spectroscopic properties, and assist analyte-receptor interaction. The receptors exhibited highly selective recognition toward Cu2+ and Fe3+ cations, and F^- and $ClO4^-$ anions over other studied cations (K+, Mg2+, Ca2+, Mn2+, Fe3+, Co2+, Ni2+, Cu2+ and Zn2+) and anions (F^-, Cl^-, Br^-, I^-, $HSO4^-$, $H2PO4^-$, $ClO4^-$, $NO3^-$ and OH^-). The nitrogen and thione donors of the probe molecules are liable for cation binding whereas –NH protons was found to be responsible for selective anion sensing. The computational studies using density functional theory were also carried out, whereupon comparison of the interaction of Cu2+ and Fe3+ cations, and F^- and $ClO4^-$ anions with the chemosensors explain the selective detection towards respective ions.

SIX WHEELER ROCKER BOGIE MECHANISMS

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Abstract: Mars rovers often use the Rocker bogie system to navigate simple terrain while keeping balance. It is NASA's preferred method for rovers and spacecraft. It has two arms that each have a steering wheel. There is a movable joint connecting each component to the others. This makes it possible to use a suspension-based mechanism to distribute the vehicle's cargo evenly over protrusions and irregular surfaces. The present Rocker-Bogie rovers have many problems, including needing to be faster. In our project, we have concentrated on designing a six-wheeled rocker-bogie suspension system, which benefits from linear boogie motion to prevent rollovers of the entire system during high-speed operations. As a result, the structure is now much more reliable on uneven terrain and can travel at higher speeds while still being able to clear obstacles of the same height. A wheel that is twice as wide as the others is connected to a DC Gear Motor that is powered by a DC Battery, and the operation of this mechanism is controlled by a wire-free remote control with a circuit board. The Catia software will be used to design this rocker bogie mechanism. The project intends to enhance some fundamental operations so that they can function more effectively.

Keywords: Six Wheels, DC Motor, Battery, Wireless Remote Control, and Circuit Board.

THE STEINER CHROMATIC NUMBER OF A GRAPH

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A set W$\subseteq$V(G) is called a Steiner chromatic set of G if W is both a Steiner set and a chromatic set of G. The minimum cardinality of a Steiner chromatic set of G is called the Steiner chromatic number and is denoted by $Xs(G)$. The Steiner chromatic number of some standard graphs are determined. It is proved that $2 \leq \max [s(G), X(G)) \leq Xs(G) \leq n$, where $s(G)$ and $X(G)$ are the Steiner number and the chromatic number of G respectively. It is proved that for every pair of integers a and b with $2 \leq a \leq b$, there exists a connected graph G such that $X(G) = a$ and $Xs(G) = b$. Also it is proved that for every pair of integers a and b with $2 \leq a \leq b$, there exists a connected graph G such that $s(G) = a$ and $Xs(G) = b$.

Keywords: Steiner distance, Steiner number, coloring, chromatic number, Steiner chromatic number.

THE UPPER STRONG MONOPHONIC NUMBER OF A GRAPH

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A strong monophonic set $M \subseteq V(G)$ is said to be a minimal strong monophonic set of G if no proper subset of M is a strong monophonic set of G. The maximum cardinality of a minimal strong monophonic set of G and is denoted by $sm^{+}(G)$. Some general properties satisfied by this concept are studied. The upper strong monophonic number of some standard graphs are determined. Connected graphs of order n ≥ 2 The upper strong monophonic number 2 or p are characterized. It is shown that for every pair of integers a and b with $2 \leq a \leq b$, there exists a connected graph G such that $sm(G) = a$ and $sm+(G) = b$.

Keywords: upper strong monophonic number, strong monophonic number, monophonic number.

3D BIO PRINTED CANCER MODELS: ADVANTAGES, ROLES & APPLICATIONS IN DRUG DEVELOPMENT

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Nowadays, efforts made to create new medications frequently fall short of providing cancer patients with significant clinical benefits. Thus, there is still a critical medical need for the development of improved anticancer medicines and precise clinical value predictions. Three-dimensional (3D) cancer models have significant promise to increase our understanding of cancer biology since solid tumors have complex and diverse structures made up of several cell types and extracellular matrix. Modern 3D bio-printed cancer models have the power to transform the way we identify therapeutic targets, create new medications, and customize anticancer therapies in a precise, repeatable, clinically transferrable, and reliable way. Hence, understanding the distinctions in carcinogenesis between 2D, 3D, and tumor animal models is crucial. This developing field will also aid in the clinical translation of novel therapies. This paper deals with the Important Role of 3D Bio printed Cancer Models, the Advantages of 3D Bio printed Cancer Models & Drug Development Applications of 3D Bio printed Cancer Models. Thus, 3D bio-printed cancer models have the potential to transform the way we study, diagnose, prevent and treat cancer. The commercialization of these models, particularly in medication research and testing, will result in significant financial gains. Advanced 3D bioprinting technologies may also disclose new biomarkers and therapeutic targets, enhance the development of efficient customized cancer treatments, and reveal fundamental mechanisms of cancer biology when integrated with machine learning and AI-based omics methods develop.

Keywords: 3D Bio printed Cancer Models, Drug Development Applications, Cancer, AI-based omics methods.

CORRELATING CHEMERIN BIOMARKER WITH SUB CLINICAL ATHEROSCLEROSIS PARAMETERS IN METABOLIC SYNDROME PATIENTS

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Background: Chemerin is a recently identified adipokine with a contentious role in people with metabolic syndrome. It is still very unclear how circulating chemerin and noninvasive indicators of subclinical atherosclerosis interact. Objective:To assess the relationship between serum chemerin and subclinical atherosclerosis in patients with metabolic syndrome. Materials and Methods: 75 patients with metabolic syndrome who were undergoing the comprehensive health examination were the subject of the cross sectional investigation. Enzyme linked immunosorbent assay (ELISA) was used to detect the serum chemerin level. High resolution ultrasonography was used to measure the CIMT, FMD and ABI in all subjects. Results: Those with metabolic syndrome, who had subclinical atherosclerosis, as shown by carotid plaque, carotid stenosis, increased CIMT, or ABI, had significantly higher plasma chemerin levels. Positive associations between chemerin serum levels and patients with the metabolic syndrome based on a straight forward linear regression analysis. The level of chemerin in the serum significantly correlated positively with CIMT, FMD, and ABI. "P" value of< 0.05 or lower was regarded as significant. Conclusion: The subclinical atherosclerotic parameters that are being studied are a good indicator of the atherosclerotic burden in different artery sites and disease stage. The blood chemerin level was found to be a reliable predictor of atherosclerosis in people with metabolic syndrome.

ANALYSING THE AQUAPONICS PROTOTYPE ON SALINITY

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Over the past 50 years, the average global warming temperature has increased at the fastest rate in recorded history, affecting whole-ecosystem with a rise in sea-level, increased salinization of groundwater, loss of coastal land, increased risk of droughts and floods, threats to biodiversity leading to poor agricultural practice and productivity; eventually affecting the life on earth. Therefore the need for preserving the ecology of groundwater integrity as well as food-security is raised. In this context, in the present study aquaponics-system (integration of plant and fish production [agri/aquaculture]) is employed to ascertain the impact of salinization on the growth of Koi carp and Azolla. Azolla pinnata, an aquatic fern utilized as hydroponic to reveal the impact of Azolla on fish rearing in saline aquaponic system through determining phytochemicals in Azolla, fish growth, oxidant and antioxidant status of fish gills. Phytochemical analysis revealed that Azolla contains flavanoids, may attributed to its antisalinity property. Azolla treated fish showed increased growth (fish length and weight). Gill-homogenate of treated fish showed decreased cell/tissue damages (SGOT, ALP) and differential oxidant-antioxidant (LPO and CAT) level compared with test and control. It concludes that growing Azolla minimizes the salt induced stress and favors the regulation of fish growth.

Keywords: Azolla pinnata, Koi Carp, LPO- Lipid peroxide, CAT- Catalase, SGOT- Serum Glutamate Oxaloacetate Transaminase, ALP- Alkaline phosphatase.

SYNTHESIS OF BIODEGRADABLE POLY(1,6 HEXANEDIOL-SUBERATE-CITRATE) POLYESTER AND ITS APPLICATIONS

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In recent years, biodegradable polymers play an important role in emerging technologies like biomedical engineering, tissue engineering and drug delivery. Citric acid based biodegradable elastomers have been shown to offer a wide range of controllable mechanical and degradation profiles

Biodegradable polyesters were synthesized by catalyst free melt-polycondensation method. Copolyesters are prepared namely poly (1,6 Hexanediol-suberate-citrate) using monomers - citric acid, suberic acid, and 1,6 - Hexanediol. The structure of biodegradable polyesters were characterized by FT-IR, 1H NMR and 13C NMR spectral studies. Thermal stability of the polyesters was studied by Differential Scanning Calorimetry. Tensile tests were conducted to evaluate the mechanical properties of the polyesters. The data of mechanical studies give a characteristic of cross-linked polyesters. Furthermore, the results of mechanical and thermal properties suggested that these polyesters are appropriate for degradation and biocompatibility studies. Swelling and Invitro degradation results supported that the synthesized citric acid polyesters have the potential use in bio-medical applications.

Keywords: Citric acid, melt-polycondensation, cross-linked polyesters, Invitro degradation.

THE RESILIENCE OF FODDER SHORTAGE AND YIELD IMPROVEMENT OF KODO MILLET THROUGH GOAT GRAZING IN INDIA: A REVIEW

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Agriculture crop production is not only a purpose of food production but also for fodder production. At present, the nutritive food and fodder shortage is the talk of the country in India. Both need to be fulfilled by the way of cultivation of Kodo millet. Kodo millet is one good green graze of goat and dry fodder for domestic animals, especially the Goat. The pruning practice of Kodo millet to improve the yield at the time of the tillering phase. This practice is done by Goat grazing to save labor costs and filled the fodder need.

Keywords: Kodo millet, pruning, tillering effect, goat graze, green fodder, dry fodder.

EFFECT OF PSEUDOMONAS FLUORESCENS AND EUCALYPTUS GLOBULUS ON THE MANAGEMENT OF RICE SHEATH ROT DISEASE CAUSED BY SAROCLADIUM ORYZAE

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An investigation was carried out with the aim to study the interactive effect of Pseudomonas fluorescens (PF13) and Eucalyptus globulus on the management of rice sheath rot disease. In both pot and field trials, application P. fluorescens as seed treatment (10 ml/kg of seed) with leaf extract of Eucalyptus globulus as foliar spray @ 10% conc. at 45 and 60 DAT [T7] significantly reduced the sheath rot incidence with maximum biometric value of paddy crop and recorded at par results with that of Hexaconazole 75% WG treatment [T8]. While, the untreated control treatment recorded the maximum per cent disease incidence and minimum plant growth biometric values of rice.

Keywords: E. globulus. Oryza sativa. P. flourescens. Sarocladiumoryzae.

EVALUATION OF ETHANOLIC EXTRACT OF BOERHAVIA DIFFUSA ON ADENINE INDUCED CHRONIC KIDNEY DISEASE RATS

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Background: Boerhavia diffusa is said to have rejuvenating effects in Ayurvedic literature, particularly in relation to the urinary system. Objective: To evaluate effect of ethanolic extract of of Boerhavia diffusa in adenine induced chronic kidney disease rats. Materials and Methods: Study was conducted in wistar albino rats 5 groups with 6 rats in group 1 and 2 group 3.4 and 5 consisted 8 rats. Animals in Group 2 - 5 will receive 600 mg/kg/body weight of adenine orally once day for 10 days, along with 0.5% carboxyl methylcellulose (CMC). And then two weeks of treatment 400mg/kg/body weight of BD extract for group 4 and 500mg/kg/body weight of pirfenidone (PFD) for group 5 animals. Animals were anaesthetized with overdose of anesthesia (Halothane by inhalation) venous blood will be obtained from retro-orbital plexus (2 ml) in EDTA containing tube and it was centrifuged at 3000rpm for 15 min. The separated serum stored at -80°C for biochemical analysis. Kidney were dissected from euthanized animals and fixed in 4% formaldehyde for histological studies. Results: When compared to the normal control group, the disease control group's high dose of adenine significantly increased urea, serum creatinine, and kidney histopathological damage ($P< 0.05$). B. diffusa treatment stopped the aforesaid parameters from changing. conclusion: B. diffusa exerted protection against structural and functional damage induced by adenine induced nephrotoxicity.

EXFOLIATED GRAPHITE MICROWAVE SYNTHESIZED FOR THE REMOVAL OF SPILLED HEAVY OILS

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Developing carbon-based absorbent materials for spilled oils have received much attention in recent times, owing to their low cost, high surface area, porous, natural abundance, and eco-friendly nature. Exfoliated graphite (EG) is the expansion of graphite along c-axis up to several hundred times, has been fashionable in the last decade because of the growing number of potential applications. Even though, the preparation of EG has several disadvantages like, consuming more chemical quantity, time and energy, difficult for large scale production, less expansion and poor performance, etc. Here, we report a simple low-cost method using diluted perchloric acid and sodium nitrate and potassium permanganate followed by microwave irradiation technique within short interval of time. As prepared EG material shows excellent broad range absorption of various types of oils. The maximum absorption capacity of EG obtained to be 80 gm of heavy oil per 1gm of EG. The highly efficient absorption capacity of EG is mainly due to the formation of mesoporous structure. The advantage of the present technology over the other is low-cost and simple way of producing the materials and better performance. To the best of our knowledge, the present heavy oils absorption values are better than recent reports. It is believed that the developed low-cost method will suggest a facile route to large scale production of highly efficient EG not only for spilled oils clean up but also for other potential applications.

Keywords: Exfoliated graphite, Absorption, Heavy oils, Microwave irradiation.

ON 4- RAINBOW DOMINATION NUMBER OF

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In this paper, we have discussed domination number, k- Rainbow domination number, 4 -rainbow domination number of some special graphs and determined bounds, we have taken the graphs to be finite, undirected, connected and simple and obtained 4 – rainbow domination number of some special graphs. Let f: V(G) → p {1, 2, 3, 4} be a function that assigns to each vertex of G a set of colors chosen from the power set {1, 2, ..., k}. If each vertex v ϵV(G) such that f(v) = Φ, U u ϵN (v) f(u) = {1, 2, …, k}, then the function f is called a k - rainbow dominating function (k - RDF) of G. The weight of the function f denoted by w (f) is defined as w (f) = $\sum$ vϵ V (G) $\left| f(v) \right|$. The minimum weight of a k – RDF is called the k – rainbow domination number of G and is denoted by γ r k (G). we introduced the concept of 4-rainbow domination which is an extension of 2 & 3- rainbow domination functions. we have obtained 4- rainbow domination number of some special graphs such as Flower graph, Helm graph, Web graph, Ladder graph, Barbell graph, Wheel graph.

IN-SILICO DRUG DISCOVERY APPROACH: IDENTIFICATION OF NOVEL PHYTOCHEMICAL AS ANTI-DIABETIC A-AMYLASE INHIBITORS

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Diabetes mellitus is one of the world's most serious health concerns, requiring novel preventative and treatment approaches. There is a current demand for safe, effective, and less expensive anti-diabetic drugs, and looking into medicinal plants for novel anti-diabetic treatments is an exciting study topic. The main objective of this study is to estimate and classify natural antidiabetic compounds as inhibitor medicines like caffeic acid, gallic acid, catechin for Porcine pancreatic alpha-amylase complexed with acarbose (PDB ID: 1OSE) and compared with antiviral medication Miglitol. Molecular docking studies have shown that natural flavonoid derivative catechin was of exceptional inhibition with a binding energy value of -5.9 kcal/mol of 1OSE enzyme, relative to the other compounds and Miglitol antidiabetic medication (Binding energy -4.9 Kcal/mol). The need for the most time is the prompt discovery and commitment of appropriate medication to tackle and convince the global diabetes mellitus crisis. Besides, timely in vivo experiments to confirm the inhibition efficacy of the anti-diabetic compounds might save people are warranted.

EFFECT OF PRUNING AND PACLOBUTRAZOL APPLICATION ON OFF SEASON PRODUCTION OF JASMINE (JASMINUM SAMBAC L.)

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An experiment for confirming effect of pruning and Paclobutrazol application on Jasminum sambac was performed under off season condition during the month of September to February at Department of Floriculture and Landscaping, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore. The experiment was laid out in Randomized Block Design with three replications. Pruning along with application of Paclobutrazol at 100, 200 and 300 ppm were applied as soil drenching , 25, 50 and 75 ppm where applied as foliar spraying and 25 + 10, 50 +15, 75+20 ppm were applied as soil drenching + foliar spraying and control (pruning + without Paclobutrazol application). The experiment confirmed that pruning and Paclobutrazol as soil drenching was effective plant growth retardant by reducing plant height (82.77 cm), plant spread (E-W 95.66 cm, N-S 84.64 cm), intermodal length (3.78 cm) and leaf area (18.87 cm2) and increases the flowering characters Viz., number of cymes plant-1 (124.44), number of flower buds plant-1 (706.6) and estimated yield acre-1 (380.95 kg). At higher concentration of Paclobutrazol by soil drench method, the vegetative growth was plummeting and as a consequence increased yield was obtained. Thus Paclobutrazol has a strong tendency to increase flower buds production by altering the above mentioned parameters significantly.

Key words: Off season, Pruning, Paclobutrazol, Growth and Flowering

FORAGING BEHAVIOUR OF APIS MELLIFERA LINN., (APIDAE HYMENOPTERA) ON CUCUMBER

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The present study is entitled "Foraging behavior of the Italian bee, Apis mellifera Linn., on cucumber. Studies on Italian bee abundance, pollen and nectar foraging period, time spent and number of flowers visited by Italian bees at different hours on Cucumis sativus flowers. The field experiments were conducted at the farmland of the Horticultural College and Research Institute for Women [(HC & RI (W)], Tiruchirappalli. The experiment was laid at Randomized Block Design (RBD). The data pertaining to relative abundance, foraging speed, number of flowers visited were statistically analyzed using AGRESS software and as per the protocol (Steel and Torrie, 1980). The result revealed that the foraging activity of A. mellifera commenced at 0800h after 10 per cent flowering, with maximum foraging activity confined to the morning hours between 0800 and 1000h with 2.00 bees/m^2/5 min, followed by 1.60 bees/m^2/5 min observed between 0600 and 0800h of the day. The presence of A. mellifera colonies near to experimental field might have increased visitation. The mean time spent by the A. mellifera population was maximum at 0800h (42 secs/flower). The mean minimum time spent was at 1400-1600h (18.25 secs / flower). During 1200-1400, 1400-1600 and 1600-1800h, there is no visitation of the A. mellifera population. Therefore, time spent by A. mellifera remained significantly higher between 0800-1000h than at other timing intervals. The mean number of flowers visited by the A. mellifera population was at its maximum between 0800-1000 h with 6.32 flowers/ min. During 1400- 0600 and1600-1800h, no visitation of the A. mellifera population was noticed. The Results concluded that 0800-1000h is an ideal time for flower visitation compared to the rest of the time intervals.

Key words: Apis mellifera; Cucumber; Foraging Behavior; Pollination; Flower Visitation.

FORMULATION OF BIOFERTILIZERS USING ISOLATED MICROBES FROM DUMPED LEAF WASTE

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A biofertilizer is a substance which living micro-organisms which, when applied to seeds, plant surfaces, or soil, colonize the rhizosphere or the interior of the plant and promotes growth by increasing the supply or availability of primary nutrients to the host plant. Biofertilizers add nutrients through the natural processes of nitrogen fixation, solubilizing phosphorus, and stimulating plant growth through the synthesis of growth promoting substances. The microorganisms in biofertilizers restore the soil's natural nutrient cycle and build soil organic matter. In our present study we aimed to formulate the u biofertilizer from eco-friendly wasteproduct such as coconut shells and the application of whey water for culturing of microorganisms. The study was focussed to carry out the screening of microbes from dumped leaf waste to identify the beneficial bacteria promoting plant growth and improvement in soil fertility. Screening of microbes was carried out by serial dilution followed by isolation of pure colonies and then culturing them in medium formulated with simple trace elements along with whey water from remains of cheese making which enhanced the growth of bacteria. Further the biomass was separated and mixed with carrier material to formulate the biofertilizer.

Keywords: Dumped leaf waste, screening, microbial culture, whey water,iofertilizer, stimulate the plant growth

A STUDY ON THE BIOLOGICAL ACTIVITY OF CHITOSAN EXTRACTED FROM OYSTER SHELL

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Chitin is the most abundant nitrogenous polysaccharide found on the shells of crustaceans. Chitosan, the derivative of chitin yield through deacetylation has discovered a lot of bioactive properties and biotechnological applications recently. Oyster shell, which is abundant is chitin polysaccharide could be a good source for chitosan extraction. The chitosan extracted from chitin polysaccharide can be used for antibacterial and anti-inflammatory activity. In this study, chitosan extracted from oyster shells were characterized by Fourier Transform-Infra-Red spectroscopy with degree of deacetylation of 93.8%. The FT-IR analysis of chitosan showed different functional groups of organic compounds. Antibacterial property of chitosan against Escherichia coli and staphylococcus bacterial strains was examined using agar well diffusion method. The antibacterial activity against Escherichia coli at 500 µg/ml chitosan concentration was better when compared to staphylococcus upon the same concentration. Invitro HRBC membrane stabilization method was performed to evaluate the anti-inflammatory activity of chitosan and it showed 45.5% of protection at 500 µg/ml. Thus, the chitosan extracted from oyster shells can be applied to pharmaceutical industry because it showed greater efficacy in antibacterial and anti-inflammatory activity.

Keywords: Oyster shell, Chitin, Chitosan, antibacterial, anti-inflammatory activity.

INVITRO ANTIMICROBIAL ACTIVITY AND MOLECULAR DESIGNING OF PROTEIN SEQUENCED FROM BACILLUS PARAMYOCOIDESBWCVES05

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Endophytic microorganisms have symbiotic life with plants and does not show any detrimental to the host.The main exertion of these organisms unveils high medicinal value.Wound healing was the tangled process that occur in the cells by the various phases such as hemostatis, inflammation, growth re epithelialization and remodeling.

Antimicrobial agents generate by endophytes are eco-friendly toxic to pathogens and do not harm the human. Antimicrobial peptides having defence mechanisms in many organisms. Approximately 1500 antimicrobial peptides have been characterized in a wide range of organisms . In the current analysis molecular design of antimicrobial peptide from Bacillus ParamycoidesBWCVES05, an endophytic bacteria isolated from plant species of Mangrove forest.Prediction of AMP by using FASTA format of the sequence submitted in NCBI.Analyzing the physio chemical properties of AMP sequence "VASVIRNYWA" by Expasy software. Prediction of antimicrobial peptides was done by DBASSA database and modelling can be processed by Swiss data base.The sequence shows high binding affinity with EPGR, 2ITO, 5G5J, 6ITQ and 1C4-HSC protein prop up from PDB, having ligand binding site of antimicrobial properties and anti tumour properties. Comparative studies have been processed and analyzed by Docking tools.The ligand shows binding affinity of -9.0kcal/mol with 6ITQ. Prominent hydrogen bonding interaction was observed between Asp7 and Arg6 (antimicrobial peptide ligand) having the least inter molecular distance of 1.3Å. This emphasizes novel drug design of these peptides and very useful in predicting the interaction between the ligand and cancer targets. This study was an attempt to find a suitable therapy using antimicrobial peptides by identifying peptide-protein interaction of AMP.

Key words. Bacillus Paramycoides BWCCES05, AMP Peptides, Expasy softwere, Docking, Binding Energy,Anticancer activity.

QBD DRIVEN ECO FRIENDLY HPLC METHOD FOR SIMULTANEOUS ESTIMATION OF SELECTED ANTIOXIDANTS IN HUMAN PLASMA

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A simple high-performance liquid chromatography method with combined approach of Analytical QbD and green chemistry principles for simultaneous estimation of selected antioxidants (GSH, SIL and CUR) in human plasma has been developed. The separation was achieved using Eclipse XDB C18 (4.6 X 150mm, 3.5 µm) column using UV detection 215nm. The mobile phase consisted of water (pH 6.7 adjusted with 0.1% orthophosphoric acid) : Ethanol with flow rate 1.07ml/min. In extraction procedure volume of the extracting solvent, centrifugation speed and time were chosen as factors for screening through QbD approach using a regular two level fractional factorial design to find their significance on the response i.e, percentage recovery. Calibration curve was linear between the concentration range of 2-160 ng/mL, 56- 4480ng/ml and 1.8-150ng/ml for GSH, SIL and CUR respectively. For the validation of the developed method, USFDA recommendations were followed, and all the results obtained met the acceptance criteria.

Keywords: Analytical QbD, Green analysis, HPLC, antioxidants

MICROSATELLITE (SSR) MARKERS FOR DIFFERENTIATION OF PARENTS AND IDENTIFICATION OF DROUGHT TOLERANT RICE HYBRIDS

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The parental survey indicated that out of 15 SSR markers, 11 markers were found to be highly polymorphic. Based on the PIC values, the polymorphism observed in seven SSR markers (RM3825, RM19367, RM212, RM518, RM252, RM302 and RM510, RM228, RM60, RM72 and RM20) among the rice cultivars in the present study demonstrated the effectiveness of this method in determining genetic variation. The PIC values for these 11 markers varied from 0.07 to 0.50. Genetic similarity values among the 14 rice genotypes used led to the construction of dendrogram. At 73 per cent level of similarity, UPGMA cluster diagram showed V groups with additional clusters within each group. The clustering pattern revealed that the genotypes within each cluster had superior performances for one or more traits. The genotypes within each cluster may have more similarity and hence cannot be used in the improvement of traits. Interclusters genotypes with more diversity may be crossed. The genotypes IR 58025 A, IR 68897 A, IR TNAU CMS 2A, IR 68888 A, IR 60199 R, IR 65912R, IR 21567R, CB 87 R, MAS- 946-1, MAS 26, BI 33, KMP 148, BR 2655 and Vandana belonging to different V clusters exhibited superior performances for different traits and highly suitable for introgression of important traits which contribute yield improvement in aerobic rice breeding. Hybrids were confirmed and superiors identified based on the polymorphism brought out by the primers. Promising hybrids identified based on stability, mean performance and heterosis were reconfirmed with authenticity by using drought specific markers. The SSR marker RM 252 for hybrid IR 68888 A/BR 2655 and markers RM 212, RM302 and RM60 for hybrids IR 68888 A/KMP 148, IR 68897 A/IR 60199 R and IR 68897 A/IR21567 R and the marker RM510 for hybrids IR 68897 A/VANDANA and IR 68897 A/IR 21567 R showed polymorphism for the presence of drought tolerance in them.

Keyword: Hybrid rice, microsatellite marker and genetic diversity.

SYNTHESIS, CHARACTERIZATION, AND ADSORPTION APPLICATION OF ZINC FERRITE REINFORCED CYCLODEXTRIN BASED POLYMER NANOCOMPOSITE

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β-Cyclodextrin-Epichlorohydrin-tetrafluoroterephthalonitrile polymer (β-CDP) was reinforced with Zinc ferrite (ZF) nanoparticles to produce β-CDPZF nanocomposite. The powder X-ray diffraction (XRD) and Fourier-Transform-Infrared (FTIR) spectroscopy was used to confirm the formation of β-CDPZF nanocomposite. Surface properties and surface charge of β-CDPZF nanocomposite was investigated using Brunauer–Emmett–Teller (BET) and Dynamic light scattering (DLS), respectively. The surface morphology of polymer, nanoparticle and their nanocomposite were investigated using the field emission Scanning-Electron-Microscopy (SEM). β-CDPZF nanocomposite was investigated as a potential adsorbent for the removal of one cationic dye (malachite green; MG) and one anionic dye (Congo red; CR). The influence of temperature, time, pH, salt, adsorbent dosage, and adsorbate concentration on the removal % of dyes was investigated. Moreover, the adsorption process's isotherm, kinetic, and thermodynamic aspects were explored in order to adequately define the adsorption process. The results suggested that the β-CDPZF nanocomposite show a higher adsorption capacity towards removal of MG than CR because of its anionic surface charge.

Keywords: Cyclodextrin, Adsorption, Polymer nanocomposite, Zinc ferrite

NANOMEDICINE AND ADVANCED TECHNOLOGIES FOR BURNS: PREVENTING INFECTION AND FACILITATING WOUND HEALING

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Burns can be a traumatic experience, leaving victims in excruciating pain and a long road to recovery. But advances in nanomedicine and other technologies are providing new ways to prevent infection and facilitate wound healing. Nanomedicine utilizes nanoscale materials and machines, such as nanoparticles, nanorobots, and nanosensors, to target specific biological functions at the molecular and cellular levels. These devices are designed to interact with, and modify, biological systems to achieve better health outcomes. Nanomedicine has many applications, from drug delivery to tissue engineering to cancer therapy. In particular, it has shown great potential in the field of burns. One way nanomedicine can help facilitate wound healing in burns is through nanosized particles, which can interact with and modify the environment around the wound. These particles can work to reduce inflammation, deliver therapeutic agents, and prevent infection. Another way nanomedicine can be used to prevent infection in burns is by using nanomaterials designed to attract and bind to harmful bacteria. By binding to the bacteria, these nanomaterials can limit the spread of infection, allowing the burn wound to heal more quickly and effectively. Other way nanomedicine can be used to prevent infection is by using nanoparticles loaded with antibiotics. Using these nanoparticles, the targeted release of antibiotics directly into the burn wound can reduce the risk of infection. Overall, advanced technology like nanomedicine can prevent infection and facilitate wound healing in burns. By using this, healthcare professionals can ensure the safety and effectiveness of their treatments.

Keywords : Nanomedicine, nanorobots, and nanosensors, burns.

A NEW PROTOCOL FOR THE SYNTHESIS OF 5-(AZIDOMETHYL)-4-PHENYL-1H-1,2,3-TRIAZOLE FROM BAYLIS-HILLMAN ADDUCTS DERIVED FROM NITRO OLEFINS

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The Baylis-Hillman adducts derived from nitroolefins have been conveniently transformed into 5-(azidomethyl)-4-phenyl-1h-1,2,3-triazole via simple reaction condition. Further application of these compounds have been demonstrated for the synthesis of tris ((E-)2-nitro -3-phenylallyl)amines, as dendrimers cores. Baylis-Hillman reaction is one of the most important reactions in the field of organic synthesis. Recently 1,2,3-triazoles have been receiving growing attention due to their wide range of applications and consequently significant advances have been achieved in their preparation. Recently Sharples et.al have introduced a click chemistry concept utilizing acetelinic system with azide to produce 1,2,3 triazole via 1,3-dipolar cycloaddition reaction. Inspired by the click chemistry, We have developed a novel 1,2,3-triazole heterocyclic derivatives via domino 1,3-dipolar cycloaddition and denitration reaction sequence.

Key words: 5-(azidomethyl)-4-phenyl-1h-1,2,3-triazole, benzaldehyde, nitromethane, Henry reaction, click chemistry DMSO, NaN3.

LABORATORY GLASS WASTE DERIVED SILICON DIOXIDE POROUS POLYMER MEMBRANE DESIGNED FOR HIGH PERFORMANCE SODIUM-ION BATTERIES

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Glass recycling is efficient and sustainable. It saves energy and natural resources. Glass recycling is a simple way to make a positive contribution for saving our environment. For achieving sustainability, transitioning from non-recycled glass to beneficial material is required. In this work, size reduced silica (SiO2) granules, derived from the laboratory waste glass bottles is successfully employed in the fabrication of SiO2 based composite membrane that could potentially replace the commercial polypropylene separator. Owing to its high dielectric constant (ε=8.4)., PVDF is the promising choice for the fabrication of highly porous polymer electrolyte membrane. Thus, in the present work, an attempt has been made in preparing SiO2/PVDF composite membrane, which subsequently characterized using various tools to understand shape, porosity and electrochemical properties of the resultant composite membranes. The electrolyte absorption characteristics and temperature dependent ionic conductance were determined using 1 M NaPF6 electrolyte solution. The electrochemical results for the constructed membrane with the sodium P2-type cathode material were carried out together with impedance analysis. This membrane exhibits higher ionic conductivity of 3.8 × 10−2 S cm−1 at room temperature. The material showed an initial discharge capacity of 184 mAh g−1 at 0.1 C between 1.5 and 4.2 V with 97% columbic efficiency and 80% capacity retention after 50 cycles upon using the as-prepared PVDF-SiO_2 composite separator membrane.

Keywords: PVDF-SiO2 membrane; waste glass ware; high capacity delivery, phase inversion method

DRUG DISCOVERY APPROACH: IDENTIFICATION OF NOVEL ANTIOXIDANTS FROM HERBAL PLANTS

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Free radicals with an oxygen core and certain other reactive oxygen species (ROS) may form as byproducts of the oxidative processes occurring in living things. Excessive levels of free radicals are associated with a variety of human disorders, such as accelerated ageing, cancer, inflammation, cardiovascular, and neurological disease. In order to treat these disorders, antioxidants are required to enhance the body's natural antioxidant defences. Nevertheless, as synthetic antioxidants may be harmful, more focus is being placed on finding plant-based natural antioxidants to stop oxidative damage. This article's main objective is to examine and classify natural antioxidants such ilicic acid, taxifolin, and quercetin as inhibitors of the 1HD2 protein and to compare them to the antioxidant ascorbic acid. Molecular docking tests showed that taxifolin was a very effective inhibitor of the 1HD2 enzyme, with a binding energy value of -3.9 kcal/mol, when compared to other compounds, such as the anti-inflammatory medication ascorbic acid (Binding energy -3.5 Kcal/mol).

ZN-AGCUO - NANOMATERIAL SYNTHESIS, CHARACTERIZATION AND MULTI APPLICATIONS

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In this article, we reported the highly reusable undoped copper oxide and doped Zn-AgCuO nanomaterial by simple precipitation method and sonication technique. The prepared nanomaterials were characterized by X-ray diffraction, field-emission scanning electron microscopy with elementary dispersive X-ray, high-resolution transmission electron microscopy, techniques and ultraviolet and visible-diffuse reflectance studies. The influence of operational parameters such as the effect of catalyst loading dye concentration and chemical oxygen demand measurements had also been investigated.

Keywords: Photocatalytic properties, Antibacterial activity, Electrochemical properties

THE TOTAL VERTEX STRONG GEODETIC NUMBER OF A GRAPH

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A vertex strong geodetic set S of x of G is called a total vertex strong geodetic set of G if G[S] has no isolated vertex. The minimum cardinality of a total vertex strong geodetic set of G is called the total vertex strong geodetic number of G and is denoted by tsg_x (G). Any total vertex strong geodetic set of cardinality tsg_x (G) is called a tsg_x-set of G. Some of the standard graphs are determined. Necessary conditions for sg_x (G) to be n or n-1 are given for some vertex x in G. It is shown for every pair of integers a and b with $2 \leq a \leq b$, there exists a connected graph G such that *x* sg_x (G)=a and t(G)sg(G)_x (G)=b for some x in G.

Keywords: strong geodetic number, vertex strong geodetic number, total vertex strong geodetic number.

QUALITATIVE AND QUANTITATIVE ANALYSIS OF COMPOUND IN ZINGIBER OFFICINALE ROSCOE

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Ginger (Zingiber officinale Roscoe) is widely used as either a food product or a herbal medicine in the world. In this study, a gas chromatography-mass spectrometry method is developed for the analysis of dried Indian ginger. Thirty eight compounds are identified. The major compounds in the rhizome identified are α-Zingiberene, camphene, Decanal, β-Phellandrene, β-bisabolene, Zingerone, α-farnesene, β-sesquiphellandrene, 6-gingerol. The identification of the compound is based on the peak area, retension time, molecular weight, molecular formula, MS-fragment ions and pharmacological actions. Quantification of these compounds is important for assessing ginger quality for processing purposes, as their levels can vary with cultivar and growing conditions. The 6-gingerol, 8-gingerol, 10-gingerol and 6-shogaol content of the samples was measured in 90% ethanol extracts using high-performance liquid chromatography (HPLC) and also extraction of the ginger by Soxhlet Extraction method.. GCMS analysis of ginger by before and after extraction From the results it could be concluded that the ginger rhizome contain various bioactive compounds which have various medicinal properties.

Keywords: Ginger, Gas chromatography-Mass spectrometry, -bisabolene , -Zingiberene,Soxhlet Extraction method.

STABILITY INDICATING SIMULTANEOUS ESTIMATION OF OLMESARTAN MEDOXOMIL AND AMILODIPINE BESYLATE AS ACTIVE PHARMACEUTICAL INGREDIENT AND FIXED DOSE FORMULATION WITH FORCED DEGRADATION STUDY BY LC-MS METHODS

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The aim of the study is to develop a simple, rapid and sensitive method was established for the simultaneous determination of Olmesartan medoxomil and Amlodipine besylate by a Liquid Column Mass Spectrometry method. The analytes were separated separated on a Zorbax C18 column with a mobile phase of Methyl alcohol: Ammonium ethanoate (90: 10, v/v) at a flow rate of 0.6 mL/min with a DL temperature of 250°C. Detection was carried out by electrospray ionization in positive-ion multiple reaction monitoring mode. The correlation coefficient for Olmesartan medoxomil and Amlodipine besylate was found to be 0.997 and 0.998 respectively. The LOD and LOQ for Amlodipine besylate were found to be 0.14 ng/mL and 0.30 ng/mL respectively. The LOD and LOQ for Olmesartan medoxomil were found to be 0.34 ng/mL and 0.94 ng/mL respectively. The intra- and interday precisions (RSD %) were within 9.0%. The method is successfully conducted a forced degradation study on Olmesartan medoxomil and Amlodipine besylate to determine the percentage degradation under respective stress condition.

Keywords: Olmesartan medoxomil, Amlodipine besylate, Simultaneous estimation, forced degradation, stability studies, LC-MS/MS method.

A REVIEW ON DRUG DELIVERY METHODS FOR TREATING PARKISON'S ILLNESS

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Parkison's disease can be treated with a variety of therapeutic methods, but with a drawback in crossing the blood brain barriers that make most of drug delivery system ineffective. Delivery of drugs that cross brain through blood cells to target brain tissue and the side effects linked to the long-term use of antiparkinsonian medications are two unresolved issues of the available therapies for Parkison's Illness. For both diagnosis and treatment, the use of drug delivery methods such as liposomes, microcapsules, dendrimers, and nano-capsules is being researched. The liposomal drug delivery technology is the main subject of this review. When compared to conventional medication administration methods, liposomes are regarded as flexible drug vehicles. Properties like site-targeting, sustained or regulated release, protection against drug deterioration, and a reduction in harmful side effects are the key highlights of this Drug delivery system. To achieve the highest level of efficacy without unintended agent degradation, it is crucial to deliver therapeutic agents in sufficient quantities to the brain. Motor symptoms are the focus of current therapy. The discovery of aberrant proteins, such as -synuclein, parkin, or leucine-rich repeat serine/threonine protein kinase-2, may offer intriguing alternate targets for molecular imaging and therapy of Parkinson's disease in addition to pharmaceutical treatment.

KEY WORDS: Drug delivery tools, Liposome fusion, Parkinson's treatment, Regulated drug release.

ISOLATION AND CHARACTERIZATION OF STREPTOMYCES SP FROM SOIL FOR BIODIESEL PRODUCTION

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Biodiesel is an alternative energy source for petroleum diesel fuel. Due to global warming and the increase of toxic gases emitted from fossil fuels and the increase in energy demand, it is necessary to look for an alternative source for biodiesel. In this study, Streptomyces sp, the largest genus of actinobacteria, is a group of bacteria which is most commonly isolated from the soil. Streptomyces sp was isolated from the soil sample. Their provisional identification was done following Bergey's manual of systematic bacteriology. The isolated bacteria were tested for their ability to lipid production. The most potent lipid producer was identified as Streptomyces sp. The fatty acids of Streptomyces were converted to the corresponding fatty acid methyl esters (biodiesel). After transesterification of the produced lipids, the obtained oil was injected into gas chromatography (GC) to show the level of fatty acids which is considered biodiesel. In conclusion, the study represents that Streptomyces sp could be an alternative for biodiesel production.

Key words: Biodiesel, lipid production, FAMEs, gas chromatography, Streptomyces sp.

A RETROSPECTIVE OBSERVATIONAL STUDY ON ASSOCIATION BETWEEN NATRIURETIC PEPTIDES AND CARDIOVASCULAR RISK IN PATIENTS WITH TYPE 2 DIABETES MELLITUS.

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CVD is the major cause of morbidity and mortality in individuals withT2DM. Although many promising cardiac markers have been identified, it is unlikely that a single Natriuretic peptides biomarker will aid in T2DM patients with CVDs. Hence we attempted to provide a brief review on the association between natriuretic peptides and Cardiovascular risk in T2DM by using the UKPDS -10 years risk stratification tool. Objective: Aim of the study was to assess the association betweeen natriuretic peptides (MR- pro-ANP& NT Pro-BNP) and CVD in T2DM patient. Method: A retrospective observational study was conducted in a tertiary care hospital, with a sample size population of 74. This study was carried out for a period of 6 months. Results: Out of 74 patients in our study,we found a significant correlation between UKPDS Risk Score, CVD and natriuretic peptides in T2DM. The following results was found in our study 1) Association between HbA1c vs UKPDS 10 years cardiac risk score (P value = 0.026) 2) Association between HbA1c vs NT-Pro BNP (P value=0.017) 3) Association between HbA1c vs MR-Pro ANP (P value=0.002) 4) Association between UKPDS 10years cardiac risk score vs NT-Pro BNP (P value=0.000) 5) Association between Age vs NT-Pro BNP (P value=0.044) 6)Association between Age vs MR-Pro ANP (P value=0.033) 8)Association between UKPDS 10 years risk score vs CVD (P value=0.038) Conclusion: Our data shows that there is a significant correlation between Natriuretic peptides and CVD hence, higher Natriuretic peptides levels in T2DM are directly associated with cardiovascular risk.

KEYWORDS : Cardiovascular disease(CVD),Type II Diabetes Mellitus (T2DM), The United Kingdom Prospective Diabetes Study (UKPDS).

A COMPARATIVE STUDY ON CAPRINI RAM VS DOH TOOL FOR THROMBOPROPHYLAXIS IN ICU SETTING AT TERTIARY CARE HOSPITAL

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The study aims to assess DVT prophylaxis using two models (Caprini RAM & DOH tool) in preventing DVT in postoperative or critically ill patients and for better predictability of disease. In a prospective observational study, we compared the Caprini RAM and DOH tool in the ICU setting on 229 patients (140 men and 89 women). 205 patients were considered in the study. out of which 97 had Caprini RAM and 108 had DOH tool. The data is analyzed using SPSS software, and the results are compared using the student t-test. Both GROUP A and GROUP B revealed that the majority of the patients (67.1% & 55.6%) were above 60 years and a large proportion of them required DVT prophylaxis. In GROUP A 93% of forms were complete with 79% accuracy. In GROUP B 83% were complete. The most appropriate prophylaxis received by patients was ENOXAPARIN SODIUM 40mg OD in around 30% of 97 patients and HEPARIN 5000IU BD in around 30% of 108 patients based on their Caprini scores and NICE guidelines respectively. The majority of patients in GROUP A did not require dosage adjustments, but in 20% of cases, it was necessary. On comparison with a paired t-test, it was statistically significant with a p-value less than 0.05. The DOH tool is better than Caprini RAM to be used in hospitals, for risk assessment of VTE in both medical and surgical patients for accuracy and predictability of the prophylaxis.

Keywords: DVT, Risk assessment, Caprini RAM, DOH tool, pharmacological and mechanical prophylaxis.

A REVIEW ON DRUG DELIVERY METHODS FOR TREATING PARKISON'S ILLNESS

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Parkison's disease can be treated with a variety of therapeutic methods, but with a drawback in crossing the blood brain barriers that make most of drug delivery system ineffective. Delivery of drugs that cross brain through blood cells to target brain tissue and the side effects linked to the long-term use of antiparkinsonian medications are two unresolved issues of the available therapies for Parkison's Illness. For both diagnosis and treatment, the use of drug delivery methods such as liposomes, microcapsules, dendrimers, and nano-capsules is being researched. The liposomal drug delivery technology is the main subject of this review. When compared to conventional medication administration methods, liposomes are regarded as flexible drug vehicles. Properties like site-targeting, sustained or regulated release, protection against drug deterioration, and a reduction in harmful side effects are the key highlights of this Drug delivery system. To achieve the highest level of efficacy without unintended agent degradation, it is crucial to deliver therapeutic agents in sufficient quantities to the brain. Motor symptoms are the focus of current therapy. The discovery of aberrant proteins, such as -synuclein, parkin, or leucine-rich repeat serine/threonine protein kinase-2, may offer intriguing alternate targets for molecular imaging and therapy of Parkinson's disease in addition to pharmaceutical treatment.

KEY WORDS: Drug delivery tools, Liposome fusion, Parkinson's treatment, Regulated drug release.

AZURE A/NICKEL HEXACYANOFERRATE HYBRID COMPOSITE AS DOPAMINE AND HYDROGEN PEROXIDE SENSOR

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This paper demonstrates a convenient strategy to prepare Azure A (AZA) and Nickel hexacyanoferrate (NiHCF) based hybrid composite electrode which is demonstrated to be a highly effective dopamine (DA) and hydrogen peroxide (H_2O_2) sensor. The morphologies of the AZA/NiHCF hybrid composite sensor were observed by scanning electron microscopy and X ray photoelectron spectroscopy. The AZA/NiHCF hybrid composite electrode exhibited distinct redox peaks for AZA in PBS (0.1M) and NiHCF in $NaNO_3$ (0.1M) with formal potential as -0.39V and 0.32V at a scan rate 50 mV/s respectively. The cyclic voltammetry experiments indicate that AZA/NiHCF hybrid composite sensor have high electrocatalytic activity towards DA and H_2O_2. Under an optimal experimental condition, the developed sensor was found to exhibit low detection limit as 5.55×10^{-7} and 8.33×10^{-7} for DA and H_2O_2 respectively. Hydrodynamic and the chronoamperometry measurements illustrate that the fabricated sensor has high sensitivity even under dynamic conditions. This indicates that this novel and simple strategy for fabricating electrochemical sensor has wide potential applications in real sample analysis.

Keywords: Dopamine, Hydrogen peroxide, Sensor, Azure A, Nickel hexacyanoferrate

AMPEROMETRIC HYBRID SENSOR FOR SELECTIVE DETERMINATION OF FERULIC ACID AND HYDROGEN PEROXIDE

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A sensitive platform for the electrochemical determination of ferulic acid (FA) and hydrogen peroxide (H_2O_2) has been developed by fabricating a bimediator sensor using thionine (TH) and nickel hexacyanoferrate (NiHCF). The surface morphology and the composition of the TH/NiHCF bimediator modified electrode were characterized by field emission scanning electron microscopy (FESEM) and energy-dispersive spectroscopy (EDS) techniques. The redox characteristic of the resulting TH/NiHCF modified electrode was studied by cyclic voltammetry, differential pulse voltammetry, hydrodynamic voltammetry and chronoamperometry. The modified electrode showed an excellent electrocatalytic behaviour toward the oxidation and reduction of FA and H_2O_2 with a linear response over the concentration range from 8.32×10-6 to 1.15×10-3 (FA) and 4.99×10-6 to 1.03×10-3 (H_2O_2) respectively. The detection limit was found to be 2.77×10-6 (FA) and 1.66×10-6 (H_2O_2). The fast amperometric response, low detection limit, wide linear range, good selectivity, and long-term stability for the electrochemical detection of FA and H_2O_2 imply a good performance of the TH/NiHCF sensor.

Keywords: Ferulic acid, Hydrogen peroxide, Sensor, Thionine, Nickel hexacyanoferrate

DUFOUR IMPACT OF CHEMICAL REACTION ON A PARABOLIC FLOW PAST IN THE PRESENCE OF ISOTHERMAL VERTICAL PLATE WITH VARIABLE MASS DIFFUSION

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The result of a chemical reaction re action on pulsating streams are determined over the conditional course of an extreme isothermal vertical plate with equipment heat transfer. The laminar flow is ideal because the fixing strength increases evenly near the plate. The dimensionless master equation was obtained using the Laplace transforms working method. The velocity and temperature profiles effects are intended for various physical criteria such as chemical reaction parameters, Grashof numbers for heat and mass, Schmidt values, and Prandtl values. The velocity value clearly increases as the upper part of the warm (or) Grashof mass increases. The floats are actually positioned relative to the heat chemical action boundaries.

Keywords: parabolic, chemical reaction, vertical plate, Dufour effect.

METAL CATALYSED OXIDATION REACTIONS: A POSSIBLE PLATFORM FOR HYDROGEN STORAGE MATERIALS

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Our over dependency on non-renewable energy sources such as fossil fuels and rapid rise in greenhouse gas emissions are unsustainable due to the detrimental consequences on earth's climate and ecosystem. This led to the development renewable energy sources; hydrogen has been identified as a source of energy and as a very good alternative for the fossil fuels. The scientist community around the world is now focusing on the hydrogen economy over the fuel economy. Though the hydrogen economy is considered to be superior compared to the fuel economy, it suffers from two major drawbacks such as production of green hydrogen from sustainable resources and storage and transportation of hydrogen in a safer way is considered to be the bottle-neck in the hydrogen economy. Currently, the scientific community around the world is working on developing technologies that lead to safe storage and transportation of hydrogen. One such method to store and transport hydrogen in a much safer way is by using the liquid organic hydrogen carriers (LOHCs). LOHCs are liquid or semi solid compounds which can easily be stored and transported in a safer way. LOHCs are capable of releasing and storing the hydrogen gas by undergoing reversible dehydrogenation and hydrogenation, respectively in the presence of a catalyst

NATURAL FARMING SUSTAINABLE AGRICULTURE IN INDIA

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The world needs to upsurge over all food production by 70 percent by 2050 in order to keep up with growing global population and the change in consumption driven by expanding middle class as per the recent reports of Food and agriculture organization (FAO). Our country, India is anticipated to be the most populated nation globally by 2030, with 1.51 billion people. This farming system is considered to significantly reduce production costs by substituting the chemical fertilizers and pesticides with home grown products like Beejamritha, Jeevamritha, Neemastra etc. and adopting intercropping and mulching. According to him, natural farming system requires only one indigenous cow for 30 acres of land. It is also envisioned to improve soil health, increase soil organic carbon even without adding massive quantity of Farmyard manure as in case of organic farming and thus help in conquering sustainable agriculture with reduced carbon foot print. NF require not only regular monitoring and engagement, but also the conviction to continue these practices. Even though, the Natural Farming practices results into better farm profitability, it would be humungous task to implement these practices by relatively large farm land, as polycropping may not be compatible with farm mechanization, particularly sowing and harvesting. It may be quite feasible for the smallholders, which has adequate family labour to look after the field and use these inputs on regular interval.

Keywords- Natural Farming, Organic farming, Beejamritha, Jeevamritha, Neemastra etc.

THE FORCING TRIANGLE FREE DETOUR CONVEXITY NUMBER OF A GRAPH

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Let G be a connected graph and S be a dΔf-convex set of G. A subset $T \geq S$ is called a forcing subset for S if S is the unique dΔf-convex set containing T. A forcing subset for S of minimum cardinality is a minimum forcing subset of S. The forcing triangle free detour convexity number f_cdΔf(S) of S is the minimum cardinality among the forcing subset for S and the forcing triangle free detour convexity number f_cdΔf (G) of G is the minimum forcing triangle free detour convexity number among all triangle free detour convex set of G. Some general properties satisfied by this concept are studied. The forcing triangle free detour convexity numbers of certain classes of graphs are determined. It is shown for every pair a,b of integers with $0 \leq a \leq b$ and $b \geq 2$, there exists a connected graph G such that f_cdΔf (G)= a and C_dΔf (G)=b. Also studied in forcing triangle free detour convexity number of total graph, middle graph, join of graphs and lexicographic product of graphs.

Keywords: convex, detour, triangle free detour path, triangle free detour convexity number, forcing triangle free detour convexity number, total graph, middle graph.

PROTECTION OF CARBON STEEL IN 1N HCL SOLUTION USING AQUEOUS EXTRACT OF VITEX NEGUNDO LEAVES

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The corrosion inhibition of carbon steel in 1N HCl containing aqueous extract of Vitex negundo leaves (VNL) has been studied using chemical techniques and electrochemical techniques at the best concentration of 800 ppm of VNL extract provides 79.2% of the inhibition efficiency on carbon steel. The results showed that when the concentration of VNL extract increased the rate of carbon steel corrosion is decreased, which indicates that the inhibition of the corrosion process is produced. Electrochemical impedance analysis results showed that the corrosion inhibition of carbon steel occurred mainly by charge transfer. The electrochemical results of polarization showed that the extract of VNL plant act as a mixed type inhibitor and they retarded both anodic and cathodic reactions. The experimental results from chemical and electrochemical studies were fit Langmuir isotherm. Values of the equilibrium constant of adsorption and the standard free energy of adsorption for the extracts are also calculated.

Key words: Carbon steel; Corrosion inhibitors; Hydrochloric acid; Langmuir isotherm; Vitex negundo.

A RETROSPECTIVE OBSERVATIONAL STUDY ON ASSOCIATION BETWEEN NATRIURETIC PEPTIDES AND CARDIOVASCULAR RISK IN PATIENTS WITH TYPE 2 DIABETES MELLITUS.

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CVD is the major cause of morbidity and mortality in individuals withT2DM. Although many promising cardiac markers have been identified, it is unlikely that a single Natriuretic peptides biomarker will aid in T2DM patients with CVDs. Hence we attempted to provide a brief review on the association between natriuretic peptides and Cardiovascular risk in T2DM by using the UKPDS -10 years risk stratification tool. Objective: Aim of the study was to assess the association betweeen natriuretic peptides (MR- pro-ANP& NT Pro-BNP) and CVD in T2DM patient. Method: A retrospective observational study was conducted in a tertiary care hospital, with a sample size population of 74. This study was carried out for a period of 6 months. Results: Out of 74 patients in our study,we found a significant correlation between UKPDS Risk Score, CVD and natriuretic peptides in T2DM. The following results was found in our study 1) Association between HbA1c vs UKPDS 10 years cardiac risk score (P value = 0.026) 2) Association between HbA1c vs NT-Pro BNP (P value=0.017) 3) Association between HbA1c vs MR-Pro ANP (P value=0.002) 4) Association between UKPDS 10years cardiac risk score vs NT-Pro BNP (P value=0.000) 5) Association between Age vs NT-Pro BNP (P value=0.044) 6)Association between Age vs MR-Pro ANP (P value=0.033) 8)Association between UKPDS 10 years risk score vs CVD (P value=0.038) Conclusion: Our data shows that there is a significant correlation between Natriuretic peptides and CVD hence, higher Natriuretic peptides levels in T2DM are directly associated with cardiovascular risk.

KEYWORDS : Cardiovascular disease(CVD),Type II Diabetes Mellitus (T2DM), The United Kingdom Prospective Diabetes Study (UKPDS).

EFFECT OF BUILD ORIENTATION ON 3D PRINTING YIELD

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The process of 3D printing involves layer-by-layer material deposition to create a three-dimensional part. In 3D printing, a variety of materials are used, including ceramics, polymers, and metals. Polylactic acid (PLA) is the most popular polymer filament used by Fused Deposition Modelling (FDM) based 3D printing users. The literature review reveals that 3D printing is affected by several parameters associated with the 3D printing process. Among these parameters, part (or build) orientation during 3D printing is one of the key parameters. Build orientation not only affects the strength of the part but also influences several other parameters such as support, build time, surface finish, dimensional accuracy, 3D Printing planning, postprocessing, material cost, build time, etc. Desired build orientation should result in good adhesion and stability on build plate, maximizes part strength subjected to different loading conditions and minimizes the amount of support material. Deciding suitable build orientation becomes a critical task for complex parts. Therefore, one should eliminate the build orientations that do not satisfy the necessary characteristics, and then optimize the other factors. Several researchers studied the effect to build orientation on the mechanical strength of part through experimental, analytical and numerical methods. None of the researchers have presented detailed analysis on 3D printing time, amount of PLA filament used and 3D printing yield. Time required for 3D printing of tensile specimen is directly proportional to the amount of filament used. In this work, new term is coined i.e. 3D printing yield. It is calculated by knowing the actual weight of the 3D printed specimen and the total material required.The study involved 3D printing a set of identical tensile test specimens with seven different build orientations typically observed during design and development of a medical device. These build orientations are flat, flat-45, flat-support, edge, edge-45, upright and upright-45. It is observed that 3D printing yield is maximum when support and build plate adhesion is not used during 3D printing. Therefore, flat and upright orientations result in maximum yield whereas edge-45 orientation results in minimum yield. Lower yield means more wastage of filament material. 3D printing yield of edge-45 orientation is lowest i.e., ~41%. It means 60% filament material is utilised in generating support for successfully 3D printing the part.

Keywords: FDM, PLA, 3D Printing Yield, Build Orientation

AUTOMATIC DUSTBIN USING ARDUINO

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In this recent world, urbanization has increased tremendously. At the same phase, there is increasing amount of in waste production. Waste management has been a crucial issue to be considered. This report is a different way to achieve this good cause. In this report, smart bin is built on a microcontroller based platform Arduino - Uno board, which is interfaced with Ultrasonic sensor. It will stop overflowing of dustbins along roadsides and localities as smart Dustbins are managed in real time. Once these smart bins are implemented on a large scale by replacing the traditional bins, the waste can be quickly managed to its efficient level as it avoids unnecessary lumping of wastes on roadside. Foul smell from these rotten wastes that remain untreated for a long time, due to negligence of authorities and carelessness of public may lead to long term problems. Breeding of insects and mosquitoes can create nuisance around promoting unclean environment. This may even cause dreadful diseases. The goal of this project is to keep our environment clean. It also aims at creating a clean as well as green environment. Hence, Smart Dustbin using Arduino was designed successfully. In this way, people can dispose of garbage without touching the dustbin and the lid also remains closed to avoid flies.

GREEN SYNTHESIS AND CHARACTERIZATION OF SILVER NANO PARTICLES FROM LAWSONIAINERMIS(HENNA)LEAF EXTRACT BY HYDROTHERMAL METHOD

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The ecologically benign and economically advantageous green synthesis of silver nanoparticles has been suggested as a substitute for the chemical and physical processes. The green chemistry method of using plants to synthesise nanoparticles links nanotechnology and biotechnology. In the current study, aqueous silver nitrate was reduced with leaf extract of the medicinal herb Lawsonia inermis to create silver nanoparticles (AgNPs). Silver nanoparticles made through biological synthesis have several applications in medicine. The alteration in colour of plant extracts served as proof that silver nanoparticles had formed. Silver nanoparticles (AgNps) have numerous applications in the medical industry. Due to its potent medicinal properties, Lawsonia inermis is a plant that is used in many traditional medical applications. In this study, stable silver nanoparticles (Ag NPs) are synthesised using environmentally acceptable, practical, and green hydrothermal methods. Spherical Ag NPs are produced when hydrothermal conditions are carefully optimised. Ag nanoparticles (AgNPs) were produced and characterized using a green production process. X-ray diffraction was used to confirm that agnates are crystals (XRD). The Scherrer formula was used to determine the AgNps1 size at 44.84 nm. The compositional mass ratio was discovered by energy dispersive X-ray spectroscopy (EDS) analysis of the chemical composition, biological activity of plant extracts and NPs. The spherical shape of the nanoparticles was revealed using scanning electron microscopy. The green synthesised Ag nanoparticles are non-toxic, eco-friendly and economical.

Keywords: Green Synthesis, Silver Nanoparticles, Hydrothermal, Lawsonia inermis

A NEW PROTOCOL FOR THE SYNTHESIS OF 5-BENZYL-4-PHENYL-1H-1,2,3-TRIAZOLE FROM BAYLIS-HILLMAN ADDUCTS DERIVED FROM NITRO OLEFINS

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The Baylis-Hillman adducts derived from nitroolefins have been conveniently transformed into 5-(azidomethyl)-4-phenyl-1h-1,2,3-triazole via simple reaction condition. Further application of these compounds have been demonstrated for the synthesis of 5-benzyl-4-phenyl-1H-1,2,3-triazole. Baylis-Hillman reaction is one of the most important reactions in the field of organic synthesis. Recently 1,2,3-triazoles have been receiving growing attention due to their wide range of applications and consequently significant advances have been achieved in their preparation. Recently Sharples et.al have introduced a click chemistry concept utilizing acetelinic system with azide to produce 1,2,3 triazole via 1,3-dipolar cycloaddition reaction. Inspired by the click chemistry, We have developed a novel 1,2,3-triazole heterocyclic derivatives via domino 1,3-dipolar cycloaddition and denitration reaction sequence.

Key words: 5-(azidomethyl)-4-phenyl-1h-1,2,3-triazole, benzaldehyde, nitromethane, Henry reaction, click chemistry DMSO, NaN3.

A COMPARATIVE STUDY ON CAPRINI RAM VS DOH TOOL FOR THROMBOPROPHYLAXIS IN ICU SETTING AT TERTIARY CARE HOSPITAL

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The study aims to assess DVT prophylaxis using two models (Caprini RAM & DOH tool) in preventing DVT in postoperative or critically ill patients and for better predictability of disease. In a prospective observational study, we compared the Caprini RAM and DOH tool in the ICU setting on 229 patients (140 men and 89 women). 205 patients were considered in the study. out of which 97 had Caprini RAM and 108 had DOH tool. The data is analyzed using SPSS software, and the results are compared using the student t-test. Both GROUP A and GROUP B revealed that the majority of the patients (67.1% & 55.6%) were above 60 years and a large proportion of them required DVT prophylaxis. In GROUP A 93% of forms were complete with 79% accuracy. In GROUP B 83% were complete. The most appropriate prophylaxis received by patients was ENOXAPARIN SODIUM 40mg OD in around 30% of 97 patients and HEPARIN 5000IU BD in around 30% of 108 patients based on their Caprini scores and NICE guidelines respectively. The majority of patients in GROUP A did not require dosage adjustments, but in 20% of cases, it was necessary. On comparison with a paired t-test, it was statistically significant with a p-value less than 0.05. The DOH tool is better than Caprini RAM to be used in hospitals, for risk assessment of VTE in both medical and surgical patients for accuracy and predictability of the prophylaxis. Keywords: DVT, Risk assessment, Caprini RAM, DOH tool, pharmacological and mechanical prophylaxis.

ISOLATION AND CHARACTERIZATION OF STREPTOMYCES SP FROM SOIL FOR BIODIESEL PRODUCTION

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Biodiesel is an alternative energy source for petroleum diesel fuel. Due to global warming and the increase of toxic gases emitted from fossil fuels and the increase in energy demand, it is necessary to look for an alternative source for biodiesel. In this study, Streptomyces sp, the largest genus of actinobacteria, is a group of bacteria which is most commonly isolated from the soil. Streptomyces sp was isolated from the soil sample. Their provisional identification was done following Bergey's manual of systematic bacteriology. The isolated bacteria were tested for their ability to lipid production. The most potent lipid producer was identified as Streptomyces sp. The fatty acids of Streptomyces were converted to the corresponding fatty acid methyl esters (biodiesel). After transesterification of the produced lipids, the obtained oil was injected into gas chromatography (GC) to show the level of fatty acids which is considered biodiesel. In conclusion, the study represents that Streptomyces sp could be an alternative for biodiesel production.

Key words: Biodiesel, lipid production, FAMEs, gas chromatography, Streptomyces sp.

A REVIEW ON DRUG DELIVERY METHODS FOR TREATING PARKISON'S ILLNESS

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Parkison's disease can be treated with a variety of therapeutic methods, but with a drawback in crossing the blood brain barriers that make most of drug delivery system ineffective. Delivery of drugs that cross brain through blood cells to target brain tissue and the side effects linked to the long-term use of antiparkinsonian medications are two unresolved issues of the available therapies for Parkison's Illness. For both diagnosis and treatment, the use of drug delivery methods such as liposomes, microcapsules, dendrimers, and nano-capsules is being researched. The liposomal drug delivery technology is the main subject of this review. When compared to conventional medication administration methods, liposomes are regarded as flexible drug vehicles. Properties like site-targeting, sustained or regulated release, protection against drug deterioration, and a reduction in harmful side effects are the key highlights of this Drug delivery system. To achieve the highest level of efficacy without unintended agent degradation, it is crucial to deliver therapeutic agents in sufficient quantities to the brain. Motor symptoms are the focus of current therapy. The discovery of aberrant proteins, such as -synuclein, parkin, or leucine-rich repeat serine/threonine protein kinase-2, may offer intriguing alternate targets for molecular imaging and therapy of Parkinson's disease in addition to pharmaceutical treatment.

KEY WORDS: Drug delivery tools, Liposome fusion, Parkinson's treatment, Regulated drug release.

A RETROSPECTIVE OBSERVATIONAL STUDY ON ASSOCIATION BETWEEN NATRIURETIC PEPTIDES AND CARDIOVASCULAR RISK IN PATIENTS WITH TYPE 2 DIABETES MELLITUS.

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CVD is the major cause of morbidity and mortality in individuals withT2DM. Although many promising cardiac markers have been identified, it is unlikely that a single Natriuretic peptides biomarker will aid in T2DM patients with CVDs. Hence we attempted to provide a brief review on the association between natriuretic peptides and Cardiovascular risk in T2DM by using the UKPDS -10 years risk stratification tool. Objective: Aim of the study was to assess the association betweeen natriuretic peptides (MR- pro-ANP& NT Pro-BNP) and CVD in T2DM patient. Method: A retrospective observational study was conducted in a tertiary care hospital, with a sample size population of 74. This study was carried out for a period of 6 months. Results: Out of 74 patients in our study,we found a significant correlation between UKPDS Risk Score, CVD and natriuretic peptides in T2DM. The following results was found in our study 1) Association between HbA1c vs UKPDS 10 years cardiac risk score (P value = 0.026) 2) Association between HbA1c vs NT-Pro BNP (P value=0.017) 3) Association between HbA1c vs MR-Pro ANP (P value=0.002) 4) Association between UKPDS 10years cardiac risk score vs NT-Pro BNP (P value=0.000) 5) Association between Age vs NT-Pro BNP (P value=0.044) 6)Association between Age vs MR-Pro ANP (P value=0.033) 8)Association between UKPDS 10 years risk score vs CVD (P value=0.038) Conclusion: Our data shows that there is a significant correlation between Natriuretic peptides and CVD hence, higher Natriuretic peptides levels in T2DM are directly associated with cardiovascular risk.

KEYWORDS : Cardiovascular disease(CVD),Type II Diabetes Mellitus (T2DM), The United Kingdom Prospective Diabetes Study (UKPDS).

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KEY WORDS: Drug delivery tools, Liposome fusion, Parkinson's treatment, Regulated drug release.

AZURE A/NICKEL HEXACYANOFERRATE HYBRID COMPOSITE AS DOPAMINE AND HYDROGEN PEROXIDE SENSOR

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This paper demonstrates a convenient strategy to prepare Azure A (AZA) and Nickel hexacyanoferrate (NiHCF) based hybrid composite electrode which is demonstrated to be a highly effective dopamine (DA) and hydrogen peroxide (H2O2) sensor. The morphologies of the AZA/NiHCF hybrid composite sensor were observed by scanning electron microscopy and X ray photoelectron spectroscopy. The AZA/NiHCF hybrid composite electrode exhibited distinct redox peaks for AZA in PBS (0.1M) and NiHCF in NaNO3 (0.1M) with formal potential as -0.39V and 0.32V at a scan rate 50 mV/s respectively. The cyclic voltammetry experiments indicate that AZA/NiHCF hybrid composite sensor have high electrocatalytic activity towards DA and H2O2. Under an optimal experimental condition, the developed sensor was found to exhibit low detection limit as 5.55×10-7 and 8.33×10-7 for DA and H2O2 respectively. Hydrodynamic and the chronoamperometry measurements illustrate that the fabricated sensor has high sensitivity even under dynamic conditions. This indicates that this novel and simple strategy for fabricating electrochemical sensor has wide potential applications in real sample analysis.

Keywords: Dopamine, Hydrogen peroxide, Sensor, Azure A, Nickel hexacyanoferrate

AMPEROMETRIC HYBRID SENSOR FOR SELECTIVE DETERMINATION OF FERULIC ACID AND HYDROGEN PEROXIDE

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A sensitive platform for the electrochemical determination of ferulic acid (FA) and hydrogen peroxide (H2O2) has been developed by fabricating a bimediator sensor using thionine (TH) and nickel hexacyanoferrate (NiHCF). The surface morphology and the composition of the TH/NiHCF bimediator modified electrode were characterized by field emission scanning electron microscopy (FESEM) and energy-dispersive spectroscopy (EDS) techniques. The redox characteristic of the resulting TH/NiHCF modified electrode was studied by cyclic voltammetry, differential pulse voltammetry, hydrodynamic voltammetry and chronoamperometry. The modified electrode showed an excellent electrocatalytic behaviour toward the oxidation and reduction of FA and H2O2 with a linear response over the concentration range from 8.32×10-6 to 1.15×10-3 (FA) and 4.99×10-6 to 1.03×10-3 (H2O2) respectively. The detection limit was found to be 2.77×10-6 (FA) and 1.66×10-6 (H2O2). The fast amperometric response, low detection limit, wide linear range, good selectivity, and long-term stability for the electrochemical detection of FA and H2O2 imply a good performance of the TH/NiHCF sensor.

Keywords: Ferulic acid, Hydrogen peroxide, Sensor, Thionine, Nickel hexacyanoferrate

A STUDY ON MEDICINALLY BIOACTIVE COMPOUNDS FROM DESMIDORCHIS INDICA STEM EXTRACT

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Medicinal plants and herbs have been proven to be of great importance to the health of individuals and communities. In recent years, many scientific investigations of natural remedies for several diseases have been carried out and this has led to the development of alternative drugs and therapeutic strategies. Phytochemicals are chemical compounds that are produced as a result of the metabolic reaction during plant growth. These phytochemicals are vital for the prevention of severe disorders. Phytochemical evaluation is the first step to exploring the therapeutic potential of a plant. Owing to these reasons, this study aims to assess phytochemicals content in Desmidorchis indica stem by qualitative, quantitative and chromatographic techniques. The aqueous, ethanol, hydro-ethanolic, hexane and petroleum ether of Desmidorchis indica stem were investigated. Among the various extracts, the hydro-ethanolic extract of Desmidorchis indica stem contains a higher concentration of phytochemicals than other extracts and is used for subsequent studies. A significant amount of phenol, flavonoids, tannin and saponin were found. Thirty compounds were identified in extract of Desmidorchis indica stem by GC-MS analysis. The prevailing compounds are n-hexadecanoic acid, 1-octadecanol, cis-11-eicosenoic acid, heptadecanoic acid, oleic acid, octadecanoic acid, 12,15-octadecadiynoic acid, methyl, 9-octadecenoic acid, eicosanoic acid, 2-methyl-z,z-3,13-octadecadienol, di-(9-octadecenoyl)-glycerol, hexadecanoic acid, 2,3-dihydroxypropyl ester and docosanoic acid. HPLC analysis of the hydro-ethanolic extract of Desmidorchis indica stem revealed the presence of kaempferol, quercetin, epigallocatechin and hypersoide. The current study showed that Desmidorchis indica stem has a wide array of phytochemicals, which are known to possess numerous medicinal properties Owing to this assessment, Desmidorchis indica stem found to be a therapeutically important plant. Further studies are needed to evaluate and understand a clearer picture depicting this plant's utilizations against diseases.

Keywords: Desmidorchis indica stem, Phytochemicals, Qualitative, Quantitative and Chromatographic techniques

PRELIMINARY VERIFICATION OF BACOPA MONNIERA AND NETWORK PHARMACOLOGY RESEARCH FOR THE TREATMENT OF NON-ALCOHOLIC FATTY LIVER DISEASE

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Bacoside - A, a dynamic component of Bacopa monniera is utilized in different ailments. The pharmacodynamics and cellular pathways overseeing the impacts of Bacoside- A on NAFLD stay unclear. In this study, we examined Bacoside - A pharmacology through evaluation of its chemical constituents and assessed and screened its components using drug likeness, pharmacokinetic characteristics (absorption, distribution, metabolism, excretion, and toxicity), and appropriate compensation mechanisms. We performed expectations of the dynamic BM fixings based on invert pharmacophore matching and compared different NAFLD-related genes to decide potential BM targets. Atomic docking experiments of the dynamic components were performed to uncover cellular targets. Explanation examination of both target qualities and related pathways were evaluated through the DAVID database. Cytoscape computer program was utilized to build a "component-target- path" network for the treatment of NAFLD by BM. Through data analysis, 9 active BM substances and 10 targets related to NAFLD encompassing 4 cellular pathways were identified. Data were verified through enzyme-linked immunosorbent assay and Western blot analysis. These findings provide new references for the network pharmacology of Ayurvedic medicinal compounds and NAFLD treatment.

Keywords---network pharmacology, NAFLD, pharmacodynamic substance base, action mechanism, verification experiment.

EFFECT OF CARDIOVASCULAR AGENTS ON DIETARY INTAKE - A REVIEW

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Cardiovascular diseases is the leading cause of mortality across the globe. Treatment employs lifestyle changes and medical therapeutics as primary method of combating cardiovascular disease. Cardiovascular agents are usually used in treating conditions associated with the heart or the circulatory system which includes arrhythmias, blood clots, coronary artery disease, high or low blood pressure, high cholesterol, heart failure and stroke. The five classes of drugs discussed below comprises of diuretics, anticoagulants, antihyperlipidemic, antihypertensive and antiarrhythmic. These drugs impact on dietary intake and nutritional status in both acute and chronic settings. The impact is seen in adverse reactions and drug – nutrient interaction. Patients suffering from various cardiovascular diseases are prescribed with several drugs since polypharmacy contributes to adverse drug nutrient reactions among these patients. Carbohydrate, protein, and lipid metabolism may all be altered as a consequence of cardiac pharmacotherapy. In general, precautions such as avoidance of alcohol, weight loss recommendations and restriction of fluid and electrolytes must be ensured, these precautions not only promote cardiac health but also limit the influences that may make drug- nutrient interactions. Cardiovascular agents aid in treating cardiovascular diseases and the aim of this review is to provide the summary of effect of cardiovascular agents on dietary intake.

Keywords: Cardiovascular diseases, Drugs, Pharmacotherapy, Drug- nutrient interaction, Dietary intake

DETERMINATION OF PHYTOCHEMICAL CONSTITUENTS FROM DIGERA MURICATA(I). LEAVES

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Digera muricata (L.) is a weed and commonly found in waste places, road sides and in maize fields during the summer season. It possesses antioxidant capacity and is locally used for various disorders such as inflammation, urination, as refrigerant, aperient and in sexual anomalies. Digera muricata (L) is an impressively aromatic plant that is used as herb of sweet taste and known to contain carbohydrates, proteins, lipids, phenols, chlorophylls, Some essential phytochemicals of Digera muricata (L). include flavonoids (193..18 ± 13.52) Milligrams of quercetin equivalents per gram , total phenols(246.82 ± 17.27) Milligrams of Gallic acid (GAE) equivalents per gram, saponins (134.76 ± 9.43) Milligrams of saponin equivalents per gram, tannins(61.80 ± 4.32)Milligrams of Tannic acid equivalents per gram , Steroids(117.66 ± 8.23) Milligrams of Cholesterol equivalents per gram , which they are known to possess prophylatic, anti-microbial, anti-oxidant, antidiabetic, anthelmintic, anti-testicular, allelopathic and protective effects thus used to treat renal disorders, kidney stones, dysfunctional proteins, nephrotoxicity, increase level of urine creatinine, protein, nitrite, urobilinogen, Red blood cells, leucocytes count and levels of blood urea nitrogen.

Keywords: Digera muricata L, phytochemical, bioactive, flavonoids, Phenols, Steroids, Saponins, tannins.

MOLECULAR DOCKING ON BIOACTIVE COMPOUNDSDERIVED FROM CATHRANTHUS ROSES LEAVES EXTRACT AGAINST P38 MITOGEN ACTIVATED PROTEIN KINASE (P38 MAPK)

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Molecular docking analysis has directed to predict the binding attractions of different bioactive compounds and to explain specific sites of interaction between the bioactive compounds and the target proteins. The ligands are Octadecanoic acid, Methyl ester, 9-Octadecenoicacid, 9,12-Octadecadienoyl chloride and Hexadecanoic acid, methyl ester were obtained from Pubchem database, ligands were converted in to PDB format using Open bable software and Protein obtained from PDB database. p38 mitogen-activated protein kinase (p38 MAPK) (PDB ID: 1A9U), protein preparation was generally to have a remove of all water molecules and any other Ligand molecules prior to docking, using Pymol software prepared protein was saved as PDB formet. Automated docking along with a graphical user interface, Auto Dock tools was utilized to generate grids, calculate dock score and evaluate the conformers of activators bound in the active site of protein as targets.The grid map was centred at particular residues of the protein and was generated with grid dimension prepared (Center x, center y and center z). The Lamarckian genetic algorithm and the pseudo-Solis and Wets methods were applied for minimization, using default parameters Stress-induced activation of p38 mitogen-activated protein kinase (p38 MAPK) signaling is a feature of both acute and chronic kidney disease and is associated with disease progression. Inhibitors of p38MAPK activation provide protection against inflammation and fibrosis inanimal models of kidney disease.

Keywords: bioactive compounds, Octadecanoic acid, Methyl ester,9-Octadecenoicacid, 9,12-Octadecadienoyl chloride and Hexadecanoic acid, methyl ester, p38 mitogen-activated protein kinase

BIOCOMPATIBLE NIOSOME AND NARINGENIN NANOCOMPOSITE FOR THEIR ANTIOXIDANT, ANTIDIABETIC AND INVITROWOUND HEALING ASSESSMENT

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Diabetes mellitus is a metabolic condition that causes changes in the metabolism of carbohydrates, fats, and proteins, leading to a loss of glucose homeostasis. The prevalence of diabetes mellitus has been rising in recent years.Citrus fruit's main constituent, naringenin, has antioxidant qualities but a biodistribution. Naringenin's bioavailability increased enormously after being transformed into a nanocomposite form, enabling it to play a crucial part in the process of wound healing. FTIR and XRD analysis were used to describe nanocomposites of naringenin-embedded niosomes. The niosome nanocomposite showed high antioxidant activity in the DPPH assay. At 150µg/mL of their lethal doses, all niosome nanocomposite synthesized drug had a strong anti-diabetic effect. The in vitro cytotoxic effects of the produced niosomenaringenin nanocomposite against normal fibroblast 3T3 cells were evaluated. The results demonstrated that niosome and naringenin nanocomposite had a modest cytotoxicity effect on 3T3 cells, with values observed at 150 µg/mL to be 92.05%, 85.27%, and 82.26%, respectively. The niosome nanocomposite showed biocompatibility against typical fibroblast 3T3 cells and also sped up 3T3 cells' wound healing and increased their capacity to regenerate skin.

Key words: Niosome, Naringenin, Nanocomposite, Glucose Uptake

MOLECULAR DOCKING INTERACTION OF POTENTIAL ANTICANCER FLAVONOIDS AGAINST BCL-2, BAX, CASPASE-3

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Flavonoids have multiple mechanisms of action and are known to be anticancer agents. Furthermore, flavonoids have been shown to inhibit cancer cell initiation, promotion, and progression by regulating various receptors or enzymes and interfering with signal transduction pathways involved in cell proliferation, differentiation, inflammation, angiogenesis, metastasis, apoptosis induction, and multidrug resistance reversal. Flavonoids and their derivatives have the ability to influence the host immune system, which can be useful in cancer treatment. The current work attempted to dock possible anticancer self- therapeutic flavonoidshesperidin, apigenin, quercitin, genistein with apoptotic proteins,Bcl-2, Bax, and Caspase-3 using the Argusdock tool and determine whether the flavonoids investigated might be employed as cancer medicines. The protein structures were obtained from PDB database, the flavonoid and drug structures were drawn using Avogadro software. The docking score of flavonoids was compared to those of standard anticancer medications such as doxorubicin, camptothecin, and navitoclax. Bcl-2 exhibited the highest affinity for Genistein, with binding energy -9.04161 kcal/mol, whereas camptothecin the standard drug had a binding energy of -8.70524 kcal/mol. There was no interaction between Navitoclax and Bcl-2. Baxproduced strong bonding with hesperidin, the binding energy of which was -9.02708 kcal/mol.Caspase-3 interaction with Navitoclax, a typical medicine, has the highest binding energy of -10.7126 kcal/moland followed by Apigenin, which has a binding energy of – 8.6612 kcal/mol. Quercitin did not interact with Caspase -3. The results demonstrated that Genistein, hesperidin and Apigeninas best therapeutic drugs against cancer with minimum side effects.

Keywords: Flavonoids, molecular docking, Argus lab, Bcl-2, Bax, Caspase-3

PHARMACEUTICAL POTENTIAL OF ACTIVE COMPOUNDS FROM PLANTS: A COMPREHENSIVE REVIEW ON ALZHEMIER'S DISEASE AND FUTURE POSSIBILITIES

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Alzheimer's illness (AD) is an issue that causes cell degeneration in the cerebrum and is the primary driver of dementia, which is described by a lessening in thought and freedom in private everyday exercises. Promotion is viewed as a multifactorial sickness: two primary speculations were proposed as a reason for theories of commercials, cholinergic and amyloids. Moreover, a few gamble factors, like expanding age, hereditary variables, head wounds, vascular illnesses, contaminations, and natural elements, assume a part in the infection. At present, there are just two sorts of meds endorsed to treat AD, including cholinesterase compound inhibitors and N-methyl D-aspartate (NMDA) bad guys, who are powerful just in the treatment of AD side effects, yet don't fix or keep you from disease. Today, research is zeroing in on the comprehension of AD pathology focused on a few systems, like strange tau protein digestion, β-amyloid, fiery reaction, and cholinergic and free extreme harm, with the target of creating effective medicines to stop or alter the course of the declaration. This survey presently examines accessible drugs and future hypotheses for the advancement of new treatments for AD and normal mixtures.

Keywords - Alzheimer disease, causes, diagnosis, symptoms, treatment.

HEPATOPROTECTIVE ACTIVITY OF ALBOSTEROID, A MORUS MONGOLICA TRITERPENIC GLYCOSIDE ESTER IN EXPERIMENTAL ANIMALS

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Ethnopharmacological relevance: Morus Mongolica has historically been used in China to treat and prevent a wide range of ailments. Materials and methods: Albosteroid from Morus Mongolica was tested for its hepatoprotective properties. ALT, AST, ALP, total bilirubin, and total protein levels, as well as antioxidant enzymes including SOD, CAT, and GPx, GST, and LPO levels, were all examined in the context of CCL4-induced hepatocellular carcinogenesis. Results: Albosteroid, in a dose-dependent way, effectively returned towards normality the abnormal levels of serum ALT, AST, ALP, TB, and TP. Histopathological examination of rat liver slices was performed in addition to the biochemical tests that were already conducted. The reversal of the CCl4-diminished activity of antioxidant enzymes such as SOD, Cat, GPx, GST and the lowered CCl4-elevated level of LPO was likewise considerable and dose-dependent. The free radical processes were reduced by scavenging hydroxyl radicals, which albosteroid effectively prevented from increasing in blood levels. A significant rise in the amount of endogenous antioxidant enzymes in CCL4-induced hepatocellular carcinogenesis is also caused by this drug's effect on LPO levels. Conclusion: The findings of this research reveal that albosteroid may help prevent liver cancer in rats that have been exposed to CCL4-induced carcinogenesis.

Key Words: Morus Mongolica; albosteroid; carbon tetrachloride; silymarin; hepatoprotective; rats

ANTIOXIDANT POTENTIAL AND SOME MEDICINAL PROPERTIES OF AGAR FORMULATIONS FROM SEAWEED GRACILARIA FILIFORMS IN COASTAL TAMIL NADU

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Fractionated polysaccharides were produced by extracting the water soluble polysaccharides (WSP) from the seaweed Gracilaria filiforms (FPs). The FP was structurally characterised using FT-IR, and the antioxidant capacities were assessed utilising tests for total antioxidant, 2,2 diphenyl-1-picrylhydrazyl (DPPH), and hydrogen peroxide radical scavenging (H2O2). All of the antioxidant experiments revealed increased scavenging activity in FPs from Gracilaria filiforms. The FPs from all the seaweed shown admirable anticoagulant properties. The greatest larvicidal activity on Anopheles stephensi and Aedes aegypti was demonstrated by FPs from Gracilaria filiforms. The outcomes clearly demonstrate the FPs from the three Indian seaweeds that were chosen as prospective future functional foods, nutraceutical substances, and insecticides.

Keywords: Seaweeds, Gracilaria filiforms, Red algae, FT-IR, Anticoagulant agent, Larvicidal activity.

PHYTOCHEMICAL AND GC-MS ANALYSIS OF SEAGRASS - CYMODOCEA SERRULATA

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Phytoconstituents are organic, bioactive substances that are naturally present in all parts of plants and work in concert with nutrients and fibres to fend off disease. Phytochemicals are derived from various parts of plants such as leaves, flowers, seeds, barks, roots and pulps and they are used as sources of direct medicinal agents. The presence of phytochemical such as tannins, saponins, flavonoids, steroids, terpenoids, alkaloids, anthraquinone, polyphenol, glycosides, coumarins, emodin's, anthocyanins are confirmed by qualitative analysis on different extracts. In quantitative analysis, the phytochemical such as phenols and flavonoids were quantified. They serve as a raw material base for elaboration of more complex semi-synthetic chemical compounds. This paper mainly deals with the extraction of Cymodocea serrulata using different solvent system, preliminary phytochemicals analysis and identification of phytocompounds present in the different extract of the seagrass Cymodocea serrulata by gas chromatography–mass spectrometry (GC-MS).

KEY WORDS: Phytochemicals, GC-MS Analysis, Cymodocea serrulata, Seagrass.

THE TOXICITY AND INVITRO ANTIDIABETIC ACTIVITIES OF GREEN SYNTHESIZED SILVER NANOPARTICLES FROM CHRYSANTHEMUM INDICUM.

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Diabetic Mellitus is a rapidly increasing disease and affects all types of people globally. The flowering plant Chrysanthemum indicium has the potential to treat diabetic mellitus. This study analyzes the in-vivo study of toxicity and invitro free radical scavenging ability of green synthesized silver nanoparticles. The Silver Nanoparticles were synthesized from the solvent extract of dried petals of Chrysanthemum indicium in the hydro-alcoholic medium. In this process, the phyto -chemicals reduce the silver ions into small silver nanoparticles due to the electron-donating ability of these phenolic compounds in the extract. The UV-Vis Spectroscopy peak was observed at 436nm(OD:1.804)

PHYTOCHEMICAL AND GC-MS ANALYSIS OF HYDROALCHOLIC EXTRACT OF BARK OF ANNONA MURICATA

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Annona muricata is a member of the Annonaceae family and is a fruit tree with a long history of traditional use. A. muricata, also known as soursop, graviola and guanabana, is an evergreen plant that is mostly distributed in tropical and subtropical regions of the world. The study examined the phytochemical and GC-MS analysis of hydroalcoholic extract of Annona muricata. The phytochemical investigations of A. muricata bark contains tannin, saponin, flavonoids, terpenoids, triterpenoids, alkaloids, anthroquinone, polyphenol, glycoside, coumarins and anthocyanins. Twenty-five compounds were identified in extract of Annona muricata bark by GC-MS analysis. Among that 9, 12-Octadecadienoic acid compound is main compound present in the bark, allowing for its use as reducing agents and cancer preventive. The current study suggests that hydroalcoholic extracts of bark of Annona muricata are a potent therapeutic agent and paves the way for the development of several treatment regimens based on compounds from this extract.

Keywords: Annona muricata, phytochemical, 9, 12-Octadecadienoic acid, GC-MS.

AN INDIAN TRADITIONAL MEDICINAL PLANT STUDIED FOR NUTRACEUTICAL PROPERTIES OF HYDROALCOHOLIC EXTRACT OF SOLANUM TORVUM FRUIT COAT

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Objective: To study the effect of the Hydroalcoholic extract(HAE) of Solanum torvum(S.T.) fruit coat by various in-vitro methods for studying its nutraceutical properties to find new, non-toxic, cost-effective and non-resistant drugs. **Methods**: The fruit coat of Solanum torvum was extracted in ethanol(organic solvent) and water. This study determined phytochemical constituents, antioxidants properties, anti-diabetic properties, anti-inflammatory properties, anti-bacterial properties, TLC analysis, FTIR analysis and GC-MS analysis respectively. **Results**: The HAE of S.T. exhibited promising nutraceutical properties of its fruit coat. By qualitative and quantitative phytochemical analysis, the HAE of the S.T. fruit coat showed the presence of phenolic compounds, flavonoid and alkaloid compounds majorly, along with, carbohydrates, and saponins compounds minorly. The antioxidant activity showed extract possesses the strongest antioxidant activity (DPPH shows—82.2%; ABTS—85.8%; FRAP—0.89 reducing power and in Phosphomolybdate assay 0.80 reducing power at 100µg/ml concentration). The anti-diabetic activity showed the extract can effectively inhibit the α-amylase activity (60.00%) and α-Glucosidases activity (62.00%). The anti-inflammatory activity showed that the HAE of the S.T. fruit coat revealed anti-inflammatory activity of 21.87% by Inhibition of Egg Albumin denaturation and 32.25% by Inhibition of the BSA denaturation at 100µg/ml concentration. The antibacterial activity of the extract was tested against gram-positive and gram-negative bacteria. The diameter of the zone of inhibition was seen between 12mm at 50 µg/ml and 24mm at 100 µg/ml concentration showing a clear zone of growth in HAE of Solanum torvum fruit coat with Pseudomonas aureus. The diameter of the zone of inhibition was seen between 10mm at 50 µg/ml and 18mm at 100 µg/ml concentration showing a clear zone of growth in HAE of Solanum torvum fruit coat with Bacillus subtilis. TLC chromatogram revealed the presence of Phenolic, Flavanoids and Alkaloids compounds present in the extract. FTIR analysis revealed that even though almost similar bands were observed in the spectrum of both solid and liquid medium of HAE of Solanum torvum of fruit coat, the transmittance intensity originating from liquid form HAE of Solanum torvum was lower than the solid form. GC-MS analysis showed the presence of 24 compounds.

KeYWORDs: Solanum torvum, hydroalcoholic extract, phytochemical, antioxidants, anti-diabetic, anti-inflammatory, anti-bacterial assay, TLC analysis, FTIR analysis and GC-MS analysis.

EFFECTS OF CINNAMOMUM TAMALA IN RHEUMATOID ARTHRITIS

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Rheumatoid arthritis (RA) is an autoimmune disease of unknown etiology and is mainly characterised by the progressive erosion of cartilage leading to chronic polyarthritis and joint distortion. It is a systemic disease which means that it can affect the whole body and internal organs such as lungs, heart and eyes. Although the exact pathogenesis of the disease has yet not been elucidated. However, studies suggest that cellular proliferation of synoviocytes result in pannus formation which damage the cartilage and the bone. Although numbers of synthetic drugs are being used as a standard treatment for rheumatoid arthritis, newer and safer drugs are continuously being searched, as long term usage of the drugs have resulted in adverse effects. Currently, a number of medicinal plants are under scientific evaluation to develop a novel drug. Hence in this paper we have tried to explore the potential effects of the medicinal plant Cinnamomum tamala against rheumatoid arthritis. This study reviews the phytochemical study, invitro antioxidant activity, cell line study of rheumatoid arthritis and docking study. This medicinal plant have been reported that it exerts antiarthritic effect in various experimental models of rheumatoid arthritis.

KEYWORDS: Rheumatoid arthritis, joint distortion, systemic disease, medicinal plants, Cinnamomum tamala.

A STUDY ON PHYSICAL CHARACTERISTICS AND STANDARDISATION OF FERMENTED RICE.

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The renaissance of fermented rice from immortal time, much insight has been accumulated in the past decade comprehending forces shaping the architecture and functionality of fermented rice. The objective of the study was to analyze the physical characteristics of the pigmented rice and standardize the traditional fermented rice (Oryza sativa) of Tamil Nadu. Physical properties of food components often determines the desirability (or undesirability) and attractiveness of the particular product. Thereby, making the knowledge of physical properties essential for successful food product development and formulation. Physical properties are also crucial for appropriate selection of suitable processing procedures and packaging materials. The thousand grain weight and volume of kattuyanam rice was 25±0.79 g and 13±1.51ml ,bulk density 1.47±0.01 g/ml, hydration capacity and index was 0.027±0.001g and 0.10±0.1%, swelling capacity and index were found to be 0.031±0.0015ml and 0.012±0.0005. The mappillai samba which is red rice was analyzed for physical properties. The thousand grain weight of mappillai samba rice was 24.6±0.41g , thousand grain volume 19.40±0.70 ml, buldensity1.12±0.13 g/ml, hydration capacity 0.027±0.001 g and swelling capacity 0.041±0.0014 ml. The sensory analysis was done using a nine-point hedonic scale among the eight treatments (T1 to T8) by fifty untrained panelists and their demographic details were also analyzed. The result revealed that treatment P2 (Pigmented rice – 10 hour of fermentation) had an overall acceptability score of 8.6±0.45.

Key Words: Fermentation, thousand-grain weight, Sensory analysis, standardization

ASSESSMENT OF ACUTE TOXICITY STUDIES OF EUPHORBIA HIRTA LEAF EXTRACT IN ALBINO RATS

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Acute oral toxicity studies of herbal medicines are essential to identify the safety and the determination of dose level that could be used subsequently. It also helps in the investigation of the therapeutic index of drugs and xenobiotics. No drug should be used clinically without its clinical trials and toxicity studies. In particular, plants that are rich in phenolic phytochemicals are gaining increasing attention due to their potential health benefits and their leading role as a staple food in the human diet. In the present study, the hydro-ethanolic extract of Euphorbia hirta leaves was tested for its acute toxicity in vivo. Acute toxicity study carried out accordance with The Organization for Economic Cooperation and Development (OECD) guidelines for the Testing of Chemicals. Male albino rats of Wistar strain approximately weighing 180-200 were used in this study. Male Albino rats were randomly assigned into two groups of each six rats. Among the two groups, one considers as a control and the second group is treated as a toxic group at a single dose of 2000 mg/kg bwt of Euphorbia hirta leaf extract. After administration of E. hirta extract, rats were observed for 24 h, with special attention given to the first 4 h and once-daily further for a period of 14 days. General appearance and behavior were observed for 14 consecutive days. Acute toxicity studies results showed that up to the tested dose of 2000 mg/kg bwt in extract treatments, throughout the 14 days of treatment, the extract does not produce any toxicity symptoms. No toxicity-related symptoms were observed in dose of leaves extract treated rats group. The results of in vivo acute toxicity study clearly showed the nontoxic nature of hydro-ethanolic extract of Euphorbia hirta leaves up to the tested dose level of 2000 mg/kg bwt. The LD50 values of all the tested groups were considered to be more than 2000 mg/kg bwt. On the basis of acute toxicity studies, the 1/10th (200mg/kg) dose from the LD50 has taken as perform the animal studies.

Keywords: Euphorbia hirta leaves, Acute toxicity, General appearance, Medicinal plants and Lethal concentration

SYNTHESIS AND CHARACTERISATION OF SILVER NANOPARTICLES USING SEAGRASS ENHALUS ACOROIDES AND THEIR IN VITRO ANTIOXIDANT ACTIVITIES

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Seagrass are widely distributed along template and tropical coastlines of the world seagrass mainly found in estuaries, bays and coastal waters from the mid-region down to depths of 50 or 60 meters. Treatment of various diseases is still a challenge to modern medicine. The commercially available medicine has little to offer for the alleviation of ailments but severe side effects. Biogenic synthesis of silver nanoparticles (Ag-NPs) using plants has become a promising substitute to the conventional chemical synthesis method. In this study, we report low-cost, green synthesis of Ag-NPs using Enhalus acoroides extract. The study was aimed to evaluate the synthesized silver nanoparticles were characterized with different techniques such as powder X-Ray diffraction (XRD), Scanning electron microscopy (SEM) and Dynamic light scattering (DLS) In spherical Ag-NPs, the particle size ranged from 43 to 118 nm and the average diameter was 109.3 nm. The antioxidant property of green synthesized AgNPs from Enhalus acoroides extract was determined to be nearest to the IC50 values of standards. This shows the ability of green synthesized AgNPs to scavenge free radicals. The green synthesized AgNPs of Enhalus acoroides can be further exploited as a potential candidate for antioxidant agents.

Keywords: Enhalus acoroides, Nanoparticles, Scanning electron microscopy, Dynamic light scattering, Antioxidant.

DETERMINE THE EFFECTIVE STROKE PREDICTION SYSTEM USING DIFFERENT CLASSIFICATION TECHNIQUES

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A stroke is a condition in which there is insufficient blood supply to the brain, which results in cell death. From 2000–2008, stroke incidence increased by more than 100% in low- and middle-income nations, including India. An accurate calculation of the stroke burden in India is difficult due to unreliable reporting procedures, variations in methodology, the study population, and small sample sizes in previous epidemiological research. Early illness detection is a crucial step in ensuring the affected individual has a respectable quality of life. It has become more necessary to rely on automated methods, such as the data mining approach, for the early detection and evaluation of risk factors related to stroke. There has been an unreported growth in interest in developing the unique ways offered up recently for identifying the disease. Yet, there is still a critical need to create an efficient method for better prognosis and classification. To determine the risk of stroke, various machine-learning techniques are used in data mining. In the current study, we compared a wide range of classification techniques, including Logistic Regression, KNN, Decision Tree, Linear SVM, Radial SVM, and Random Forest, and ultimately identified the technique that performed the best in terms of accuracy.

Keywords: Stroke, Classification, Data mining, Prediction, Machine-Learning

IN-SILICO RECEPTOR BASED SCREENING OF TRADITIONAL CHINESE MEDICINE (TCM) LIBRARY AGAINST PROTOTHECOSIS, ZOONOTIC ALGAL DISEASE

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Protothecosis, is an algal disease, affecting humans and wide-range of animals. Identifying this pathogen in human-animal interface shows its importance of high zoonotic potential and focuses on one health principles. Generally, targeting algal infections with intrinsic resistance to a wide variety of drugs have always been a challenge using existing therapeutic interventions. Antifungal azoles forms the first line of treatment. It mainly acts by binding and inhibiting sterol 14α-demethylase (CYP51/ERG11), a key enzyme involved in the biosynthesis of ergosterol. This study was aimed at In-silico screening of Traditional Chinese Medicine (TCM) library against Protothecosis. "DrugRep" an online virtual screening tool containing TCM library from nearly 800 traditional Chinese medicines was used. The crystal structure of sterol 14α-demethylase from an extensively studied fungus S.cervisiae complexed with Itraconazole was used for deducing the active binding site residues in Virtual Molecular Dynamics (VMD) tool. The binding pocket 1 from Drugrep containing active binding site residues is selected for screening via AutoDock Vina (version 1.1.2) and ranked by predicted affinity. The Autodock Vina affinity score/X-Score Binding energy, of top hits without violating Lipinski rule of five are Peimisine -10.6 /-10.24 Kcal/mol, Limonin-10/-9.37 Kcal/mol, Hecogenin -9.7/-10.42 Kcal/mol, Jervine, (25R)-Spirost-4-ene-3,12-dione and Cyclopamine -9.5/ -10.28 Kcal/mol and Obacunone -9.1/-9.49 Kcal/mol. The reference antifungal drugs had similar binding affinity in the range of -9 to -10 Kcal/mol noting that these TCM drugs could serve as potential inhibitors and further studies to confirm their binding energies, stability of the complex by molecular dynamic simulations will add more insights on newer therapeutics against Protothecosis.

Keywords: Protothecosis, CYP51/ERG11, TCM library, DrugRep, Binding affinity

IDENTIFICATION OF ANTIBACTERIAL COMPOUND FROM ACINETOBACTER SPP.: AN IN VITRO AND IN SILICO ANALYSIS.

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Secondary metabolites are natural compounds that are acquired from sources like fungi, bacteria, and plants. The secondary metabolite from these sources has the ability to inhibit or kill a pathogenic organism. Isolating a strain (CR13) from the river Cooum and checking for its antibacterial activity against pathogenic organisms revealed that the strain has antibacterial activity. The strain CR13 was identified as Acinetobacter junii through 16s rRNA sequencing and phylogenetic analysis. The strain showed a maximum of 17mm inhibition zone against Micrococcus luteus and 14mm zone against Staphylococcus aureus. The isolate also showed antioxidant activity of 38.36%. Molecular docking is performed for the antibacterial targets with the secondary metabolite from the isolated species. The compound acinetoferrin is docked against the target proteins (PDB ID: 3G75, 6RVN, 1VQQ, 5ENZ, 4C12, 1T2P). The protein MnaA has the lowest binding affinity with a -8.0 score. Thus, it will have more stability when compared to other proteins.

Keywords: Secondary metabolites, antibacterial, molecular docking, antioxidants, target proteins.

BIOCOMPATIBILITY OF BIOMATERIALS IN TISSUE ENGINEERING: IN VITRO AND IN VIVO

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Biocompatibility is one of the most crucial features of biomaterials. It refers to the ability of a biomaterial to perform its intended function in medical therapy without causing any undesirable local or systemic effects on the recipient or beneficiary. Abiomaterial's ability to perform optimally in a specific situation is part of its biocompatibility, generating clinically relevant performance for the therapy Biocompatibility evaluation is a complex process that assesses various aspects of biomaterials. Tests evaluate the bio material's ability to interact with biological systems without adverse effects. In vitro and In vivo tests provide valuable information on performance and safety. In conclusion, the biological evaluation of biomaterials is a critical aspect of medical therapy. Biocompatibility, which is defined as the ability of a biomaterial to perform its intended function without causing any adverse effects, is a fundamental requirement for biomaterials used in medical therapy. The evaluation of biocompatibility is a complex process that involves various In vitro and In vivo tests, and it is essential to ensure the safety and efficacy of biomaterials in medical therapy.

Keywords: Biocompatibility, Biomaterial, In vitro, In vivo, Tissue Engineering

QUALITATIVE ANALYSIS AND LOSS ASSESSMENT IN PRESERVATION OF FOOD GRAINS

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Storage of food Grains is an equally important task as harvesting,because if the produced is not stored properly using appropriate measures it may get spoilt or attacked by insects, Rats and Microorganisms. These losses play a critical role in influencing the life of millions of smallholder farmers by impacting the available food volumes and trade-in values of the commodities. Unutilized food also results in extra CO2 emissions, eventually affecting the environment. The Rice and Wheat samples were collected from different seasons from different types of temperature and places and analysed the losses of food grains incurred by insects through qualitative methods. Rice and wheat samples was collected fromdifferent storage structures and dunnage using polypellates ,wooden crates and Bamboo mates .The samples are collected from all sides with bag spear, in some cases from bottom vent (out let) of store. In case where grains were stored on the floor, samples were taken from upper, lower and other sides of bulk. All these primary samples were thoroughly mixed on plastic sheet and weighed to 1kg. These samples were placed in plastic bag to make it able to retain the Moisture of grain and avoid contamination. Insect damaged, broken and healthy grain count: After removing the weeds and grass, sample of cleaned grain weighing 25 gram was drawn from each replication of the respective different commodities of rice and wheat variety. The grains were classified and counted for percent insect damaged, broken and healthy one has been calculated and comparative study of losses incurred in the storage grain has been analyzedin different types of storage structures and also in different seasons in various types of Storage Godowns. The result using polypellates has reduced the storage losses of Rice and wheat in comparing to wodden crates and bamboo mates and the Result will be discussed in detail.

FACILE SYNTHESIS OF CARBON NANOPARTICLES FROM PISTIA STRATIOTES, THEIR CHARACTERIZATION AND BIO APPLICATIONS

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Carbon nanoparticles are used in a variety of ways due to their extensive applications in catalysis, sensing, optics and antimicrobial activity. However, problems like use of hazardous precursor chemicals, organic solvents, and production of hazardous by-products linked to present synthesis procedures have led to limitations in the applicability in the field of biomedicine. To overcome this, facile synthesis of carbon nanoparticles using the leaves of an aquatic plant Pistia stratiotes (water lettuce) was carried. The aquatic plant Pistia stratiotes is considered as a free floating freshwater weed as it has no potential for bioactivity. In this study, nanoparticles were produced as a result of a simple open burning of leaves to produce biosoot. Biosoot is defined as soot emanating from any biological material either of plant or animal origin. The biosoot thus produced from the leaves of Pistia stratiotes was characterized using Dynamic Light Scattering (DLS), Fourier Transform Infra-Red (FTIR), X-ray Diffraction (XRD), Raman spectroscopy, BET analysis and Field emission Scanning Electron Microscopy (FESEM) with EDX and GC-MS. The antibacterial activity was performed against Pseudomonas aeruginosa, Bacillus subtilis, Staphylococcus aureus and Streptococcus mutans . The cytotoxic nature of the biosoot was studied against the human lung cancer cell line (A549). The results of the study will be discussed in detail.

Keywords: Carbon Nanoparticles, Pistia stratiotes, Biosoot, XRD, EDX, Raman spectroscopy, FTIR, BET, GC-MS, Cytotoxicity

SUGARCANE WASTE: AN EFFICIENT SUBSTRATE FOR VERMICOMPOSTING

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India is the second largest sugar producing country in the world. It is an agro based industry and approximately 732 sugar mills are in India. These sugar mills generate wastes such as Bagasse, Pressmud, Molasses, Waste water etc during the process of sugar production. Sugarcane residues disposal and management are very difficult. Bagasse is the fibrous waste produced in the sugarcane juice extraction process. It constitutes cellulose (50%), hemicelluloses (25%) and lignin (25%). Press mud contains 21 % organic carbon along with macro- and micro-nutrients, which promote microbe's growth, improve cation exchange capacity , and nutrient supply in the soil. Press mud and bagasse serves as an ideal medium for vermicomposting and the earthworms grow luxuriously in it. By introducing earthworms into heaps of well-prepared press mud and bagasse, we can create a wealth of enriched organic manure in the form of Vermicompost. The earthworms feed on the organic waste and the earthworms gut acts as a bioreactor and vermin casts are produced Vermicompost maintains a steady mineral balance, improves nutrient availability and could act as complex biofertilizer rejuvenating the soil, in addition of reduction of pathogenic organisms too. Use of these by-products in agriculture field will solve disposal problem. Sugar content in the organic residues may enhance organic acid production in the soil. Incorporation of these materials in soil could be a good source of nutrients and would influence agricultural sustainability by improving physical, chemical, and biological properties of soil.

Keyword: Bagasse, Press mud, vermicompost, cation exchange

ANTIOXIDANT POTENTIAL OF RUTA CHALEPENSIS IN CALLUS CULTURE

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The current day encompasses not have much availability of medicinal plants, especially in high yield, hence with the process of Callus culture the pharmacological properties can be maintained as well as multiply yield vastly. Callus culture of Ruta Chalepensiswas done for different plant growth regulators and its best-given callus was studied for Antioxidant properties. They neutralize the free radicals in biological cells, whichaids in protection against the effects due to free radicals that could in order result in causes leading to heart diseases, inflammation as well as other chronic diseases. It in order shows free radical scavengers through analysis of the antioxidant study.Plant growth regulators of the best callus in single, combinations of hormones, as well as elicitors such (Phenylalanine and Riboflavin), were studied and to check their antioxidant properties. The following extracts such as ethyl acetate, ethanol, methanol, and aqueous were used. The antioxidant activities were analyzed by DPPH, hydroxyl radical scavenging, ABTS, and ion chelating assay activities. Methanol extract showed the highest antioxidant activity with a low IC50 value in all the mentioned Assays other than ion chelating Assay. In ion chelating Assay, ethyl acetate extract showed a better percentage of inhibition in single hormone followed by yet again, methanol in the other groups such as hormonal combination and elicitors (both Phenylalanine and Riboflavin).

Key Words:Ruta chalepensis, Callusculture, Antioxidants, Solvents, DPPH.

EVALUATION OF BOTANICAL EXTRACT OF MARTYNIA ANNUA FOR ITS ANTIOXIDANT ACTIVITY

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Martynia annua (cat's claw) belongs to Martyniaceae family and for centuries the extracts of leaves, roots, stem and seeds of the plant have been used to cure epilepsy, inflammation, tuberculosis, skin infections etc. From this versatile plant wide range of chemical compounds including oleic acid, linoleic acid, stearic acid, palmitic acid, cyanidin-3-galactoside etc have been isolated. Free radicals induce various harmful effects to the human body such as DNA damage, protein peroxidation, lipid peroxidation. Studies show that numerous plant extracts possess antioxidant activities to scavenge the free radicals. In the current study aqueous, methanolic and hexane extract of Martynia annua were examined using various methodologies such as DPPH assay, ABTS assay, total antioxidant assay, FRAP assay and ion chelating assay. The IC50 values were calculated for all the three extracts. In DPPH assay the methanolic extract exhibited the IC50 value of 52.17µg/ml. In ABTS assay the aqueous extract showed IC50 value of 51.16 µg/ml. Total antioxidant activity of the methanolic extract was found to be 1.577±0.003 absorbance unit at 100ug/ml. In FRAP assay and in Ion chelating assay the methanolic extract showed maximum inhibitory percentage giving IC50 value of 51.47 µg/ml and 63.21 µg/ml respectively. From the study the methanolic extract showed higher amount of antioxidant activity when compared to other extract due to the presence of phenolic compounds like flavonoids.

Keywords: Martynia annua, DPPH, antioxidant, ABTS.

EXPLORING THE MICROBIAL DIVERSITY OF SOIL SAMPLES CONTAMINATED WITH AUTOMOBILE OIL

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Contamination of soil with automobile oil is a significant environmental issue that can have a detrimental effect on soil microbial diversity. In this study, we aimed to investigate the impact of automobile oil contamination on soil microbial diversity using a culture-independent approach. We collected soil samples from sites contaminated with automobile oil and analyzed them using high-throughput sequencing technology. Our results showed a significant decrease in the microbial diversity of soil samples contaminated with automobile oil compared to the control samples. The bacterial and fungal diversity in contaminated soil samples was found to be significantly lower than that in uncontaminated samples. We also observed changes in the relative abundance of different microbial taxa in the contaminated samples, indicating a shift in microbial community structure. Further analysis revealed a decrease in the abundance of genes related to important soil functions such as carbon and nitrogen cycling, indicating that automobile oil contamination can adversely affect soil microbial activity and nutrient cycling. In conclusion, our study highlights the impact of automobile oil contamination on soil microbial diversity and functions. These findings can contribute to the development of effective strategies for managing soil contamination and promoting soil health.

Key words: Soil Microbial Diversity; Culture-Independent Approach; Bacterial Diversity; Fungal Diversity; Microbial Community Structure.

GREEN SYNTHESIZED COPPER NANOPARTICLES: A PROMISING APPROACH FOR EFFICIENT DYE DEGRADATION

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The growing textile industry has led to a significant increase in the discharge of dye-containing wastewater, which can cause severe environmental problems. To address this issue, the development of cost-effective and eco-friendly methods for dye degradation is crucial. In recent years, the green synthesis of copper nanoparticles (CuNPs) has gained attention as a promising approach for the degradation of dyes due to its eco-friendliness, low cost, and high efficiency. This study highlights the importance of green synthesized CuNPs in dye degradation. CuNPs were synthesized using a green approach, utilizing fruit peel extract as a reducing and capping agent. The synthesized CuNPs were characterized using various spectroscopic techniques and were found to be stable and of a small particle size range. The CuNPs were then evaluated for their efficiency in degrading methylene blue (MB) dye. The results showed that the synthesized CuNPs effectively degraded MB within a short time and under optimized conditions. The CuNPs also exhibited good stability and reusability for multiple cycles of dye degradation. Overall, this study demonstrates the potential of green synthesized CuNPs as an eco-friendly and cost-effective approach for efficient dye degradation. This approach can be scaled up for industrial applications and has the potential to contribute to sustainable wastewater treatment.

Key words: Green synthesis, copper nanoparticles, dye degradation, eco-friendliness, fruit peel extract, methylene blue

PRODUCTION OF VITAMIN B12 BY PSEUDOMONADS ISOLATED FROM SAGO WASTE

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Vitamin B12 is very important in the diet because they are of great value in growth and metabolism of the living cell. As the demand for vitamin B12 increased, fermentation processes were developed with higher yielding strains. Commercial production is currently carried out easily by fermentation. Vitamin B12 is produced exclusively by microorganisms. Microorganisms most commonly exploited for the freudenreichii and Pseudomonas denitrificans. From the sago waste sample thirty two strains were isolated. Only twenty four (75%) of them were found to be the vitamin B12 producers. The optical density value of the fermentation broth inoculated with the sample was recorded spectrophotometricallly at 367nm. Among the eighteen samples following three sample synthesized higher yield of Vitamin B12 0.748(180□l/ml), 0.682(164□l/ml), 0.663(162□l/ml). The control strain Propionibacterium freudenreichii yieleded 4.63mg/ml of vitamin B12. The result of HPLC with isolate SA-13 was negative for the production of Vitamin B12 due to improper imbalance of propionic acid concentration or inadequate cobalt in the medium. Hence concentration of cobalt in the substrate has to be standardized.

Keywords: Vitamin B12, Sago waste, Pseudomonas denitrificans.

EXPLORING ATTITUDES TOWARDS GENETICALLY MODIFIED CROPS IN INDIA: A SURVEY

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The production of genetically modified (GM) crops in India varies from year to year depending on a number of factors such as weather, pest infestation, and demand. However, it is important to note that the cultivation of some GM crops, such as Bt cotton, has been widely adopted in India over the past two decades. According to data from the International Service for the Acquisition of Agri-biotech Applications (ISAAA), in 2020, India planted approximately 7.5 million hectares of biotech crops. This represented a slight decrease from the previous year, which saw the planting of 7.6 million hectares of biotech crops in India. It is also worth noting that India is one of the top five countries in the world in terms of biotech crop cultivation, along with the United States, Brazil, Argentina, and Canada. While the use of GM crops in India remains controversial, proponents argue that they can help increase productivity and reduce the use of pesticides, while opponents have raised concerns about their potential impact on human health and the environment. This survey aims to gather information and opinions about Genetically Modified (GM) crops from a diverse range of individuals. GM crops have been developed to improve yield, reduce pesticide use, and enhance nutritional value, but there is still much debate about their safety and potential impact on the environment. Through this survey, we hope to better understand public perception and knowledge of GM crops, as well as attitudes towards their regulation and use. The findings from this survey can help inform policy decisions and further research on the development and adoption of GM crops.

Keywords: GM crops, survey, nutritional value, public perception, environment, human health

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Key words: GM crops, survey, nutritional value, public perception, environment, human health

STUDIES ON THE SOIL MYCOFLORA OF BEACHES OF TOURIST IMPORTANCE

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Different soil samples were collected from different beaches-Mahabalipuram, MGM, VGP, ECR- in order to examine fungal strains in the soil. These locations are known to have Tourist Importance. The fungal species are known to cause certain skin infections in people. The soil samples are diluted in a liquid medium. The liquid medium used here Is Potato Dextrose Agar. The soil samples are further analyzed to know more about fungal diversity.

Keywords: Soil, Mahabalipuram, Kovalam, MGM, VGP, ECR, Skin infection, PDA

ISOLATION OF PHOSPHATE-SOLUBILIZING BACTERIA AND ITS APPLICATION

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Phosphate-solubilizing bacteria (PSB) are microorganisms that can convert insoluble phosphorus compounds in soil to soluble forms, making them available to plants. Isolating and applying PSB in agricultural systems can enhance plant growth, reduce the need for chemical fertilizers, and improve soil fertility. Collected soil samples from different locations such as agricultural fields, forests, or grasslands. Dilution of soil samples: Dilute the soil samples in sterile distilled water to obtain different dilutions. Plating on selective media: Plate the diluted samples on selective media such as National Botanical Research Institute's Phosphate (NBRIP) agar, Pikovskaya's agar, or Tris-buffered Pikovskaya's agar. Incubate the plates at appropriate temperature and time. Selection of PSB colonies: Select colonies with clear halo zones around them as they indicate phosphate solubilization. Purification: Pick up a single colony and streak it on fresh selective media to obtain pure cultures. Characterization: Characterize the PSB isolates by testing their morphological, biochemical, and molecular properties. Inoculum preparation: Grow the pure PSB culture in a suitable nutrient medium. Multiplication of inoculum: Multiply the PSB culture in large quantities by transferring it to larger volumes of nutrient media. Apply the PSB inoculum to the soil through irrigation, soil drenching, or seed treatment.

Keywords: Phosphate-Solubilizing Bacteria, PSB, Isolation, Selective Media, Incubation, Characterization, Inoculum, Application, Plant Growth, Soil Fertility.

SCREENING OF KOJIC ACID PRODUCING FUNGI ISOLATED FROM KODUNGAIYUR GARBAGE DUMPING YARD

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Kojic acid, which is an organic acid, is produced biologically by different types of fungi during aerobic fermentation using various substrates. The name 'kojic acid' was derived from "Koji", the fungus starter or inoculum used in oriental food fermentations for many centuries. Kojic acid (KA) is a fungal secondary metabolite used as a topical treatment skin-whitening cosmetic agent in humans. Totally five soil samples were collected from the Kodungaiyur garbage dumping yard. Soil sample were serially diluted and spread plate method was done on Potato dextrose agar plate. Five morphologically different fungi were isolated and maintained as a pure culture. The microscopically identification of Fungi by Cover slip culture technique was done and KF1 - Aspergillus nidulans, KF2 -Aspergillus terreus, KF3 - Aspergillus fumigatus, KF4 - Aspergillus niger, KF5 -Aspergillus flavus. The fungal culture was inoculated in Initial fermentation Agar plate to get a spore then transfer into YES broth after 2 days 5 ml was added to Initial fermentation broth to obtain a spore ball formation of fungi. Kojic Acid screening was done by adding 1% Fecl3 into 200µl of fungus broth. The strong Red colour was formed in KF 5 Aspergillus flavus.

KeyWords: Kojic Acid, Aspergillus, Kodungaiyur garbage, Fungi

PHYTOCHEMICAL DETECTION OF ROOT SAMPLES OF PUNICA GRANATUM, FICUS MORACEAE COLLECTED FROM BOTH URBAN AND RURAL AREAS

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Abstract: Plants are found in the pharmaceutical business for their wide degree of pharmacological exercises, These phytochemicals are derived from different bits of plants like leaves, blossoms, seeds, barks, roots and pulps. Compared to the region quality of the sample may differ due to active pollutants that causes quality to the secondary metabolites. Wide variety of phytochemical constituents used in traditional medicine as remedies for various ailments that can be helpful for many unknown disease, Samples chosen for this study are Roots of Punica granatum. L (PG) commonly known as pomegranate and Ficus moraceae L, commonly known as Fig, both these plants has numerous biological, anti-oxidant, anti-inflammatory properties, samples of these trees are collected from Rural and Urban areas. The difference in their active phyto compounds are inferred with solvent extractions like petroleum ether, chloroform, Ethanol, Methanol and Aqueous by using standard analysis methods. In this study Methanol has showed the better activity compared to other solvent extracts.

Key words: Phytochemical analysis, Different solvents, Punica granatum, Ficus moraceae,

"ANTIMICROBIAL POTENTIAL OF PHYLLANTHUS EMBLICA: A REVIEW OF CURRENT LITERATURE"

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Phyllanthus emblica, commonly known as Indian gooseberry or amla, is a fruit-bearing tree native to the Indian subcontinent. It has been used for centuries in traditional medicine for its numerous health benefits, including its antimicrobial properties. In recent years, there has been a growing interest in the potential of Phyllanthus emblica as a natural alternative to antibiotics, particularly in the face of increasing antibiotic resistance. This review provides an overview of the available literature on the antimicrobial activity of Phyllanthus emblica, with a focus on its potential as a therapeutic agent. Studies have shown that Phyllanthus emblica exhibits significant antimicrobial activity against a wide range of microorganisms, including bacteria, fungi, and viruses. The mechanisms by which Phyllanthus emblica exerts its antimicrobial effects have also been investigated. The antibacterial activity of Phyllanthus emblica may be due to its ability to disrupt bacterial cell wall synthesis and alter membrane permeability, while the antifungal activity may be attributed to its ability to inhibit ergosterol synthesis and disrupt fungal cell membranes. The antiviral activity of Phyllanthus emblica has been shown to be mediated by its ability to interfere with viral replication and infectivity. Further research is required to determine the safety and efficacy of Phyllanthus emblica in clinical settings, as well as to identify the active compounds responsible for its antimicrobial activity. Nonetheless, the findings of this review support the potential of Phyllanthus emblica as a therapeutic agent with significant antimicrobial activity.

Key Words: Phyllanthus emblica, Phytochemical, Antimicrobial activity

A JOURNEY OF AMF FROM COMMERCIAL ROC MANUFACTURER TO ITS NATIVE ORIGIN: FROM THE PERSPECTIVE OF A MANUFACTURER

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It is well-established that arbuscular mycorrhizal fungus, also referred to as AMF, is the most advantageous microorganism for the sustainable management of the environment in this era of ever-increasing population across the globe. It is only when the concentration of AMF in the soil is increased that it will be possible to completely take advantage of the benefits that this microorganism provides. Among all methods, mass-cultivation by Root organ culture (ROC) technique is the most cost-effective and viable technology for creating sterile, high-concentration propagules. From the time it is first multiplied until the time it is applied to the field or soil by the end user, this microorganism must overcome a great number of obstacles to be successful. Like any other manufacturing unit, the crucial aspect is to finding ways to cut costs while simultaneously maintaining or upgrading the product quality. In the same vein, the aforementioned aspects can be addressed by taking into account the pricing of the chemical components of the medium, its physico-chemical properties, the procedures, incubation conditions and processing equipment at various stages of production. This study is one of the foremost and most comprehensive ones that have ever been done on the subject of tracing the journey from the mass production of AMF to its application in the field.

Keywords: Arbuscular Mycorrhizal Fungus (AMF), Root organ culture (ROC), mass-multiplication

A PRELIMINARY INVESTIGATION ON COMPARISON OF PHYTOCHEMISTRY AND ANTIOXIDANT POTENCY OF BIOSOOT AND BIOASH OF RICINUS COMMUNIS

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Biosoot is defined as a soot emanating from burning of any biological material be it an animal or a plant origin. The remnants are termed as Bioash. In this investigation, the difference in phytochemical constituents and their difference in antioxidant potency were evaluated. The presence of phytocompounds like Tannins, Flavonoids, Terpenoids, Cardiac Glycosides, Steroids, Saponins, Phlobatannins and Coumarins were detected in both Biosoot and Bioash of the leaves of Ricinus communis. Ricinus communis is generally considered as a common weed but having economical and medical advantage too. Further, the antioxidant potency of both Biosoot and Bioash were evaluated using DPPH scavenging activity. The results will be discussed.

Keywords: Biosoot, Bioash, Phytocompounds, Antioxidant potency, Ricinus communis

RECOMBINANT ANTIBODY DEVELOPMENT AGAINST SHRIMP WSSV VIRUS

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Shrimp white spot disease (WSD), which is caused by white spot syndrome virus (WSSV), is one of the world's most serious shrimp diseases. Our objective in this study was to use recombinant antibodies, to develop Immunochromatographic assay with highly sensitive, easy WSSV detection platform targeted against ICP11, VP28, VP19 and comparison of all three antigens. The gene encoding the VP28, VP19 envelope protein and ICP11 DNA mimic protein of White spot syndrome virus (WSSV) was cloned into expression vector pET-30a and transformed into the Escherichia coli strain BL21. Conventional methods for recombinant expression of whole antibodies of interest typically require the establishment of cell lines derived from CHO, mouse myeloma, or PER.C6 cells. This tends to be a lengthy, low efficiency process involving extensive selection and screening and is consequently unfavourable for expressing large numbers of antibodies for functional studies, as may be required after generating a variable gene library. Matched Ig heavy- and light-chain V-regions of desired specificity have been amplified from single B cell derived cDNA and linked to the desired Ig constant (C) region in separate vectors encoding either the heavy- or light-chain DNA. Transient transfection of these vectors in mammalian HEK293 cells has enabled the rapid production of recombinant mAbs

Key words: White spot syndrome virus (WSSV); Recombinant VP28; Recombinant ICP11; recombinant mAbs

ISOLATION AND IDENTIFICATION OF BIOACTIVE COMPOUNDS ISOLATED FROM AN EDIBLE MUSHROOM LENTINUS TUBERREGIUM (FR.).

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Lentinus tuberregium an edible mushroom, collected from dead logs of rubber trees and mango trees of Keeriparai forest, Kanniyakumari District of Western Ghats of Tamil Nadu, India. Kaani tribes lives in the forest, attributes many medicinal properties to this fungus. However, there are no studies were carried out on this indigenous L. tuberregium. From the fruitbodies harvested two medically important steroids have been isolated and identified as antimicrobial compounds which exhibited considerable zone of inhibition against all the test organisms. The compounds also exhibited a moderate anticancer activity in four human cancer cell lines including ovarian (SK-OV-3), breast (MCF-7) and colorectal carcinoma (HCT-116) cell lines. Furthermore, these compounds were characterized and named as LT-1 and LT-2, based on the spectroscopic data derived by employing 1H NMR, 13C NMR, DEPT, APT and IR. Presence of these compounds in this indigenous isolate is reported for the first time and we have received the patenting acceptance for this study.

Keywords: Cultivation, Lentinus tuberregium, Anticancer, Antimicrobial, LT-1 and LT-2.

ISOLATION OF PECTIN & VALUE ADDED PRODUCTS FROM DIFFERENT FRUIT PEELS

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Fruit waste has become one of the main source of the municipal solid wastes, which have been an increasingly tough environment issue. Extraction of pectin from mixed fruit peel. Pectin is one of the most extensively studied natural biodegradable polymers. The potential of fruit waste is not only limited to the product of value added products but could also be utilized in generating bioactive compounds like antioxidant and anticancer. Fruit waste is general and the mixed fruit peels they are Apple peel, orange peel, gooseberry peel, citrus peel and banana peel from the production of pectin which is used in number of ways viz. Jam preparation, filling the agents in pharmaceutical industry, as thicker, etc.

Keywords: Fruit peel waste, pectin, value added products.

IDENTIFICATION OF BIOFILM AND EXTENDED SPECTRUM LACTAMASES (ESBL) PRODUCING ISOLATE OF KLEBSIELLA PNEUMONIA FROM TAMILNADU

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Prevention of food-borne illness is an important public health concern worldwide. Consumption of raw or undercooked unhygienic meat and eggs linked to health risk to individuals with compromised immune system. In the recent years, multi drug resistant Escherichia coli and Klebsiella pneumoniae strains pose a great threat to many countries. The aim of the present study is to evaluate the presence of drug resistant K. pneumonia from local meat chains. Chicken, beef, goat tissue samples from small scale abattoir and commercially available processed meat sausages were tested for the presence of multi drug resistant K. pneumonia. Among the tested meat samples, highest occurrence of β-lactamase producing K. pneumonia was observed in goat meat sample (70%), bovine (60%) and chicken (10%). The prevalence of extended-spectrum β-lactamase genes identified by the amplification of SHV, TEM, CTXm and OXA specific primers by PCR. TEM type was observed in all meat isolates having strong or medium bio film production, followed by CTXm. Antibiotic resistance was found to be more in goat isolates with 68.5%, followed bovine isolates with 56.6% and chicken isolates with 46%. In our study, the strong biofilm producing individual isolates (41%) had at least three of the ESBL genes with higher percentage of antibiotic resistance (>70%) than weak or moderate biofilm producing isolates.

THE EFFECT OF LOW LEVELS OF HAEMOGLOBIN ON CHILDREN IN INDIA

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Iron deficiency is one of the most frequent cause of anemia, which can be caused due to insufficient intake of iron from food. Iron deficiency anemia is a major public health issue in developing countries such as India. The US Centre for Disease Control and Prevention has classified a high blood lead level in children as 10 g/dl. The connection between anemia in Indian children under the age of three and lead levels as low as 10g/dl. Hemoglobin levels of 10 to 10.9% g/dl were considered mild anemia, 8 to 9 g/dl were considered moderate anemia, and less than 8 g/dl were considered severe anemia. 568 children (53%), 413(38%) and 97(9%), respectively had lead levels between 10 and 19.9 g/dl and greater than 20g/dl. Children with lead levels 10 g/dl were 1.3 (95% confidence interval: 1.0, 1.7) times more likely to have moderate anemia than children with lead levels 10 g/dl after controlling for the child's age, length of breastfeeding, the standard of living, parent's education, father's occupation, maternal anemia, and number of children in the immediate family. The odds ratio for severe anemia was 1.7 as well. Indian health organizations should take note of the link between high blood lead levels and anemia and increase their efforts to reduce lead pollution and pediatric anemia.

Keywords: Iron deficiency anemia , haemoglobin, pediatric anemia

DOCKING STUDIES ON THE INTERACTION OF FE(III) AND ZN(II) COMPLEXES OF LAWSONE DERIVATIVE WITH BIO-MACROMOLECULES

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The metal (II) complexes containing naphthoquinone based ligand were synthesized and characterized using various techniques. Octahedral geometry was proposed to the Fe(III) complexes and the Zn(II) complex endure tetrahedral structure. Several spectral techniques such as UV-Vis, steady state fluorescence and circular dichroism were employed to study the mechanism of interaction of these compounds with carrier protein BSA. Electronic and fluorescence titration suggested that these compounds form complex with BSA, consequence of which altered the conformation of the protein molecule. Fluorescence quenching experiments of BSA confirmed the binding ability of the complexes and that the mode of binding is static. Complexation of these compounds with BSA was found to increase the α-helical content of the protein molecule. The distance between BSA and the compounds, during the interaction, is observed to be less than 7 nm, suggesting that the energy transfer from BSA to the metal complexes occurs with a good probability. The mode of binding of these compounds with BSA was delineated using molecular docking studies. The DNA binding affinities of the complexes were valuated using spectrophotometric methods. The results supported the interaction of the complexes with CT DNA through intercalation. Fe(III) complexes had better DNA binding ability compared to Zn(II) complex. The molecular docking results for the interaction of the complex and free ligand with DNA were in agreement with the conclusions drawn from the experimental results.

EFFICIENCY OF CALOTROPIS GIGANTEA AGAINST THE COMMON SOIL BACTERIA

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Calotropis gigantea is the toxic plant that engorged the most Asian countries including India. Although, it is poisonous, it has the potential to act as medical herb and has a therapeutic value. The common problems like toothache, diarrhoea, earache, anxiety, sprain, pain, epilepsy, and mental disorders were treated by the tribal people. Calotropis gigantea is easily available in most agricultural and non-agricultural fields and the usage of this plant for the medicinal purpose was reported by several researchers. The ability of Calotropis gigantea against common soil pathogens helps in understanding its efficiency in the microbial world. The ethyl acetate extract of this plant showed a significant antimicrobial effect against most of the pathogenic organisms. The antimicrobial potential of Calotropis gigantea against a wide range of microorganisms was studied. Invitro antimicrobial activity was performed by Agar well diffusion method in MH agar. Different bioactive compounds present in the leaf extract of Calotropis gigantea indicates the antimicrobial property against soil bacteria. The current study was concentrated to investigate the antibacterial activity of the crude leaf extract of Calotropis gigantea against agricultural isolates of bacteria for 48hrs.

Keywords: Antibacterial, Calotropis gigantean, Agar Well diffusion method, pathogens, bioactive compounds

SYNTHESIS AND CHARACTERIZATION OF FUNCTIONALIZED HCNT IN CONSTRUCTION AND BUILIDING MATERIALS

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Carbon Nanotubes (CNTs) are most advancing nanomaterial in the field of civil engineering. CNTs are a primary nonmaterial that have outstanding physical and mechanical characteristics, and can be combined with cement-based materials to alter their heating characteristics. Progress in the field of helical multiwalled carbon nanotubes (hMWCNTs) presents a potential opportunity to enhance the physical, mechanical, and electrical properties of cement composites. The advantages of CNTs are: to remove space in composite (main reason for cracking in wall) and to improve the strength of the materials. Dispersion of HMWCNT with cement paste obtains excellent mechanical and electrical properties. The commonly used method for synthesize of hMWCNTs is Chemical vapor deposition (CVD) method. Other techniques used for the synthesis of CNTs are arc method, laser ablation method, radio frequency chemical vapour method, electro chemical method. The functionalized product is characterized by X-Ray Diffraction (XRD), Filed emission scanning electron microscopy (FESEM), TEM, Raman spectroscopy to determine the physical, chemical state, surface morphology and particle properties. CNTs can be mixed with cement composite in predefined proportion and analysed for mechanical & electrical properties, dispersion, workability, curing age and compressive strength test. This simple and economical method can pay a path in application of nanotechnology in emerging field of construction.

Key words: CNTs, Cement composite, cracking, CVD

SYNTHESIS OF METAL BASED BENZILIC ACID COMPOUND AND ITS BIOLGICAL ACTIVITY

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Benzylic acid is a standard building block in organic synthesis. It is used in the preparation of quite a few pharmaceuticals such as anodyne, cosmetic drugs, spasmolytics and anti-inflammatory. Benzilic acids are compounds belonging to aromatic α-hydroxy carboxylic acid, a class of chemical compounds that consist of a carboxylic acid substituted with a hydroxyl group on the α-carbon. Due to the effective treatment in skin disorder and shows various biological activity we have selected benzilic acid for our research Benzilic acid derivatives structurally related to benadryl and trasentin. The metal complex compound was synthesised. The newly synthesised compound was subjected to anti bacterial acitivity.

KEYWORDS: Synthesis,Characterisation, Biological activity

ELECTROCATALYTIC BIODEGRADATION OF TEXTILE DYE EFFLUENT

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The waste discharged from a textile industry, contains large quantities of pollutants like organic dyes and solvents which imparts high COD level to the effluent. The waste water with higher amount of organic load cannot be discharged into the environment as such it need proper treatment to reduce the pollution level prescribed by the concerned pollution control board. In the present study the waste water is collected from a particular textile industry and the various physic chemical examinations will be conducted to know its pollution load. The raw effluent may contain 48,000mg/l of COD. Initially the effluent will be treated with electrochemical processes like electro oxidation or electrocoagulation for one hour, after that the partially treated effluent will be subjected to biological treatment processes, since the hybrid technology may give the improved treatment efficiency with low power consumption. The organic molecules are complexed structured that's why Biological process alone will not work for this type of effluents. While we are giving one hour electrochemical treatment, it can break the complexed organic molecules into simplest molecules which can be easily taken up by the biological species.

Key words: Textile dye effluent, COD, electro coagulation, bio degradation

GREEN SYNTHESIZED COPPER NANOPARTICLES: A PROMISING APPROACH FOR EFFICIENT DYE DEGRADATION

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The growing textile industry has led to a significant increase in the discharge of dye-containing wastewater, which can cause severe environmental problems. To address this issue, the development of cost-effective and eco-friendly methods for dye degradation is crucial. In recent years, the green synthesis of copper nanoparticles (CuNPs) has gained attention as a promising approach for the degradation of dyes due to its eco-friendliness, low cost, and high efficiency. This study highlights the importance of green synthesized CuNPs in dye degradation. CuNPs were synthesized using a green approach, utilizing fruit peel extract as a reducing and capping agent. The synthesized CuNPs were characterized using various spectroscopic techniques and were found to be stable and of a small particle size range. The CuNPs were then evaluated for their efficiency in degrading methylene blue (MB) dye. The results showed that the synthesized CuNPs effectively degraded MB within a short time and under optimized conditions. The CuNPs also exhibited good stability and reusability for multiple cycles of dye degradation. Overall, this study demonstrates the potential of green synthesized CuNPs as an eco-friendly and cost-effective approach for efficient dye degradation. This approach can be scaled up for industrial applications and has the potential to contribute to sustainable wastewater treatment.

Key words: Green synthesis, copper nanoparticles, dye degradation, eco-friendliness, fruit peel extract, methylene blue

BIMETALLIC NANOPARTICLES INCORPORATED WITH GRAPHENE OXIDE AS AN EXCELLENT ABSORBENT IN THE REMOVAL OF METHYLENE BLUE

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This article describes the preparation, characterization and Kinetics of bimetallic alloy nanoparticles of GO-Ni-Cu NPs. The main objective of this review is to quantitatively, and comprehensively describe the synthesis of bimetallic nanoparticles, and characterization. The kinetic studies were carried out as a function of different variables like pH, and temperature on rate of decolorization. The activation energy in presence of Go- Ni(II) and Go-Cu(II) is lower than in its Go-Ni-Cu. The reaction to be [H+] because the first order in both [MB+] and reductant. The rate was found to increase linearly with temperature. The rate of decolorization decreased after the addition of Ni(II), but increased after the addition of Cu(II). The decrease in the activation energy(Ea) in presence of these transition metal ions confirms their catalytic effects (metal activation). Cu–Ni BNP implant to the graphene oxide surface and it increases the catalytic activity and also dispersion capacity.

Keywords: Nickel, Copper, Nanoparticles, Methylene Blue, Graphene oxide, Activation energy

SYNTHESIS AND CHARACTERIZATION OF ADVANCED ELECTRODE MATERIALS FOR SECONDARY RECHARGEABLE BATTERIES

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Lithium-ion batteries (or rechargeable lithium batteries) are most advanced battery technology for modern portable electronics such as mobile phones, notebook computers and camcorders. There are also big potentials for lithium-ion batteries to be used for electric vehicles (EVs), hybrid electric vehicles (HEVs) and stationary power storage. Li-ion batteries consist of lithium metal oxides in the positive electrode, where lithium ions can be stored, and carbon in the negative electrode. The electrolyte used is lithium salts dissolved in organic carbonates. Lithium-ion batteries operate via the transfer of lithium ions in two phases. During charging, lithium ions pass from the positive to the negative electrode, while the opposite occurs during discharging. Li-ion batteries do not require temperature monitoring to ensure effective operation. The secondary batteries represent an excellent choice for portable electronic devices with a commercial status; the technology is for improvement in terms of energy density, power density, reliability and safety. Unfortunately, the consumption of graphite (theoretical capacity = 372 mAh g-1) is not sufficient to satisfy the current generation energy needs and experiencing poor rate capability, limited practical capacity, and Li-dendrite formation. In the present study an attempt will be made to synthesis and electrochemical properties of active anode/cathode material in different ratio for lithium/sodium-ion batteries prepared by hydrothermal reactor, co-precipitation, chemical reduction methods etc. The prepared electrodes will be subjected to X-Ray diffraction analysis (XRD), Field emission scanning electron microscopy (FESEM) with Energy-dispersive X-ray spectroscopy (EDX), X-ray photoelectron spectroscopy (XPS), Transmission electron microscopy (TEM), Raman spectroscopy and Thermogravimetric analysis (TGA). Also cells will be assembled and electrochemical studies via cyclic voltammetry (CV), electrochemical impedance spectroscopy (EIS), charge–discharge with high rate capability and cyclic life evaluation results with more than 100 cycles will be proposed.

Keywords: Rechargeable batteries, Electrode, Morphology, and Charge – discharge.

BIMETALLIC NANOPARTICLES INCORPORATED WITH REDUCED GRAPHENE OXIDE AND ITS APPLICATION IN DYE DEGRADATION

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Nanotechnology should not be viewed as a single technique that only affects specific areas. Although often referred to as the 'tiny science', nanotechnology does not simply mean very small structures and products. Nanoscale features are often incorporated into bulk materials and large surfaces.In this article describe the preparation and characterization of bimetallic alloy nanoparticles of graphene oxide supported mono metals like Mo and Ba , bimetallic likes Mo-Ni nanoparticles catalyst were synthesized. The size and shape of the products were characterized by various techniques such as : Fourier Transform Infrared Spectroscopy (FTIR), x-ray diffraction spectroscopy (XRD),UV spectra analyses and antibacterial activities were analysed. Results proved that the newly developed graphene oxide supported bimetallic nanoparticles catalysts can be more efficient to reductive, oxidative and of environmentally important organic pollutant additionally it is also very good biologically active compound.

KEYWORDS: Molybdenum, Barium Nanoparticles,MethlyenBlue,Grapheneoxide,Activation energy

SYNTHESIS, MAGNETIC, AC CONDUCTIVITY AND DIELECTRIC PROPERTIES OF HEMATITE NANOCRYSTALLITES

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We are reporting the synthesis along with magnetic, ac conductivity and dielectric properties of hematite nanocrystallites. The prepared Fe_2O_3 is crystallizing in corundum structure which belongs to the rhombohedron system with the space group R3-c. The magnetization data shows a typical Morin transition, TN = 265 K for 110 nm crystallites, whereas this transition is decreasing with decrease in crystallite size, TN = 252 K for 33 nm. The value of magnetization is increased with increasing crystallite size. The enhanced dielectric permittivity and ac conductivity were observed in higher hematite crystallite size. The overall dielectric response has revealed conduction mechanism is due to the extrinsic contribution from the dominant Maxwell-Wagner polarization.

MODELLING BIOLOGICAL ACTIVITIES OF NANOPARTICLES

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Products are increasingly incorporating nanomaterials, but we have a poor understanding of their adverse effects. To assess risk, regulatory authorities need more experimental testing of nanoparticles. Computational models play a complementary role in allowing rapid prediction of potential toxicities of new and modified nanomaterials. We generated quantitative, predictive models of cellular uptake and apoptosis induced by nanoparticles for several cell types. We illustrate the potential of computational methods to make a contribution to nanosafety.

Nanoparticles, antibacterial, antifungal

ELECTROSPUN POLYMERIC NANOFIBERS IN ENERGY APPLICATIONS

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Electrospinning is the most established and widely used method because of its simplicity, scalability, and the production of continuous fibers which are widely used in energy storage devices. In this study, the electrospun ionic liquid 1-Butyl-3-Methylimmidazolium chloride [BMIM] Cl (green solvent) incorporated with Polyvinylpyrrolidone [PVP] to make a continuous nanofiber. The ionic liquid incorporated polymer fiber exihibit high thermal stability, high tensile strength, more ionic conductivity and high hydrophilicity in nature. The [BMIM]Cl incorporated PVP nanofiber is characterised by FT IR, XRD and XPS spectroscopic studies. The morphology of fiber is observed by SEM, the chemical composition is observed by EDAX and also the mechanical and electrochemical measurements are done. On the basis of these promising results, the electrospun fiber membranes could find practical applications in advanced lithium batteries.

Key words: Electrospinning, Ionic liquids, Polyvinylpyrrolidone, Batteries.

NOVEL SITU SYNTHESIS OF MOLYBDENUM-COBALT NANOPARTICLES SUPPORTED ON REDUCED GRAPHENE OXIDE AND ITS APPLICATION IN DYE DEGRADATION

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Nanotechnology is the science of the small; the very small. It is the use and manipulation of matter at a tiny scale. At this size, atoms and molecules work differently, and provide a variety of surprising and interesting uses. Nanotechnology and Nanoscience studies have emerged rapidly during the past years in a broad range of product domains. It provides opportunities for the development of materials, including those for medical applications, where conventional techniques may reach their limits.In this article describe the preparation and characterization of bimetallic alloy nanoparticles of graphene oxide supported mono metals like Mo, Co, and a bimetallic likes Mo/Co nanoparticles catalyst were synthesized. The size and shape of the products were characterized by various techniques such as : x-ray diffraction spectroscopy (XRD),UV spectra analyses,Fourier Transform Spectroscopy (FTIR) and antibacterial activities were analysed. Results proved that the newly developed graphene oxide supported bimetallic nanoparticles catalysts can be more efficient to reductive, oxidative and of environmentally important organic pollutant additionally it is also very good biologically active compound.

KEYWORDS: Molybdenum,Cobalt Nanoparticles,MethlyenBlue,Grapheneoxide,Activation energy

SYNTHESIS AND CHARACTERIZATION OF CARBON QUANTUM DOTS AND NITROGEN CARBON QUANTUM DOTS FROM NATURAL BIO-WASTE FOR BIOLOGICAL APPLICATIONS

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A number of applications for carbon quantum dots and nitrogen-doped carbon quantum dots (N-CQDs) offer considerable potential. N-CQDs with strong fluorescence and distinctive optical properties are still in their early stages of development. Here, we present a facile and environmentally friendly method for producing flexible N-CQDs using a hydrothermal technique from natural biowaste. Various analyses, including X-ray diffraction patterns (XRD), energy dispersive X-ray analyses (EDAX), and Fourier-transform infrared spectroscopy were utilised to approve the synthesis of the quantum dots (FT-IR). Transmission electron microscopy (TEM) and scanning electron microscopy (SEM) pictures were used to examine the product's morphology. AFM was also used to examine the surface topography, and it was discovered that the product contains uniformly small and tiny particles. This strategy had significant implications for achieving low-cost, on-site real-time monitoring of Nitrogen doped carbon dots in the environment and food. The overall study offers highly bio compatible carbon quantum dots and N-doped carbon quantum dots, which may be considered as an attractive material for future biomedical applications.

Keywords : Biowaste, Carbon Quantum Dots, Green Synthesis, N-CQDs

COPPER-NICKEL NANOPARTICLES INCORPORATED WITH REDUCED GRAPHENE OXIDE AND ITS APPLICATION IN DYE DEGRADATION

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Nanoparticles have expressed significant advances owing to wide range of application in the field of bio-medical, sensors, antimicrobials, catalysts, electronic optical fibers, agricultural, bio-labeling and in other areas. Synthesis and characterization of nanoparticles is an important area of research as selection of size and shape of nanoparticles provide an effect control over may of the physical and chemical properties. In this article describe the preparation and characterization of bimetallic alloy nanoparticles of graphene oxide supported mono metals like Co,Ni and a bimetallic likes Co/Ni nanoparticles catalyst were synthesized. The size and shape of the products were characterized by various techniques such as : Fourier Transform Infrared Spectroscopy (FTIR), x-ray diffraction spectroscopy (XRD),UV spectra analyses and antibacterial activities were analysed. Results proved that the newly developed graphene oxide supported bimetallic nanoparticles catalysts can be more efficient to reductive, oxidative and of environmentally important organic pollutant additionally it is also very good biologically active compound.

KEYWORDS:,Cobalt,Nickel Nanoparticles,MethlyenBlue,Grapheneoxide,Activation energy

GREEN SYNTHESIS OF COPPER OXIDE NANOPARTICLES FROM THE PEEL EXTRACT OF CUCUMIS MELO AND ITS ANTIMICROBIAL ACTIVITY

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Phyto-synthesis of copper oxide nanoparticles (NPs) was achieved using the peel extract of Cucumis melo and characterized by various spectroscopic techniques. FT-IR spectroscopy confirmed the functional groups involved in the green synthesis of NPs. Phytochemical analysis revealed presence of various biochemical compounds in the extract which itself served as reducing and capping agents to obtain copper oxide NPs. XRD pattern revealed the crystalline nature of synthesized copper oxide NPs. SEM analysis revealed layered needle shape with an average particle size of 25 nm.

Key words: Nanoparticles, copper oxide, Peel extract

MICROWAVE ASSISTED ONE POT SEQUENTIAL FIVE COMPONENT REACTION THROUGH DIPOLAR CYCLOADDITION REACTIONS

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Synthesis of novel pharmacological agents with minimum number of steps and less time is a major challenge for chemists. In general, the conventional approach involves the use of multistep reaction sequences which are typically associated with low yields, high cost and tedious isolation and purification of the resulting products. However, multicomponent reactions (MCRs) offer a valuable solution for such a situation. and it facilitates the assembly of three or more starting materials together in a single operation with high bond-forming efficiency and atom economy, thereby enhancing the structural diversity and molecular complexity in a rapid manner paving the way for the synthesis of complex heterocyclic compounds. One of the major challenges chemists face is to develop new transformations that are not only efficient, selective and high yielding but also environmentally benign. In this regard ionic liquids are emerging as a set of new green solvents to replace the volatile organic solvents they are ecological, economical, non-volatile and offer new robust chemical and physical properties, such as high thermal and chemical stability, very low to negligible vapour pressure, good solvating ability, non-coordinating nature and the ease of recyclability. In recent years, ionic liquids have attracted increasing interest as recyclable solvents, catalysts and reagents owing to their green credentials and tunable properties.

BOROPHANE-GRAPHENE BASED COMPOSITE ANODE FOR LITHIUM-ION BATTERIES AND BOROPHANE – CARBON COMPOSITES AS ENERGY STORAGE DEVICES.

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The outstanding mechanical and electronic properties of borophane make it an ideal candidate for nanoelectronics applications, In addition, higher Li loading amount (Li0.445B2H2) with theoretical capacity as high as 504 mAh/g consistent to the theoretical binding energy analysis of lithium adatoms on borophane, makes it a potential anode candidate for lithium-ion batteries. However, volume expansion is quite inevitable in these types of materials, thus hampering its application aspect in Li-ion battery anodes. Also, to the best of our knowledge, no experimental investigation has been made in exploring it as an anode for energy storage applications. In the present study, novel borophane-graphene composite have been synthesized by tuning the interface chemistry between the borophane and oxygenated derivative of graphene (i.e.) graphene oxide and subsequently used it as an anode material for Li-ion batteries. Synthesis of borophane-graphene composite involves two steps with the first step being the synthesis of borophane from magnesium boride followed by the hydroboration reaction on graphene oxide sheets generating borophane-graphene composites. Successful synthesis of borophane-graphene composites has been corroborated using various characterization tools Electrochemical characterization of Lithium ion half cells fabricated using borophane-graphene composite anode delivers a first discharge capacity of 627 mAhg-1, thus ensuring it as a good anode candidate for lithium-ion batteries. Carbon composites like Carbon dots, Carbon Nano Tubes were composed with Borophane for the Energy storage devices through hydrothermal synthesis and Microwave treatment.

Keywords: Borophane, graphene, Interfacial chemistry, Specific capacity, lithium-ion batteries.

SYNTHESIS AND CHARACTERIZATION OF ZINC OXIDE NANOPARTICLES BY GREEN SYNTHESIS AND ITS BIOLOGICAL APPLICATIONS

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The aim of the present work is to biologically synthesize zinc particles from zinc sulphate using negundovitex leaves from extract and to study the biological applications. The negundovitex leaves and blaknegundovitex from various regions of servarayan hills. The crude extract was prepared from the leaves using aqueous and alcoholic system using hydrothermal method. The zinc oxide nano particles using the plant extract as oxidizing agent was prepared. The synthesized zinc oxide nano particles were harvested and stored for further studies. Various physic chemical characterization was done using XED, TEM. FTIR The antifungal and antibacterial and anti cancer activities of the synthesized nano materials have been studied. It is revealed from the study the synthesized zinc oxide nano materials could be effectively used as anti fungal, antibacterial and anti cancer agent.

Key words: Nano Particles, negundovitex, hydro Thermal synthesis, leaves extract

STUDY ON BIOFILM FORMATION AND EFFLUX PUMP IN MULTI DRUG RESISTANT BACTERIAL PATHOGENS.

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Klebsiella pneumoniae and Acinetobacter baumannii were important opportunistic human pathogens that causes a variety of infections as ventilator-associated pneumonia, meningitis, bacteremia, wound and soft-tissue infections, peritonitis and urinary tract infections. Nosocomial infections and persistence of multidrug resistant, biofilm-forming Acinetobacter baumannii in hospitals has made it as a serious problem in healthcare settings worldwide. One of the important factors contributing in chronic and persistence infections and antimicrobial resistance of Klebsiella pneumoniae and A. baumannii is its capability to colonize and form biofilms on biotic and abiotic surfaces. In this study, biofilm formation among both the bacterial pathogen was analyzed and correlated with the presence of efflux pumps among the isolates. The genes for virulence and drug resistance were detected using specific primers by conventional PCR and were found to be associated with biofilm production. Biofilm production in clinical pathogens helps evade immune reaction and antimicrobial agents leads to chronic infections. The intensity of biofilm production in multidrug resistant bacterial pathogens could be associated with their virulence. The study is significant and of global importance since biofilm production among pathogens is considered as one of major threats to human health and environment.

Keywords: community pathogen, nosocomial infection, antimicrobial resistance, biofilm and efflux pump

EFFECT OF BACTERIAL CONSORTIUM FOR IMPROVING GROWTH AND YIELD OF VEGETABLES CROPS

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The plant growth system was mainly depend upon the macronutrients such as Phosphorus, Nitrogen, Potassium. The metabolism of the plant are majorly depends on these types of nutrients and it helps the plants to save from the biotic and abiotic factors. The uptake of the macronutrient results in the good yield and also increases the quality of the crops. The usage of the chemical fertilizers have results in the contamination of the soil and leads to the depletion of the nutrients in the soil and also leads to the carcinogenic effects. The usage of the biofertilizer is the solution for all these types of problems. The soil samples were collected from the both rhizosphere and non-rhizosphere region for the isolation of biofertilizing bacteria. The isolated bacteria from the soil such as phosphate solubilizing bacteria, Nitrogen fixing bacteria etc. Preparation of the biofertilizer with the certain types of beneficial bacteria as a consortium for the multifunctional property and processed for the production of the biofertilizers. The biochemical characterization of the bacteria and the 16S sequencing of the bacteria were processed. The bacterial biofertilizer will be introduced into the soil and the nutrients uptake and production of the crop plants is determined to evaluate the efficacy of the biofertilizer.

Keywords:Biofertilizer, Consortium, Macronutrients, Beneficial bacteria, Crops.

BIO-PROSPECTING OF INTERNAL MYCOFLORA OF MARINE ALGAE.

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An endophyte is an endosymbiont, often a bacterium or fungus, which lives within a plant or algae without causing any disease or symptoms. Mutualistic symbionts help the host to improve growth, resist against disease or environmental stress. Endophytic fungi considered as reservoir of chemical diversity and their capacity to produce many novel secondary metabolites that can be utilized for fuel, medicine, restoration and agriculture also in the fields like Biofuel, Environmental remediation, Drug discovery and Host defence. In this study medicinally important marine algal species surveyed for endophytic fungi distribution and comparative study of Chemical profile of endophytic fungus and marine algae. The study would provide an idea about endophytic fungus distributed in marine algae and their Chemical profile. If any of the endophyte profile produces similar chemical composition. The algae will be analysed in a large scale.

Key Words: Endophytes, Bio-prospecting, Secondary metabolites, Chemical profile, Marine algae.

COMPARATIVE STUDY OF ANTIOXIDANT PROPERTIES OF VARIOUS SOLVENTS TERMINALIA CHEBULA DRIED FRUITS EXTRACTS

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Terminalia chebula, a deciduous plant, endogenous to India has medicinal value. Its fruits are known for its cure to many ailments in human beings. In this study dried fruits of Terminalia chebula were extensively analysed. Phytochemical constituents of carp and seeds of Terminalia chebula fruits were extracted with high to low polar solvents water, ethanol, chloroform and benzene by maceration method and qualitatively analysed. An invitro study of antioxidant assay DPPH (2,2-diphenyl-1-picrylhydrazyl) and ABTS (2, 2'-azino-bis (3-ethylbenzothiazoline- 6-sulphonic acid) was carried out. The study is to identify the presence of Antioxidants, Secondary metabolite, Polyphenols in Terminalia Chebula fruits. Scavenging properties of Air dried extracts of carp and seeds in water, ethanol, chloroform and benzene solvents were studied. Ethanol extract of carp shows better anti-oxidant property than any other extract even the ethanol extract of seeds. Future work of the study to explore the phytochemicals against plant pathogenic bacteria and fungi so that it helps the organic growers.

KEY WORDS: Terminalia chebula, antioxidants, phytochemicals, solvents, DPPH and ABTS.

BIOGENIC SYNTHESIS OF COPPER NANOPARTICLES FROM BRASSICA OLERACEA VAR.ACEPHALA LEAF EXTRACT- AN IN VITRO STUDY

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Medicinal plants are the “backbone” of traditional medicine, which means more than 3.3 billion people in the less developed countries utilize medicinal plants on a regular basis. Nanoparticles are being viewed as fundamental blocks of Nanotechnology. Using plant and plant extracts can be a suitable choice for the synthesis of nanoparticles in large scale and it is also very environmentally friendly. Brassica oleracea is a plant belonging to the family Brassicaceae (Cruciferae). Generally consumed cruciferous vegetables are broccoli, brussels sprouts, kale, mustard, cabbage, turnips, cauliflower, boy choy and Chinese cabbage. Kale (Brassica oleracea var.acephala) belongs to the family Brassicaceae and is among the most nutrient dense foods on the planet. The main objective of this study was to detect the anti microbial and anti-cancer activity of Copper Nanoparticles from Brassica oleracea var.acephala Leaf extract. The plant was collected from local markets of Kelambakkam, Chennai and was shadow dried and made it to fine powder for further analysis. The ethanolic crude extract of Brassica oleracea var acephala were used for phytochemical analysis and synthesis of copper nanoparticles. The characterization of copper nanoparticles was done using Scanning Electron Microscope (SEM). The antioxidant activity was checked using ethanolic crude extract and copper nanoparticles. Anti-microbial activity were performed against 3 microbial strains (Escherichia coli, Staphylococcus aureus, Pseudomonas aeroginosa) and 1 fungi (Candida albicans) using crude extract and copper nanoparticles. Anticancer activity against Cervical HeLa cell line was checked using ethanolic crude extract and copper nanoparticles.

Keywords: Cancer, Nanoparticles, Escherichia coli, Staphylococcus aureus, Pseudomonas aeroginosa, Candida albicans.

LOCAL ELECTRIC FIELD ENABLING ENHANCED ELECTROCHEMICAL CHARACTERISTICS OF SNS-SNO2 BASED COMPOSITE LITHIUM ANODE

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Atomic level tuning of the lithium-ion (Li-ion) migration in the energy storage process has greater impact on the electrochemical characteristics of lithium-ion batteries (LIBs). Generation of local in-built electric field by preparing composite heteronanostructures consisting of N and P-type electrodes could potentially enhance the electrochemical characteristics and thereby storage performances [1, 2]. In the present study, composite electrodes consisting of n-type SnO2 and p-type SnS layers was prepared using graphene oxide as the template. The synthesized composite materials were characterized using various tools to reveal the structural, morphological and chemical characteristics. When used as an electrode material in lithium-ion batteries (LIBs), synthesized composite materials deliver extraordinary specific capacity, long-term electrochemical cycling characteristics and outstanding rate capacity (1120 mAhg−1over 500 cycles measured @100 mAg−1) and this fact is attributed to the synergistic contribution of the in-built electric field generated on the composite interfaces, facilitating charge transfer kinetics, thereby boosting its electrochemical properties.

Keywords: Induced electric field; tin sulfide; tin oxide; lithium-ion batteries; specific capacity

STUDIES ON THE BIO-EFFICACY OF PLANT GROWTH PROMOTING RHIZOBACTERIA (PGPR) IN THE RHIZOSPHERE SOILS OF GROUNDNUT (ARACHIS HYPOGAEA)

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In order to satisfy the demands of a growing population, crop production must be cultivated using precise inputs. Improper application of inorganic fertilisers degrades soil fertility. However, it is extremely difficult to produce enough organic food to feed the expanding population in developing nations using accepted organic methods. It is necessary to use caution when applying biofertilizers, organic manures, and inorganic fertilisers to crops in order to provide them with nutrients. This study's primary objective was to identify microorganisms with the potential to function as plant-growth-promoting rhizobacteria (PGPR) for groundnut in India. In ten distinct locations within the district of Villupuram, soil samples from the groundnut rhizosphere were collected. Soil samples were analysed for their physio-chemical and microbial characteristics. Different PGPR organisms, including Rhizobium, Pseudomonas, and Bacillus, were identified. Rhizobium had the maximum frequency of occurrence in the soil at Pallaripalayalam, followed by Pseudomonas and Bacillus. From ten distinct soil samples, the PGPR microorganisms Rhizobium, Pseudomonas, and Bacillus were isolated and maintained for further research. On the basis of the efficiency of N fixation, IAA, ARA, and phosphate solubilization, the Rh-2, Ps-3, and Bs-6 isolates were chosen for further study. The combined Rh-2+Ps-3+Bs-6 inoculation was found to be superior to all other regimens.

Keywords: Biofertilizer, PGPR, Arachis hypogaea, Rhizobium, Pseudomonas, Bacillus

EVALUATION OF IN-VITRO PHYTOCHEMICAL, ANTIOXIDANT, ANTIMICROBIAL AND ANTICANCER ACTIVITY OF TRAGIA INVOLUCRATA LINN.

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Plants have been in use as medicines in different formulations to treat various ailments since ancient times. According to the World Health Organization, about 65-80% of the world's population depends on medicinal plants for their primary health care. So, it recommended the initiation of studies to identify and characterize new herbal preparations from traditionally known plants and the development of new effective therapeutic agents. Tragia involucrata Linn– the Indian stinging nettle is a species of plant in Euphorbiaceae family. Even though this plant has been used for thousands of years, at present, the public is not aware of the medicinal value of this plant. So, the aim of this study is to analyze, evaluate & collect data on its biological activities. The whole plant was shade dried and the phytochemicals were extracted by maceration. Based on polarity, low polar hexane, mid polar ethyl acetate and high polar methanol were used for the extraction process. The antioxidant effect was analyzed by DPPH free radical scavenging activity and Ferric Reducing Antioxidant Power Assay. The Antimicrobial activity (screening) and Minimum Inhibitory Concentration (MIC) were carried out with bacterial pathogens as well as with fungal pathogens. From these experiments, it was observed that among the three solvents (Hexane, Ethyl acetate & Methanol), Methanol showed more effective results. As well as when comparing the effect of T. involucrata Linn., its more against fungal pathogen than the bacterial pathogens. In future, the anticancer activity of the plant T. involucrata Linn. will be evaluated in normal cell line and breast cancer cells.

Keywords: Tragia involucrata Linn. extract; antioxidant; antimicrobial; anticancer; breast cancer cells.

ORGANIC AGRICULTURE

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Organic farming, also known as ecological farming or biological farming, is an agricultural system that uses fertilizers of organic origin such as compost manure, green manure, and bone meal and places emphasis on techniques such as crop rotation and companion planting. Organic farming offers an alternative to more widespread, high input farming practices that use synthetic fertilizers, fungicides and pesticides. It is based on the idea that the soil is a living system so these synthetic products are largely excluded from organic farms. Organic agricultures rely on crop rotation, animal manures, crop residues, green manures and the biological control of the pests and diseases to maintain soil health and productivity. Organic crops are often of higher value than conventional ones and the volume of organic crops shows a continually increasing production trend. The sale of crops labelled as organic are biologically highly regulated in most advanced markets. The environmental impact of organic farming is low and can be seen as a way of cleaning up and improving degraded agricultural land. Microorganism plays an important role in organic farming. Microorganisms convert complex organic material into simple compounds and hence increase the uptake by the crops. Cyanobacteria present in soil helps in fixing the atmosphere nitrogen in the soil. Anaerobic bacteria play a vital role in decomposing cattle dung into manures.

Keywords: Ecological farming, animal manures, green manures, improving degraded agricultural land, cyanobacteria, anaerobic bacteria.

BIOSYNTHESIS OF SILVER NANOPARTCLES BY MARINE SPONGE ASSOCIATED ENDOPHYTIC BACTERIA AND STUDY OF ITS ANTICANCER PROPERTIES

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The marine sponge Hyattella intestinalis was discovered in the village of Sethubavachatram in the Thanjavur district of Tamil Nadu, India. A one-gram sample of sponge was subjected to serial dilutions. The bacteria were cultivated for 48 hours on marine agar at room temperature. Colonies were randomly chosen and filtered out using streak plates according to their morphological traits. The initials of the sponges used to create them served as their names. The HIB1, HIB2, and HIB3 genes were all derived from Hyattella intestinalis. The biochemical characterization and 16S rRNA sequencing of HIB1 colonies were shown to be predominant among the three. The marine sponge Lysinibacillus sp. was linked to HIB1-encoded bacteria. The HIB1 gene was 97.19% identical to that of Lysinibacillus macroides. Extracellular generation of nanoparticles was conclusively shown by visual observation of a colour change in the reaction mixture. The supernatant changed from yellow to dark brown over the course of 48 hours, and the shade became more pronounced as the incubation time increased. Analysis of the silver nanoparticles' Fourier transform infrared (FTIR) spectra led to the identification of the most probable biomolecules responsible for the efficient stabilisation and capping of the silver nanoparticles generated by Lysinibacillus macrolides supernatant. Morphology, surface morphology, and chemical make-up of AgNPs were studied with the aid of scanning electron microscopy (SEM), transmission electron microscopy (TEM), secondary electron energy dispersive X-ray analysis (SAED), and energy dispersive X-ray spectroscopy (EDX). According to the results, the AgNPs synthesised by Lysiibacillus macrolides have a polycrystalline face-centered cubic (fcc) structure. Both bacterial and fungal infections are effectively treated by the produced nanoparticles. Particles have the potential to be used in pharmaceuticals due to their ability to halt the growth of pathogens (Escherichia coli Pseudomonas aeruginosa and Staphylocaoccus aureus). The particle inhibited the growth of cancer-causing fungi like Candida albicans and Aspergillus niger. In this work, we analyse AgNPs for their potential to inhibit the growth of a colon cancer cell line. There was significant cell death and necrosis brought on by biosynthesized silver nanoparticles on the HT-29 cell line. The diversity of antibiotic-producing marine bacteria discovered in this study suggests that sponges are a good place to look for novel bacterial species

Key words: Marine Sponge, Hyattella intestinalis, Lysinibacillus macrolides, AgNPs, HT-29 cell line

FORMULATION AND DEVELOPMENT OF CAPSAICIN BASED CAPSULES TO TREAT LIFESTYLE DISEASES IN HUMANS

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Capsaicin is a chemical compound that is majorly present in Chilli pepper. It has several properties such as antimicrobial properties, antioxidant properties, anti-inflammatory properties, etc. So we created a capsule called Capcin. It contains a gram of dried green chili powder which is taken as a supplement. It is used to treat ulcer patients by inhibiting the growth of Helicobacter pylori. When capsaicin enters the stomach, it stimulates gastric mucus production, speeds up digestion, and also enhances the growth of gut flora. It may also show anthelmintic activity against parasitic worms. Its main objective is to prevent lifestyle diseases including cancers and ulcers. Thus it is an excellent homeopathic remedy.

Keywords: Capsaicin, Treat ulcer, Enhance gut flora, Homeopathic remedy

ANTIMICROBIAL ACTIVITY OF PROBIOTIC BACTERIA ISOLATED FROM COW MILK SAMPLE AGAINST PATHOGENIC E. COLI, STAPHYLOCOCCUS, KLEBSIELLA, CANDIDA, ASPERGILLUS.

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Probiotics are live microorganisms when consumed in adequate amount confer health benefits on host. In Greek 'Pro-bios'(For life). Probiotics can be found in dairy and non-diary products. They are commercially used in different products. The most commonly used probiotics are strains of lactic acid bacteria such as Lactobacillus, Bifidobacterium. Daily consumption of food containing probiotic microbes will balance the population of useful or beneficial microbes in intestinal flora. They are used to treat and prevent infectious disease caused by pathogenic bacteria and fungi like diarrhoea, blood stream infections etc. A variety of antimicrobial substance produced by probiotic bacteria such as bacteriocin, hydrogen peroxide, organic acids to inhibit or reduce the pathogenic microbes. The aim of this study is to determine antimicrobial activity of probiotic bacteria isolated from cow milk sample against pathogenic bacteria and fungi. Isolation of probiotic bacteria by serial dilution from milk samples by spread plate method and streak plate method was performed to get pure colonies. Characterization is done by gram staining and biochemical tests. Antimicrobial activity was determined by agar well diffusion method and measuring growth inhibition zones of probiotic against pathogenic bacteria and fungi.

Keywords: E. coli, Staphylococcus, Klebsiella, Candida, Aspergillus, Probiotic bacteria, Antimicrobial activity, Cow milk sample.

PROTEOMIC STUDY OF ESBL PRODUCING KLEBSIELLA PNEUMONIAE ISOLATED FROM CLINICAL SAMPLES

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The main resistance mechanism to beta -lactam drugs in Enterobacteriaceae is the formation of extended-spectrum beta -lactamase (ESBL). ESBL-producing isolates have become a global hazard to infection therapy. The study's goal was to examine ESBL generating Klebsiella pneumoniae using the combined disc diffusion technique. To identify multidrug resistance using Kirby Bauer disc diffusion and the MIC microscan technique. Pathogens of the bladder and kidneys were detected in 340 urine samples from the general population. Biochemical characterisation revealed the presence of 7 uropathogenic bacterial strains, including E. coli (139 isolates), Klebsiella spp (86 isolates), Proteus spp (61 isolates), Pseudomonas spp (24 isolates), coagulate negative Staphylococci (CNS) (12 isolates), S. aureus (11 isolates), isolates, and Candida spp (7 isolates). Finally, four ESBL isolates of Klebsiella pneumoniae were isolated from various clinical samples and tested using the disc diffusion technique. The combined disc diffusion approach was used to confirm ESBL production. 14 Klebsiella pneumoniae isolates tested positive for multidrug resistance. Four of the 14 multidrug-resistance producers were ESBL producers. In this work, the full proteomes of four ESBL Klebsiella pneumoniae isolates were investigated. To answer the new puzzle of resistance, proteomics (MALDI-TOF) and bioinformatics technologies were applied. For functional annotation, pathway enhancement, and protein-protein interactions, KEGG and STRING were employed (PPIs). We hypothesise that these four differentially expressed proteins and their interactors contributed to bacterial survival and resistance via several mechanisms or enhanced pathways.

Keywords: Klebsiella pneumoniae,, ESBL, Proteomics, Uropathogens ,Minimum inhibitory concentration.

DEATH BY ILLUMINATION

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M.Sc. Immunology and Microbiology

Wound infection is a major factor for delayed healing. Infections with Pseudomonas aeruginosa and Staphylococcus aureus are clinically relevant caused by their ability of biofilm formation and their quickly growing antibiotics resistance. Blue light has attracted increasing attention due to its intrinsic antimicrobial effect without the addition of exogenous photosensitizers. Blue light at 415 nm has been demonstrated to have potential for the treatment of acute, potentially lethal Pseudomonas aeruginosa burn infections in mice. Cell toxicity testing by CFU, biofilm, cell viability assay, live cell imaging, TEM fluorescence microscopy, bioluminescence time curve analysis has been done to demonstrate in vivo as well as in vitro effect of blue light therapy. Histological analyses and terminal deoxynucleotidyltransferase-mediated dUTP-biotin nick end labeling (TUNEL) assays indicated no significant damage in the mouse skin exposed to blue light at the effective antimicrobial dose. Nevertheless, using longer wavelengths >455 nm should be preferred to avoid possible toxic effects on skin and skin cells.

MODELING OF MICROBIAL CAPSULE FOR CONTROLLING OIL SPILLS.

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The challenge of managing oil spills around the world is increasing in complexity and magnitude. Oil spills from the tankers provide examples of the adverse impacts of large amounts of oil on aquatic and coastline ecosystems. Those spills closest to shore generally have the greatest adverse effects on the environment since the oil would not have time to disperse before reaching shore and can significantly impact the sensitive habitats of a variety of organisms. It destroys the biodiversity present in the ocean. I propose a new standardization method in addition to previously employed safety protocols. Idea is to package oil degrading bacteria or hydrocarbon degrading bacteria in the form of a capsule. Huge amount of such capsules (calculated based on the payload inside) are placed inside ships. In case of any oil spills, actions can be taken immediately (occur in mid ocean). Main ingredient inside is Pseudomonas / Azotobacter and habitat needed for bacteria survival. These bacterial capsules will eat that oil as a food and engulf it.

Keywords: Oil spills, Biodiversity, Oil degrading bacteria, Capsules, Pseudomonas/Azotobacter.

FOOD SECURITY

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Food security exists when "all people, at all times have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.Close to 800 million individuals do not have access to enough food, >2 billion individuals experience key micronutrient deficiencies, and 60% of individuals in low-income countries are food insecure. Food insecurity negatively affects human physical, social, emotional, and cognitive development throughout the life course and is a major social and environmental disruptor with serious repercussions for planetary health of human civilization and the state of the natural systems on which it depends). Food security is related to all of the United Nations Sustainable Development Goals (SDGs). Improved food security governance based on sound, equitable, and sustainable food systems that benefit from modern information and sustainable and equitable agricultural technologies is essential for countries to meet the SDGs.

Key Words : Food security in Plantary Health, Humanry based in food security,sustainable Development goals.

FOOD SECURITY WITH ARTIFICIAL INTELLIGENCE IN INDUSTRY

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Food security exists only when all people at all times have physical and economic access to sufficient,safe and nutritious food to meet the dietary needs and food preferences..

Types : 1) PPI - pre production inspection 2) DPI - During production inspection 3) PSI - pre shipment inspection

Quality assurance is the biggest marketing tool any food in manufacturer can adopt. when a processor Can assure the consumers that they will continuously get - high Quality products that (Consumers) Became the greatest Asset for the company. It is an important in industry..

ARTIFICIAL INTELLIGENCE IN FOOD INDUSTRY : why you like the A I Mechanism in Spread Industry P Tool of AI system in food Industry : Stream line AI is being used to streamline./Automated the food industry. This means that AI Can be used to help with taste ordering. It is Streamline is caller fell of the source only. It is also increase the tasks like ordering the invertery. But, And Killing the pathogenic microorganisms AI is popular in the broad industry because It can help manufactures in lower production Costs, practice, better hygiene, and imprelle packaging.

AI Pallette It is the another. A I based System. It is analytics. to help hast molding Consumer Goods (FMCG) companies, products based on predictive Analyses.

Conclusion : Quality Assurance encompasses a broad set of activities to prevent defects proactively.It is an on-going Efforts But not an End.

Key Words : PPI - pre production inspection, DPI - During production inspection, PSI - pre shipment inspection, Ai pallete

EXPLORING THE MICROBIAL DIVERSITY OF SOIL SAMPLES CONTAMINATED WITH AUTOMOBILE OIL

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Contamination of soil with automobile oil is a significant environmental issue that can have a detrimental effect on soil microbial diversity. In this study, we aimed to investigate the impact of automobile oil contamination on soil microbial diversity using a culture-independent approach. We collected soil samples from sites contaminated with automobile oil and analyzed them using high-throughput sequencing technology. Our results showed a significant decrease in the microbial diversity of soil samples contaminated with automobile oil compared to the control samples. The bacterial and fungal diversity in contaminated soil samples was found to be significantly lower than that in uncontaminated samples. We also observed changes in the relative abundance of different microbial taxa in the contaminated samples, indicating a shift in microbial community structure. Further analysis revealed a decrease in the abundance of genes related to important soil functions such as carbon and nitrogen cycling, indicating that automobile oil contamination can adversely affect soil microbial activity and nutrient cycling. In conclusion, our study highlights the impact of automobile oil contamination on soil microbial diversity and functions. These findings can contribute to the development of effective strategies for managing soil contamination and promoting soil health.

Key words: Soil Microbial Diversity; Culture-Independent Approach; Bacterial Diversity; Fungal Diversity; Microbial Community Structure.

MICROBIAL DEGRADATION OF SYNTHETIC PESTICIDE FOR SOIL HEALTH AND ENVIRONMENTAL CLEAN UP

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Pesticides are most commonly used chemicals in agricultural practices to protect the crops from pests and weeds. Overuse of pesticides leads to the pesticide pollution which seriously affects the surrounding environment. Chlorpyrifos is one of the toxic organo-phosphate pesticides used in the agriculture with potential neuro toxic effect. Bioremediation of chlorpyrifos with the help of soil microbial communities is the focus of this study. Bacteria and fungi were isolated by enrichment culture technique from the agricultural soil contaminated with different types of pesticides for more than 20 years of farming practices. Two bacteria Pseudomonas aeruginosa and Bacillus pumilus and two fungi Aspergillus niger and Fusarium incarnatum were isolated by screening of potential chlorpyrifos degrading microbes using selective media with chlorpyrifos as sole carbon source. The isolated bacteria and fungi were further characterized for the small-scale degradation of chlorpyrifos. Bacteria and fungi were allowed to degrade the chlorpyrifos for one week and residual pesticide after degradation was analyzed by HPLC. It showed that Pseudomonas aeruginosa, Bacillus pumilus, Alternaria tenuissima and Curvularia verruculosa has degraded 47%, 71%, 67.5% and 83.2% respectively. The potential microbes with high degrading ability can be used in the future as consortium to efficiently degrade the chlorpyrifos pesticide environment.

Keywords: Pesticide pollution, chlorpyrifos, organo-phosphate, bioremediation, soil microbiota.

IN VITRO ANTICANCER ACTIVITY OF CYANTHILLIUM CINEREUM (L.) H. ROB, WHOLE PLANT EXTRACT ON CERVICAL CANCER (HELA) CELL LINES

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Cancer is the second leading cause of death globally, and despite the advances in drug development, still there is thirst for new plant-derived medicines. On comparison with usage of conventional chemical drugs, natural herbal medicines have many benefits. Close to 50% of current chemotherapeutic drugs are direct or indirect descendants' compounds isolated from medicinal plants, which indicate plants are great potential sources of novel therapeutics. In literatures we found Cyanthillium cinereum (L.) H. Rob to possess many pharmacological activities, including those with anticancer potentials. However, no study on anticancer activity of this kind has been reported. The present study aimed to discover the potential cytotoxicity of plant methanol extract on Cervical Cancer (HeLa) MG63 cell lines. Phytochemicals were extracted by maceration method from shade dried whole plant of Cyanthillium cinereum (L.) H. Rob using methanol as a solvent. The anticancer effect of extract was investigated using MTT (methyl thiazoldiphenyltetrazolium bromide) assay. Significant activity in the inhibition of proliferation of HeLa cancerous cells were observed due to the presence of bioactive compounds. The morphological changes such as shrinkage, detachment, membrane blebbing and distorted shape was observed in MG63 induced by sample M1 treatment (400 & 500 µg/ml for 24 h) on comparison with control. The results recommend Cyanthillium cinereum (L.) H. Rob is a promising source of useful natural products offers opportunities to develop the novel anticancer drugs.

Keywords: Cyanthillium cinereum (L.) H. Rob extract; anti-cancer; cell line; HeLa cells.

DETERMINATION OF COLISTIN RESISTANCE AMONG ACINETOBACTER SPECIES FROM CLINICAL SPECIMEN

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Acinetobacter spp is one of the important multidrug resistant Gram-Negative nosocomial pathogens. It is responsible for many serious infections such as pneumonia, sepsis, urinary tract and wound infections. A total of 20 Acinetobacter spp isolates (sputum, blood, urine, pus) were collected from VHS laboratories Chennai. The isolates were processed for further analysis. The isolates of Acinetobacter sp. were analyzed for antibiotic susceptibility using twelve selected antibiotics by Kirby Bauer Method (1950) and the results were interpreted using the criteria by Clinical Laboratory Standards Institute (CLSI 2022). Colistin resistance was determined by E-test method using Colistin Ezy MIC strips (Himedia). All the 20 strains showed positive result for efflux pump detection test. From the results it was clearly shown that 19 isolates Acinetobacter showed resistance to twelve antibiotics and nine strains showed resistance to Colistin. Detection of virulence genes among the 19 isolates was done by Polymerase Chain Reaction using specific primers and the results were observed.

Key Words: Acinetobacter sp, Colistin resistance, efflux pumps, virulence genes.

"ISOLATION , IDENTIFICATION OF BIOACTIVE COMPOUND AND ANTIPROLIFERATIVE ACTIVITY OF ROOT OF AEGLE TAMILNADENSIS ABDUL KADER AGAINST MCF7 ADENOCARCINOMA CELL LINE"

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Root of Aegle tamilnadensis Abdul Kader was collected from the tree located at siddha college, Arumbakkam , Chennai. It was identified and authenticated by Dr.S. Abdul Kader. The collected sample was extracted using the solvents ethyl acetate and methanol. The compound isolation was carried-out using the column chromatographic technique and identified by GC-MS analysis. From the National Center for Cell Sciences (NCCS), Pune, India, researchers received the human breast epithelial adenocarcinoma cell line MCF-7. Cells were kept alive in Dulbecco's modified Eagle medium (DMEM) supplemented with 10% (v/v) heat-inactivated fetal bovine serum (FBS), 100 U/mL penicillin, and 100 g/mL streptomycin during the logarithmic growth phase. Antiproliferative activity against MCF-7 Adenocarcinoma breast cancer cell line was performed to the identified compound and the sample extracts (ethyl acetate and methanolic) of root of Aegle tamilnadensis Abdul Kader. The cytotoxicity percentage of the sample was detected by the cell viability 50 percentage (%) of the MCF-7 Adenocarcinoma breast cancer cell line with the MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay.

Keywords: Aegle tamilnadensis Abdul Kader, Antiproliferative activity, MTT assay, MCF-7 Adenocarcinoma breast cancer cell line.

PHAGE THERAPY – ALTERNATIVE APPROACH FOR CLINICAL TREATMENT

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Phage therapy is a potential alternative treatment for bacterial infections, and its effectiveness is studied through several methods. Bacteriophages, or simply phages, are viruses that infect and kill bacteria, and their therapeutic use involves identifying and characterizing phages that can effectively target specific pathogenic bacteria. The isolation of bacteriophages from sewage samples has been a fruitful area of research for the development of phage therapy. Sewage is a rich source of bacterial diversity, including both pathogenic and non-pathogenic bacteria, making it an ideal source for the isolation of bacteriophages that can be used for therapy. The use of phages isolated from sewage samples has shown promising results in the treatment of infections caused by multidrug-resistant bacteria, such as Pseudomonas aeruginosa and Staphylococcus aureus. The advantage of using sewage-derived phages is that they are likely to have a broad host range, which means they can target multiple bacterial strains. The use of phages for therapy has several advantages over traditional antibiotics, including their high specificity for bacterial strains and their ability to evolve rapidly to adapt to bacterial resistance. However, challenges remain in the development of phage therapy, including the need for standardization of phage preparation and administration, as well as the potential for the development of phage resistance. Despite these challenges, the isolation of phages from sewage samples provides a promising approach for the development of phage therapy. The isolation of four distinct phage isolates from five sewage samples was conducted through a screening process. The process of isolating phages from sewage samples involved filtration and enrichment, followed by Double layered plaque assays to to identify the presence of lytic phages. The positive samples were then further purified through a series of steps, including plaque assays and repeated streaking. Four phage isolates were obtained and further processed to study their morphology under an electron microscope. The isolated phages will be further characterized by DNA sequencing. Once identified, phages can be further characterized to determine their morphology, host range, and other properties that are important for their use in therapy. The sewage samples were processed, and Double layer assay technique was used This study highlights the focus of optimising and potential use of sewage-derived phages in clinical settings to ensure their safety and efficacy, and to identify new phages that can be used to treat a wide range of bacterial infections and other biotechnological applications.

Key words : Sewage derived Phages, Double layer Agar Assay, Phage therapy, Multiple Drug resistant organisms.

PHYTOCHEMICAL COMPOSITION AND GC-MS ANALYSIS OF CLOVE-AJWAIN EXTRACTS AND ITS ANTIBACTERIAL ACTIVITY AGAINST UROPATHOGENIC ESCHERICHIA COLI

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Urinary tract infections (UTIs) are one of the communal bacterial infections. The major causative agents of UTIs are gram negative bacteria and the most predominant uropathogen accounting for up to 90% of both complicated and non-complicated infections is Escherichia coli (UPEC). So far, the beta lactam antibiotics have been extensively used for the management of severe infections caused by gram negative bacteria. However, those bacteria develop resistance against these antibiotics by extended spectrum beta lactamase production (ESBL) mechanism which results in recurrent infections for the patients. Thus far, several alternative therapies are being developed to overcome this issue. Among these, Phytomedicine approach has been a proven efficient strategy to overcome the global problem, antibiotic resistance. Spices are plants which possess numerous nutritional and medicinal benefits specifically, antibacterial potentials. The purpose of this present study is to assess the sensitivity of UTI causing E.coli isolates (U 72 and U 92) to a spice extract combination. Aqueous and ethanolic extracts of the spice mixture (powdered clove bud and ajwain seeds) were prepared and tested against the isolates. Both the extracts were found to be inhibitory to both the isolates tested. Minimum Inhibitory Concentration (MIC) values of the aqueous extract for both isolates are 250µg. MIC of ethanol extract is 250µg for U72 and 125µg for U92. Results from GC-MS analysis revealed the existence of bioactive compounds with potent antibacterial, antioxidant, and other preventative properties. The findings of this study suggested that these spice combination extract might be used in the food and pharmaceutical industries as a health nutrient. Further in-depth invite investigations are required to exploit this extract for proper drug formulations.

Keywords: Urinary tract infections, Gram-negative bacteria, Antibiotic resistance, Spice extracts, Antibacterial activity, GC-MS

INFLUENCE OF CHITOSAN NANOPARTICLES ON THE GUT MICROBIOME OF ORECHROMIS NILOTICUS FISHES- A BEHAVIORAL STUDY

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Fish demand continues to grow throughout the world and moving towards intensive aquaculture systems, mainly in developing countries, where fish is a major source of the animal protein. In spite of the success of aquaculture industry, it still suffers from serious limitations, such as lack of fry, expensive feed (fish meal) and low resistance to diseases. Fish meal has usually been the main ingredient in fish nutrition because of its high protein quality. Fishmeal cost has been duplicated due to the growing demand and constant production. Therefore, many studies have aimed to replace or reduce FM in diets using alternative protein sources with cheap,renewable, valuable and biologically sustainable materials. Chitosan is known to be an active growth promoter and can be considered as an essential element for the growth of aquatic animals. The main effect of CS is improving the morphological structure of the small intestine, which may improve nutrients absorption and growth performance, even at low concentration dietary CS was found to enhance nitrogen utilization and amino acid digestibility. Chitosan is drawing a lot of attention and starts to play a significant role in the sustainability of aquaculture. It meets the environmental criteria, which is an eco-friendly compound, helps the efficient use of reagents and reduction of possible waste as well.

Keywords: Chitosan, Oreochromis niloticus, Immunostimulation, Gut microbiome.

DETECTION OF VIRULENCE MARKERS- PROTEINASE & PHOSPHOLIPASE FROM SALIVARY ISOLATES OF CANDIDA SPP. IN HEAD AND NECK CANCER PATIENTS IN A TERTIARY CARE HOSPITAL

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The present study was undertaken to determine the prevalence of various Candida spp. isolated from the saliva specimens, and the virulence markers viz., proteinase and phospholipase expressed by the respective isolates. The saliva specimens were collected from diagnosed cases of head and neck cancer patients who have undergone 3-4 cycles of chemotherapy/radiotherapy or both over a period of one year. Forty three (43) patients were included in the study who consented to provide the saliva samples. The samples were inoculated on Sabouraud dextrose agar slants with chloramphenicol. The Germtube test for rapid morphological identification of C. albicans was done. Chrom agar inoculation of the isolates was also done for 48hrs in the dark for speciation. For determination of virulence factors yeast suspensions were prepared from the yeast isolates included in the study to evaluate phospholipase & proteinase activity. The Candida proteinase was detected by the modified Staib et al. method, and the Candida phospholipase was detected by the modified method of Samaranayake et al.. Out of the 43 saliva samples, thirty five (35, 81.3 %) showed growth of candida spp., of which thirty two (32) were Candida albicans & three (3) were Non candida albicans candida spp.(NCAC). Among the NCAC spp. two (2) were C.krusei and one (1) was C.tropicalis. All the Candida albicans isolates expressed proteinase & phospholipase activity. Among the NCAC spp. proteinase was expressed in (02/03) & phospholipase in (01/03) isolates.

Keywords- Candida spp.,Head and neck cancer, Proteinase, Phospholipase, Saliva,Virulence factor.

STUDY ON SOIL BACTERIAL COMMUNITY BY METAGENOMIC ANALYSIS

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In case of the metagenomic analysis, a non-culture media-based approach is being followed in order to effectively analyze the different communities of the microbes within the multiple relevant ecosystems. Both the procedural benefits took advantage of the pharmaceutical analysis such that better drug evaluations and drug development could be done. Alongside, formulation of particular antibiotics could also be simultaneously carved out. The exact difference between both the studies of genomics and metagenomics could be concluded upon the fact that in the former of the genomics, one evaluates and assesses the genetic sequences of a particular DNA. On the contrary, the process of metagenomic analysis incorporated comparative analysis of DNAs of multiple microbes such that overall results could be focused upon and prioritized. In the later procedure, along with bacteria, free DNA, viroid and viruses are also the selected organisms that have been incorporated. The major advantage in this metagenomic analysis is the fact that new genomic sequences and proteins could be developed. This has significantly aided in facilitation of proper results during the library preparation and sequencing procedures.

Keywords: Soil biodiversity, DNAs of multiple microbes, viroid and viruses, Metagenomic analysis

EMERGENCE OF THIRD GENERATION CEPHALOSPORIN RESISTANT ESCHERICHIA COLI AND KLEBSIELLA PNEUMONIA IN PAEDIATRIC PATIENTS

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This study was aimed to evaluate the emergence of third generation cephalosporin resistant Escherichia coli and Klebsiella pneumonia isolated from the culture of various biological samples of infants in a tertiarycare hospital. Resistance to commonly used antibiotics is consistently increasing during the last decades and it varies with time and geographical location. To determine the prevalence of third generation cephalosporin sensitivity pattern of E.coli and Klebsiella pneumonia, samples like urine, throat swab, CSF, endotracheal tube, endotracheal aspirate etc are cultured for isolation . Isolated stains are tested by identification tests like IMViC., sugar fermentation tests. Then third generation cephalosporin resistance is detected by Kirbi-baure antibiotic sensitivity test. Out of 351 samples of with positive E.coli and Klebsiella pneumonia were included in the study.Among the isolations221/351 and 130/351 were E.coli and Klebsiella pneumonia respectively. Among E.coli out of 221isolations 152 were ESBL positive. Among Klebsiella pneumonia out of 130 isolations 81 were positive for ESBL. Among the samples tested, urine samples were highest 128/351[35%]. Cephalosporin resistant strain was found in 243/351 samples [69.2 %] with 218/243 [89.7%] isolated from infants above 6 months of age and 25/243 [10.2%] were from infants below 6 months of age. The frequency of cephalosporin resistant E.coli and Klebsiella pneumonia in urine specimen of male and female infants was significant. Third generation cephalosporin resistant E.coli and Klebsiella pneumonia strain was found in 69.2 % of isolates and more in urine samples from female infants above 6 months of age. The clinicians should consider the emergence of cephalosporin resistant E.coli and Klebsiella pneumonia while selecting antibiotics as empirical treatment.

Keywords: Antibiotics, antimicrobial resistance, bacteremia, cephalosporin, beta-lactamase, E.coli.

A FUTURE PERSPECTIVE - ADVANCEMENTS IN 4D PRINTING

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The technology of 4D printing was an advancement of 3D printing. Because to its improved patient compliance, low toxicity, cheap cost, and zero waste manufacturing, 4D printing is an emerging successful breakthrough with the potential to bring about positive improvements in the future.A Madras Institute of Technology research team was the first to conceptualize 4Dprinting. The use of 4D printing combats climatic factors that affect the stability of products. 4D uses programmed software to convert three-dimensional structures with smart materials into four-dimensional structures based on stimuli.Smart materials used in 4D printing, like composite hydrogel, liquid crystal elastomers has Thermomechanical property which means its has ability to maintain their temporary shape and return to their normal shape. pH, light, heat, wind, and other stimuli all affect 3D printing structure in different ways and convert 4D structure. Drug distribution with 4D printing has two main mechanisms. Encapsulation and bio-adhesion are two methods of medication delivery. The structure of 3D printing is fixed and rigid. In contrast to 3D printing, 4D printing includes a mobile structure that is not stuck or fixed, as well as the ability to self-repair, self-assemble, and perform many tasks. Due to its ability to change morphological structure in response to stimuli and due to its high productivity and high sensitivity, 4D printing has found acceptance in the health industry. Personalized medicine could benefit from the use of 4D printing technology. Smart material, smart machinery, and geometric software are the three fundamental building blocks of 4D printing.

Keywords: 4D printing, stimuli,3D printing, bio- adhesive

A REVIEW ON BIOFLAVANOIDS IN THE TREATMENT OF SYSTEMIC LUPUS ERYTHEMATOSUS

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An autoimmune disorder called systemic lupus erythematosus happens when the immune system destroys its own tissues, resulting in severe degenerative changes and pervasive inflammation in the organs some of which are affected. It has a potential influence on the blood vessels, brain, kidneys, skin, joints, and skin. Citrus fruits, rose hips, and other plants contain a variety of yellow chemical compounds known as bioflavonoids, can help mammals maintain their capillary walls' sensitivity to permeation and pressure changes. These complex compounds found primarily in citrus fruits (Vitamin C) and roses (Quercitrin). Some of the latest trends in the treatment of Systemic lupus erythmatosus are: Activating CD11b, which in systemic lupus erythematosus controls TLR-dependent inflammation and autoimmunity, Flavonoids suppress Pseudomonas aeruginosa Virulence through Allosteric Inhibition of Quorum-sensing Receptors, A citrus Flavonoid, nobiletin, suppresses production and gene expression of matrix metalloproteinase 9, Flowers from Kalanchoe pinnate are a rich source of T cell-suppressive flavonoids, Citrus flavonoids reduce bacterial cell-cell interactions, biofilm production, and type III secretion, whereas luteolin, a flavonoid, prevents basophils from activating AP-1.

Keywords: Systemic lupus erythematosus, autoimmune disease, Bioflavonoids, T cell-suppressive flavonoids, Kalanchoe pinnate.

QBD ASSISTED METHOD DEVELOPMENT, VALIDATION AND SIMULTANEOUS ESTIMATION FOR MONTELUKAST WITH BILASTINE IN BULK AND DOSAGE FORM BY UPLC TECHNIQUE

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Objectives: With the use of Quality by Design (QbD) appeal, develop and verify a new Ultra Performance Liquid Chromatography (UPLC) method for estimating Bilastine and Montelukast in a standard active pharmaceutical component mixture and dosage form. Materials and Methods: The separation and quantification by chromatography was done on a kinetex C18 column (100 × 4.6 mm, 2.6 μm), with a solvent system of methanol with buffer (25:75, v / v) at a flow rate of 0.6 mL / min, and PDA detection at 281 nm.

Linear behaviour was seen over the explored concentration range (25-300 ppm) for both montelukast and bilastine, with a correlation coefficient of >0.998. This UPLC method was found to be explicit and exact for the estimation of montelukast and bilastine in pharmaceutical formulation. The proposed method was validated according to ICH Q2 (R1) guidelines. This UPLC technique can be utilised for regular estimation of montelukast and bilastine in pharmaceutical formulation as they were identified to be faultless, error-free and distinct.

Key words: montelukast, bilastine, QbD, UPLC, PDA detector, Validation

A RECENT ADVANCEMENT IN PHYTOSOMES: CHARACTERIZATION & POTENTIAL TRANSDERMAL DRUG DELIVERY

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The objective is to focus in to the phytosome technology along with its preparation, various properties and characterization. Transdermal drug delivery aims to create a safe and effective method of administering drugs through the skin that attracts a lot of attention and investment due to the constant progress in the field. Phospholipid interacts with the phytochemical via the configuration of an H-bond in between the polar head of the phospholipid and the polar functions of the phytochemical constituents. Phytosomes continue to outperform herbal extracts in improving its pharmacokinetics and pharmacodynamics. The recent developments of various researchers have been studied thoroughly to establish the transdermal route as a potential way to deliver phytoconstituents. Plant derived products or plants extracts are increasingly receiving attention as dietary supplements for the homeostatic management of inflammation, toixcities, cancers, weight loss and other chronic or acute degenerative disorders. But these products frequently face stability and bioavailability problems. This review contains a comparative account of liposomes and phytosomes along with recent advancements in the field of phytosome technology with a special concern to transdermal drug delivery.

Keywords: Phytosomes, phospholipids, bioavailability, topical route, transdermal drug delivery

A REVIEW ON SYNTHETIC BENZIMIDAZOLE ANALOGUES

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Mycobacterium tuberculosis (Mtb) is considered as one of the precarious bacterial infections around the world. Through a projected 8.7 million new tuberculosis (TB) cases and 1.4 million mortalities per annum, this deadly infection resulted insubstantial amount of human deaths than any other single organism bacterial infections. TB is one of India's most threatening human health problems and it accounts for approximately 33% of the global health issues. Subsequently, for TB there is an imperative need for the improvement of existing drug candidates with newer targets and specified mechanism of action. Within the wide spectra of heterocycles, benzimidazole and its substituted analogues were evidenced promising biological efficacies enabling them to perform as new drug or prodrug candidates. Exceptional structural features of this class of heterocycle and versatile biological applications made it a privileged structural backbone in new drug design and discovery. Majorly, 2,5- and 2,6-disubstituted benzimidazole derivatives shown to induce significant antiTB potential. To seek more insights on this unique feature of benzimidazole candidates, there is an urgency to assemble the recent advances in this promising area. This review presents an overview of the recent advancements and focuses on the structural features responsible for unique antiTB applications and compiled published reports on benzimidazole derivatives emphasizing on different approaches employed for their syntheses in order to help medicinal and clinical chemists in designing next generation, yet effective and safer antiTB candidates.

KEY WORDS: Mycobacterium tuberculosis, Bacterial infections, Benzimidazole, Heterocycle.

SAFETY AND EFFECTIVENESS OF NEWER ORAL ANTI-COAGULANTS IN INTENSIVE CORONARY CARE UNIT PATIENTS.

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The recent development of new oral anticoagulants (NOACs) offers the possibility of efficacy, relative safety and convenience compared with traditional therapy. This could lead to greater patient compliance, with easier management and improved provision of thromboprophylaxis. Safety though using NOACs should be focused on bleeding cases, surgery or on the management of patients receiving anticoagulant therapy with concomitant impairment of renal function, especially since many NOACs are dependent on renal excretion. Thus, if the clearance creatinine indicates severe renal impairment, NOACS will be contraindicated or their dose needs to be changed. In patients who need surgery, there are published protocols of management, depending on the severity of the intervention and renal function. In the case of severe hemorrhage, requiring rapid reversal of the anticoagulant effect and in the absence of specific antidotes, alternatives such as one of the nonspecific haemostatic agents must be considered. Clinical evaluation in bleeding situations and a meticulous risk–benefit appraisal for NOACs is needed, and these procoagulant agents and patients must be monitored closely.

Keywords: Apixaban, Bleeding, Dabigatran, New oral anticoagulants, Rivaroxaban

MEDICINAL PLANTS USED FOR THE TREATMENT OF SKIN INFECTIONS

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Skin infections are the most unavoidable events in life. Skin infections may arise due to physical, chemical, or microbial agents. Healing is a survival mechanism and represents an attempt to maintain normal anatomical structure and function. Skin infection healing is a process by which tissue regeneration occurs. To treat skin infections use conventional dosage forms had a combination of steroids and antibiotics. These steroids will produce huge side effects when used on long-term usage for the treatment of skin infections. To overcome this, we explored the Plants and their extracts that have immense potential for the management and treatment of skin infections. The phytomedicines for skin infections are not only cheap and affordable but are also purportedly safe as hyper-sensitive reactions are rarely encountered with the use of these agents. These natural agents induce healing and regeneration of the lost tissue by multiple mechanisms. In this review, we have made an attempt to give an insight into the different plants having potential skin infections-healing properties which could be beneficial in therapeutic practice.

Keywords: Skin infections, Healing, Herbs, and Phyto-medicine.

MOLECULAR INSIGHTS OF NOVEL THIAZOLE CHALCONE DERIVATIVES

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Chalcones (l,3-diaryl-2-propen-l-ones) one of the major classes of natural products, they consist of open chain flavonoid moiety whose basic structure includes two aromatic rings which are bound by a three- carbon α,β-unsaturated carbonyl system. Chalcones have been reported to possess many useful biological properties including anti-inflammatory, anticancer, antimicrobial, antiproliferative, anti- malarial, anxiolytic, antiprotozoal, antiviral activities these compounds also inhibit some enzymes like cyclic dependent kinase, several protein tyrosine kinases, topoisomerases. The aim of the present study is to perform QSAR studies for the selected 47 compounds of Chalcones derivatives along with Lipinski rule. After performing the study the internal and external parameters were studied for all 47 compounds to select the best model which passes all the criteria results. These observations promote to select the best model among pool of n number of model to design the novel chalcone compounds with better biological activity. Further Docking studies will reveal the best fitted compounds to DNA gyrase enzyme which could be used for the further studies involving the synthesis and invitro and invivo biological evaluation.

Keywords- Chalcones, QSAR studies, ADME, In-silico studies.

A CASE STUDY ON DRUG HYPERSENSITIVITY IN COVID VACCINATION

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This case study is about adverse reactions on covid vaccine (covisheild). The coronavirus was officially named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by the International Committee on Taxonomy of Viruses based on phylogenetic analysis. SARS-CoV-2 is believed to be a spillover of an animal coronavirus and later adapted the ability of human-to-human transmission.Because the virus is highly contagious, it rapidly spreads and continuously evolves in the human population.some individuals experience few abnormal activites after getting vaccinated ,The purpose of this review artcle is to discuss about the hypersensitivity reactions occurred in a patient who took covid vaccination and the detailed study about adverse effects on covid vaccines and prevent the possible abnormal outcome after getting vaccinated for COVID-19. This case study will cover the complications occurring due to COVID-19 vaccines based on age factor, gender, brand, environmental status, weather, food interactions, drug interactions .

KEYWORDS: Drug hypersensitivity reactions,COVID-19 vaccine,Adverseeffects,Anaphylaxis.

"IN VITRO CYTOTOXIC EFFECT OF LEAF EXTRACT OF BLUMEA BALSAMIFERA IN LUNG CANCER CELL LINE"

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Backgrounds:Lung cancer is the 1stleading cause of cancer death in India and 2ndaround the world. Lung cancer is a malignant lung tumor characterized by uncontrolled cell growth in lung tissue. Surgery, Chemotherapy, Radiation Therapy, Targeted Drug Therapy and Immunotherapywas considered to becurrenttreatment. Chemotherapeutic agents have been found to possess severe adverse reactions and hence compounds isolated from medicinal plants are of great potential sources of novel therapeutics. We found BlumeaBalsamifera to possess many pharmacological activities, including those with anticancerpotentials.

Methods:The shade dried leaf part of plant, Blumea Balsamifera was subjected to soxhelet extraction using ethanol as a solvent. The extract was then subjected to qualitative and quantitative phytochemical screening. The anticancer effect of extract was investigated on human lungcancer cell line A549 and results obtained were analyzed using statistical analysis.

Results: Qualitative phytochemical screening of the leaf part showed the presence of flavonoids, phenols, tannins. Quantitative analysis showed that ethanolic extract contains higher amount of alkaloids, flavonoids, tannins, phenols. The IC50 value of the ethanolic leaf extract of Blumea Balsamifera and the standard Cisplatin was found to be 66.63 µg and 3.90 µg, respectively.

Conclusion: From the findings of the study it may be concluded that the leaf extract of BlumeaBalsamiferawas used as a traditional medicine and also as an anti-cancer drug.

Keywords: Lung cancer, BlumeaBalsamifera, MTT Assay, Soxhelet extraction

"ANTIMICROBIAL ACTIVITY OF FORMULATION SHOREA ROBUSTA RESIN AND CARTHAMUS TINCTORIUS OIL LINN."

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Objective- Formulation The antibacterial activity of Shorea robusta resin and Carthamus tinctorius oil Linn was developed and tested. MATERIAL & METHODS- Shorea robusta resin powder (100 g) of was systematically extracted with 200 mL of ethanol in a Soxhlet apparatus. For the formulation of nano-emulsion without drug, tween 80 and PEG were taken in the ratio of 3:1. In this 3 ml of tween 80 and 1 ml of PEG were taken together. 1ml of Carthamus tinctorius oil was added. With the help of a magnetic stirrer at 500 rpm 5ml of water was added into the 3:1:1 ratio of tween 80, PEG and CTO solution with continuous stirring till the emulsion was formed. RESULTS- The zone of inhibition of the test samples when compared at each concentration level for individual strains, it was found that Formulation Shorea robusta resin and Carthamus tinctorius oil exhibited antimicrobial efficacy with the least zone of inhibition against S. aureus, S. bacillus, E. coli and P. aeruginosa at 200 mg/ml. Ofloxacin shows its maximum antimicrobial efficacy as standard drug as compared to Formulation SRR and CTO under consideration. The results showed the synergistic effect of Formulation SRR and CTO in comparison to individual Formulation Shorea robusta resin and Carthamus tinctorius oil against both gram-positive and negative strains. CONCLUSION- The study concludes that Shorea robusta resin and Carthamus tinctorius oil have promising antimicrobial activity.

KEYWORDS- Antimicrobial Activity, Formulation, Shorea robusta resin, Carthamus tinctorius oil.

A TRADITIONAL FORMULATION AND EVALUATION OF OXYMEL ENRICHED MEDICINAL PLANTS FOR THE TREATMENT OF OBESITY

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Obesity is a condition that occurs when a person has excess weight or body fat that might affect their health. It is a major risk factor leading to a number of chronic diseases. The common causes of obesity are poor diet, lack of physical activity, calories intake. Most of the anti-obesity drugs that were approved and marketed have now been withdrawn due to its serious side effects. Hence, traditional medicinal plants and their active phytoconstituents have been used for the treatment of obesity and their associated secondary complications. Herbal oxymel is a traditional medicinal preparation made by combining honey, vinegar and herbs. Hence, the study was aimed to formulate and evaluate an herbal oxymel, which is a honey based oral formulation. The formulation consists of medicinal plants Fenugreek, Black Cumin and Horse Gram which have promising phytochemical constituents that are responsible for the management of weight. So, based on the scientific background the Herbal oxymel acts as an effective natural remedy that can provide a wide range of health benefits for obese people.

Keywords: Herbal Oxymel, Obesity, Fenugreek, Black Cumin, Horse Gram

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Keywords: Herbal Oxymel, Obesity, Fenugreek, Black Cumin, Horse Gram

DEVELOPMENT AND VALIDATION OF BIO-ANALYTICAL METHOD FOR THE ESTIMATION OF LAMIVUDINE AND ZIDOVUDINE BY LC-MS/MS METHOD

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A simple, rapid, precise, accurate & specific liquid chromatography- mass spectrometry (LC-MS/MS) method was developed for the estimation of drugs like Lamivudine & Zidovudine in human plasma. Chromatographic separation was done on Inertsil ODS-3V, C18, 150 X 4.6 mm, 5 µm column. Mobile phase was composed of 10mM ammonium formate-methanol 10:90 (v/v), at a flow rate of 1.0 mL/min . Turbo ion-spray interface (TIS) operated in positive ionization mode was used for the mass spectrometric detection. The MRM transitions monitored were m/z 230.1/112.1 (lamivudine), m/z 268.2/127.1 (zidovudine), m/z 248.1/130.1 (Emtricitabine, ISTD) and m/z 287.2/191.2(Abacavir, ISTD). The method was developed and the established calibration ranges were 10-3018 ng/Ml for both lamivudine and zidovudine. The slope values are consistent and regression values were found to be more than or equal to 0.99. The accuracy for lamivudine and zidovudine were in the range of 96.9-102.2%. The precision was found to be less than 11.2% for lamivudine and 12.6% for zidovudine. Further, the reported method was validated as per the ICH guidelines and all the results were found with in the acceptable range.

Keywords: Lamivudine, Zidovudine, Abacavir and Emtricitabine

THERAPEUTIC CHALLENGES AND RECENT PREVENTIVE MEASURES IN WERNICKE'S ENCEPHALOPATHY.

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Thiamine deficiency results in Wernicke's encephalopathy (WE), a neurological disorder. In the general population, the prevalence rate of WE varies from 0.4% to 2.8%. Wernicke's encephalopathy often manifests as confusion, problems with the oculomotor system, and movement incoordination, notably ataxia. About 80% of people with untreated acute episodes of mental abnormalities first have behavioral issues and memory loss that are later diagnosed as Korsakoff syndrome; if these acute episodes are left untreated, it might result in death in severe conditions. About 50% of all WE cases have alcoholism as their major cause, while WE may sometimes be brought on by people who are not alcoholics. The lack of vitamin B1 is the main contributor to WE development. Alcohol-induced thiamine deficiency is the catalyst for WE development to begin. Ophthalmic issues, particularly quick involuntary eye movements, are the main indicator of WE. It may be diagnosed with MRI, which has a high specificity of 93% but a poor sensitivity of just 53%. Thiamine 250 mg daily over the next three to five days, spread out over 30 minutes, diluted in 50-100 mL of ordinary saline, is the recommended immediate therapy for WE. For two to three days, thiamine 500 mg IV t.i.d. Clinicians find it very challenging in understanding the predisposing factors, radiological imaging, and symptoms to diagnose the condition and provide therapy right once. This review discusses the underlying causes, clinical symptoms, pathophysiology, risk factors, diagnosis, and therapy of WE.

Keywords: Complications of alcoholism, Wernicke's encephalopathy, Immediate treatment, Thiamine, Prophylaxis.

TURRITOPSIS DOHRNII- ON HUMAN AGEING

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Turritopsis dohrnii (Cnidaria, Hydrozoa) which is also called as immortal jellyfish where it undergoes life cycle reversal to avoid death caused by physical damage through environment and aging. T. dohrnii also provides the

Paradigm to understand regeneration and aging by exhibiting an additional developmental stage to the typical hydrozoan life cycle. jellyfish which is weak undergo a whole-body transformation where the stage is named as cyst stage and then metamorphoses back into an earlier life cycle stage, the polyp. trans differentiation by which the cellular process is reversed and a mechanism in which a differentiated cell and mature cell can switch into a new cell type. The unique characteristics of the cyst would be reflected by differential gene expression patterns when compared to the jellyfish and polyp stages. Usually

The gene which comes under the sorts which exhibit significant differential expression that would play a foremost role in reverse development. The polyp, jellyfish and cyst stage of T. dohrnii is sequenced through RNA sequencing.

T. dohrnii undergoes mutation that preserved telomeres, or DNA sequences that protect the end of a chromosome and typically shorten with age and an important thing is that it's not a single molecular pathway..it is a combination of many . so it is not scientifically proved that it would be usefull for human aging but further studies and research may bring a cure to a disease associated with aging. Where much deeper understanding of T. dohrnii Might inspire regenerative medicines for humans.

Keywords: Immortal Jellyfish , Regeneration, Ageing, Mutation.

IDENTIFICATION AND STUDY OF A DIGESTIBLE FIBER BASE FOR SLOW RELEASE OF AMOXICILLIN AND SUPPORT POPULATION DYNAMICS OF PROBIOTICS

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Amoxicillin is a strong penicillin antibiotic effective against multiple strains of bacteria, but also affect the gut microbiome. Amoxicillin remains one of the best and most preferred antibiotics with and without Clavulanic acid, but the side effect due to removal of probiotics from gut environment greatly impair the therapeutic value of the drug. Hence the aim of the present study is to develop a base for tablet formulation that can improve release of amoxicillin, can improve probiotic effect in gut and to evaluate its efficacy. Amoxicillin tablet (500 mg) was formulated incorporating natural fibers obtained from Brassica oleracea and evaluated for the antimicrobial activity against E. coli and species of Salmonella to understand the released concentration of the drug from different bases versus time versus antimicrobial activity. The survival rate and time of various probiotics such as Lactobacillus acidophilus, L. bulgaricus, L. casei, Bifidobacterium bifidum, B. longum, Enterococcus faecium, Streptococcus faecium and Saccharomyces boulardii were also tested.

Study findings revealed that the tested pathogens showed susceptibility while all the probiotics escaped antimicrobial attack from the tablet formulated with Brassica oleracea base. Survival rate of all species of probiotics in partially polymerized Brassica oleracea fiber base incorporated formulation was higher whereas no viable organism can be isolated from other fiber bases treatment group. Rapid and selective attraction cum binding of probiotics on partially depolymerized Brassica oleracea fiber was observed and also the release of Amoxicillin from the same was not affected. About 40% of the probiotics (based on log phase time) from the partially depolymerized Brassica oleracea fiber was observed to have survived and could withstood all adversities implicated during the experiment. The study concludes that the partially depolymerized fiber base from Brassica oleracea may offer solution to the problem of probiotic survival due to Amoxicillin and would also make the best use of the drug.

Keywords Amoxicillin, Depolymerized fibers, Brassica oleracea, herbal base for tablets

INSILICO EVALUATION OF KAEMPFEROL-3-O-BETA-D XYLOPYRANOSIDE FROM RICINUS COMMUNIS LINN. FOR ANTI-ANXIOLYTIC ACTIVITY.

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Ricinus communis is classified as the most poisonous plant on earth of humans. Ricinus communis have been widely used in the traditional medicine such as abdominal disorders, arthritis, muscle aches, chronic headache, sleeplessness. The aim of this study is to find the anxiolytic activity of Ricinus communis of the flavonoid compound Kaempferol-3-O-beta-D xylopyranoside with the translocator protein(18kDa) by molecular docking. The docking study was done for Kaempferol-3-O-beta-D Xylopyranoside using the translocator protein(18kDa). The Translocator protein ligands are promising candidates for fast-acting anxiolytic drugs. Kaempferol-3-O-beta-D Xylopyranoside is found in the dried leaves of the Ricinus communis. Anxiolytic agents treat the symptoms of anxiety, fear, uneasiness, muscle tightness and fear. Anxiolytics work by targeting key chemical messengers in the brain. Docking is a method which predicts the preferred orientation of one molecule to a second when a ligand and a target are bound to each other to form a stable complex. For this analysis , Autodock tools v1.5 and auto dock v4 program and molegro molecular viewer v2.5 were used. For the present study, the crystal structure 18kDa translocator protein were retrieved from the protein data bank(PDB) and used for the computational analysis. The ligand was docked to target protein complex 18kDa Translocator protein using autodock tools.The electrostatic map and affinity of all atoms present were computed with grid spacing of 0.35A.The result were evaluated by sorting the different orientation of ligands with respect to Kaempferol-3-O-beta-D Xylopyranoside -18kDa translocator protein interaction, which developed by molegro molecular viewer v2.5.

Keywords: Ricinus communis, kaempferol-3-O-beta-D Xylopyranoside, 18kDa Translocator protein.

EVALUATION OF CURCUMIN CHEWABLE TABLET BYCHROMATOGRAPHIC TECHNIQUES

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Curcuminoids are a partially purified natural complex of diarylheptanoid derivatives isolated from turmeric. A Simple, Selective, precise RP-HPLC method has been developed for the determination of Curcumin in pharmaceutical formulation. Curcumin was analyzed by HPLC using C18 analytical column (250mm X 4.6mm, 5µm) with UV detection at 420nm. The mobile phase consisted of a mixture of 60 volumes of Tetrahydrofuran and 40 volumes of citric acid. The chromatography was performed by isocratic elution at a flow rate of 1mL/min. The detector response for the Curcumin was linear over the selected concentration range from 1to 10 µg/ml, with a correlation coefficient of 0.9999.The accuracy was between 98.0% to 102.0%. The precision (R.S.D) among the six sample preparations was 0.9 %. The recovery of Curcumin was about 100.92 %. The method was validated according to International conference of harmonization guidelines in terms of accuracy, precision, specificity, robustness, Ruggedness, and solution stability method. The method development of Curcumin was applied successfully for HPLC analysis of pharmaceutical dosage form.

Keywords: Curcuminoids, HPLC analysis, pharmaceutical formulation, Validation

PHARMACOLOGICAL EVALUATION OF "PROSOPIS CINERARIA(L). DRUCE & DICHROSTACHYS CINEREA (L)" WIGHT & ARN AGAINST FORMALDEHYDE INDUCED ARTHRITIS IN RATS

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The current study is designed to evaluate the Pharmacological evaluation of "Prosopis cineraria(L). Druce & Dichrostachys cinerea (L)" Wight & Arn against formaldehyde induced arthritis in rats. The extraction was done by using the Hot Soxhlet extraction method and the extract was subjected to Phytochemical screening. The in-vitro anti-arthritic activity of Prosopis cineraria(L). Druce & Dichrostachys cinerea (L) was performed by the Bovine serum albumin method by determining the % of inhibition. In the BSA method Diclofenac sodium (Standard drug) exhibits 90% of percentage inhibition at 400 µg/ml concentration. While comparing with the Test extract (Prosopis cineraria & Dichrostachys cinerea) exhibits 72.7% and 66.6% at 400 µg/ml concentration. The invivo anti-arthritic activity of Prosopis cineraria(L). Druce & Dichrostachys cinerea (L) was performed by Formaldehyde induced arthritis method in male albino Wistar rats by determining the changes in the paw volume, and paw thickness was measured. The standard drug Diclofenac sodium exhibits 77.45. while the Prosopis cineraria &dichrostachys cinerea exhibits (high doses) 75.41&75.21%of inhibition. The phytochemical screening of Prosopis cineraria(L). Druce & Dichrostachys cinerea (L) reveals the presence of various chemical constituents like sterols, Flavonoids, Tannins, Saponins, Alkaloids, Proteins, and Carbohydrates. Both plants have significant anti-arthritic activity in both Invitro and in vivo models. but the Prosopis cineraria plant shows more antiarthritic activity compared with dichrostachys cinerea in both Invitro and in vivo studies.

Keywords: Prosopis cineraria, Dichrostachys cinerea, Rheumatoid arthritis, Diclofenac sodium, Formaldehyde, Bovine serum albumin.

THE DEVELOPMENT OF A NOVEL STABILITY-INDICATING RP-HPLC METHOD FOR THE SIMULTANEOUS EVALUATION OF RILPIVIRINE AND CABOTEGRAVIR IN PURE API FORM AND TABLET DOSAGE IN ACCORDANCE WITH ICH GUIDELINES.

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This study's focus is on the simultaneous assessment of Rilpivirine and Cabotegravir using RP-HPLC in bulk and tablet dosage form. Materials and methods: The separation was carried out on a Zorbax SB C18 (4.6 x 150mm, 5 m) analytical column using a mobile phase of 40% Water (0.1 percent Formic Acid): 60% Acetonitrile. Using a UV detector, the eluents were found at 248.0 nm.

Under optimal circumstances, Rilpivirine and Cabotegravir were separated at 2.084 and 3.2mins, respectively. The detection limit for Rilpivirine was 1.02µg/mL, while the detection limit for Cabotegravir was 3.30µg/mL.Cabotegravir had a percentage mean recovery of 100.02 percent, but Rilpivirine had a recovery rate of 100.72 percent.

The percentage of degradation was determined to be extremely low in each stressful environment. It was found that optimized conditions were incredibly ideal for simultaneously determining all of them in both marketing dose form and bulk form.

Key words:Cabotegravir, Rilpivirine, method development, validation, and RP-HPLC.

LEVODOPA RICH BIOLOGICAL SOURCES: AN ALTERNATIVE APPROACH IN PARKINSON TREATMENT

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Parkinson's disease (PD) was first formally identified by British physician James Parkinson and named the disease as "The shaking palsy". PD is characterized by the decrease levels of dopamine in the brain. L-DOPA is a pro drug which crosses the Blood Brain Barrier (BBB) whereas dopamine cannot. L-DOPA (3, 4-dihydroxy-phenyl-L-alanine) has been considered as the gold-standard treatment for PD but have various side effects. L-DOPA is found naturally in fungal (Acremoniumreticulcum, Aspercaillusoryzae), marine sources such as thermophilic bacteria (Archae), Spongionella Sp.(Sponge), plants such as Viciafaba (Fava Bean), Mucunapruriens. Broad beans were found to be replenishing brain levels of L-DOPA even more quickly and for longer periods, than conventional medication. The current work is focused on identifying the natural sources contains L-DOPA. In plant, levodopa is a precursor of many alkaloids, catecholamine's and melanin and is released from mucuna into soils, inhibiting growth of nearby species. Plant sources were widely explored and Mucunamonosperma (a wild plant) contains 16.78% of L-DOPA. Antheumgraveolens (a vegetable) have proved to be ideal sources for extracting L-DOPA in sufficient quantity. Marine sources Holothuriascabra (Sea Cucumber) and fungal sources (Acremoniumreticulum) were found to contain L-DOPA, which can cure the disease much faster than the allopathic treatment. Various extraction methods have been compared and reviewed along with its efficiency, yield and purity of L-DOPA. The application of L-DOPA holds true in every field including therapeutics and herbicidal effects. L-DOPA obtained from chemical synthesis was found to have serious side effects. So, the L-DOPA rich natural sources like plant, fungal, food, marine, bacteria may be an alternative approach for the treatment Parkinson disease.

Keywords: L-DOPA, dopamine, Parkinson's disease, biological sources

HERBAL MICROSPONGE DRUG DELIVERY SYSTEM OF ENICOSTEMMA AXILLARE FOR THE TREATMENT OF RHEUMATOID ARTHRITIS

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The present study was carried out to formulate "Herbal Microsponges" by using "Ethanolic" extract of "Enicostemma axillare" leaves, to explore the drug release based on the type and concentration of "Polymers" used in the formulation. The extract was subjected to preliminary phytochemical screening which indicates the presence of Alkaloids and flavonoids. Isolation of flavonoids was done which consists anti arthritic activity. Microsponges were prepared and the evaluation studies of each formulation were compared. In the determination of encapsulation efficacy of Microsponges, the ratio of polymer played an important role. Maximum encapsulation efficacy was observed with 100 mg of polymer when used along with the drug in 1:1 ratio. Similarly, the concentration of emulsifier Poly Vinyl Alcohol (PVA) has a key role to play in the preparation of Microsponges.

Key words: Herbal Microsponges, Ethanolic extract, Enicostemma axillare, Flavonoids, Polymers, PVA, Rheumatoid arthritis

REVIEW OF QUINOZOLINES

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Quinazoline is an aromatic heterocycle that has a bicyclic structure made up of two fused, six-membered aromatic rings, a pyrimidine ring and a benzene ring. It is a crystalline solid that is light yellow and soluble in water. Because it is an aza derivative of quinoline, quinazoline is also known as 1,3-diazanaphthalene. Although substituted derivatives of the parent quinazoline molecule have been created for medical applications including antimalarial and anticancer medicines, the parent quinazoline molecule is rarely referenced by itself in scientific literature. A planar molecule is quinazoline. It is isomeric with cinnoline, quinoxaline, and phthalazine, three other diazanaphthalenes belonging to the benzodiazine subgroup.

The docking method, currently used as a standard computational tool in drug design for lead compound optimization and in virtual screening studies to find novel biologically active molecules, aims to predict the experimental binding modes and affinities of small molecules within the binding site of specific receptor targets.

Natural compounds with high bioactive potency are considered as outstanding building blocks to create a hybrid molecular scaffold for therapeutic medicines. Quinazoline is one that many medicinal chemists are interested in. The current mini review updates our understanding of natural and synthetic Quinazoline hybrids, with a focus on their potential as anti-cancer, anti-microbial, anti-malarial, antidiabetic, antiinflammatory and antioxidant agents. The most promising agents Quinazoline along with their synthesis, structure-activity relationships (SAR) and pharmacological characteristics, presented in this brief review may help a researcher in medicinal chemistry to select the proper nucleus and functions when creating Quinazoline hybrids that are effective against a variety of disorders.

KEYWORDS: Quinazoline, docking, synthetic Quinazoline hybrids, anti-cancer, anti-microbial, anti-malarial, antidiabetic, antiinflammatory and antioxidant agents.

A REVIEW ON "SARACA INDICA- THE POTENTIAL AYURVEDIC HERB"

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Saraca indica L or (Saraca asoca Roxb. de Wilde) belonging to the family Caesalpiniaceae has been regarded as a universal panacea in old Indian Ayurvedic texts.. Saraca indica is women friendly plant due to its anti-progestational, antiestrogenic, anti-menorrhagic, anti-oxytocic, uterotonic activity. It is reported to contain glycoside, flavonoids, tannins and saponins, steroids, carbohydrates, proteins. The versatile plant has pharmacological effects like spasmogenic, anti-bacterial, anti-tumour, & anti-cancer, anti-diabetic, CNS depressant, anti-helminthic, cardio protective, analgesic, anti-inflammatory and anti-oxidant activities. Unethical harvesting and deforestation have reduced the wild population, listing the Ashoka tree in the 'Globally vulnerable' category by IUCN. Huge market demand has led to adulteration with substitutes. It is aimed to compile a current research dealing with phytochemistry, pharmacology and medicinal properties of Saraca indica.

Keywords: Saraca indica, gynaecological, vulnerable, phytochemistry, Caesalpiniaceae

RP HPLC METHOD DEVELOPMENT AND VALIDATION OF TOLPERISONE HCL AND DICLOFENAC SODIUM IN BULK AND PHARMACEUTICAL DOSAGE FORMS

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High-performance liquid chromatography is at present one of the most sophisticated tool for analysis. The estimation of Tolperisone HCl and Diclofenac sodium was done by RP-HPLC. The Phosphate buffer was pH 3.0 and the mobile phase was optimized consisting of Methanol: Phosphate buffer mixed in the ratio of 70:30 % v/ v. Inertsil C18 column C18 (4.6 x 150mm, 5%m) or equivalent chemically bonded to porous silica particles was used as stationary phase. The detection was carried out using a UV detector at 260 nm. The solutions were chromatographed at a constant flow rate of 0.8 ml/min. the linearity range of Tolperisone HCl and Diclofenac sodium were found to be from 100-500 g/ml of Tolperisone hcl and 1-5g/ml of Diclofenac sodium. Linear regression coefficient was not more than 0. 999. The values of % RSD are less than 2% indicating the accuracy and precision of the method. The percentage recovery varies from 98-102% of Tolperisone HCl Diclofenac sodium. LOD and LOQ were found to be within the limit.

Key words: Tolperisone HCl, Diclofenac sodium, RP-HPLC, Methanol, validation.

SELF PRESERVING COSMECEUTICAL PERSONAL CARE PRODUCTS

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Background of the study: Preservatives are used to control microbial spoilage, extend product shelf life, and prevent human infection. However, their safety and, in some cases, environmental impact have already been increasingly questioned. Many of the traditional/popular preservatives were increasingly banned by world Regulatory authorities. In recent years, there has been a lot of interest in developing preservative-free or self-preserving cosmeceuticals. Alternative preservation is becoming more popular, due to consumer acceptance based on safety aspects.

AIM: The description and selection of an alternative preservative complex (self preserving) with multifunctional ingredients, its application in the development and formulation of various cosmeceutical personal care products, and a comparative study of the efficacy of the cosmeceutical formulation versus a traditional preservative cosmeceutical topical products represent the goal of this study.

METHODS: Minimum Inhibitory Concentration (MIC) of different cosmetic ingredients were screened to identify Multi-functional actives with antimicrobial activity. Cosmeceutical personal care formulations made with multifunctional ingredients and other cosmetic ingredients were studied for their efficacy against microbial challenge by Preservative Challenge Test (PCT).

RESULTS: Five synergistic combinations of multifunctional ingredients were identified by studying combinations of biomimetic phospholipids, anti-oxidant, and chelators. Cosmeceutical formulations with the said synergistic mixture of multi-functional ingredients were found to be highly efficacious in controlling microbial challenges as examined in the Preservative challenge Test.

CONCLUSION: The study shows that it is possible to develop 'self-preserving' cosmeceutical personal care products by a judicious selection of multi-functional actives without compromising on product aesthetics and product sensorial. These products can withstand microbial challenges. They exhibit similar efficacy as that of products made with conventional preservatives.

Key Words: Cosmeceutical, Multi-functional ingredients, Self-preserving, Personal care formulations, Conventional Preservatives

NEW VALIDATED LC-MS METHOD DEVELOPMENT AND ESTIMATION OF NITROSAMINE IMPURITIES (NDMA, NEIA) IN CANAGLIFOZIN DRUG(SGLT2) INHIBITORS.

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Background: Canagliflozins is most prescribed anti diabetic drug, as diabetic drugs are consumed daily there may be chance of consuming nitrosamine impurities beyond their limits hence FDA recommended to check for carcinogenic impurities in routine using drugs.

Aim& Objectives: The study aims to simultaneous estimation of 4 nitrosamines (NMDA, NEIA) by LCMS to detect the LOD & LOQ. estimation of these impurities (NMDA, NEIA) in canagliphozin tablet dosage form with specificity parameters.

Methods: Drug canagliflozin was collected from hetero labs, methanol , lcms grade acetonitrile ,formic acid two impurities (NMDA, NEIA)purchased from merck pharmaceuticals. The Zorbax SB C18 column (250mmx4.6mm, 3 mcm)is used as stationary phase,0.1% formic acid and acetonitrile in ratio of 70:30 is used as mobile phase, methanol is used as diluent flow rate was maintained at 1ml/min, the injection volume was fixed to 10mcl ,which is run at 10min. The Electron ionsation ion source, multiple reaction monitoring , acquisition mode is used for study. The time required for solvent delay and detector off is 4mins and 9.5 mins respectively. The product ions peaks of impurities were observed at 44 for NDMA, 99 for NEIA. Results: The % RSD for the peak areas of NDMA, NEIA obtained from six replicate injections of standard solutions were 2.5, 9.8, respectively. The % recovery of NDMA, NEIA were within the limit..The % RSD for the results obtained from method precision study were within the limit.

Conclusion: Above observations indicate that the LC-MS method meets the acceptance criteria for the parameters selected for validation study. Hence, the method is suitable for the determination of NDMA, NEIA in Drug Substance by LC-MS.

Key words : Nitrosamines, LCMS, NDMA, NEIA

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF VILDALIPTIN IN BULK AND SOLID DOSAGE FORM BY RP-HPLC AND UV-VISIBLE SPECTROPHOTOMETRY METHOD

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A simple, sensitive, precise, accurate and specific Chromatography RP-HPLC methods has been developed and validated for estimation of Remogliflozin Etabonate and vildagliptin in Pharmaceutical dosage form. RP-HPLC metgod was carried out by Isocratic mode technique on a Reversed-Phase Cosmosil C18 (250 mm*4.6 mm, 5µm i.d.) column. Detection wavelength was at 210 nm and monile phase Acetonitrile: Water(60:40% v/v). HPLC plays a vital role in product assessment, research and environmental monitoring. HPLC is suited to sepaeate higher molecular weight compounds in order to give quantitative and qualitative information. HPLC separatory systems, chromatography separations are characterized by the resolution time of analyte peak, selectivity and efficiency (plate number). HPLC separations are effective with liquid mobile phases following through a column packed with a solid stationary phase. This article briefly describes the theory and equations behind many of the concepts that drive chromatography in pellucid and simple way of essential chromatography comcepts such as efficiency, retention factor, selectivity, resolution, pressure, Van Deemter curves and gradient equation.

Keywords: Efficiency, retention factor, selectivity, resolution, chromatography parameters.

NATURAL STARCHES AS PHARMACEUTICAL EXCIPIENTS: A REVIEW

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Starches present in tropical vegetables and fruits have served as a nutritive source of carbohydrate. Most of these crops grow in abundance with little or less agricultural assistance are present with starch in these which are gluten-free carbohydrates. When employed as an excipient can serve the criteria of gluten-free ingredients for the severely effected patients due to reactions created by the presence of gluten components. They have been studied for their excellent pharmaceutical excipient characteristics, such as filler, glidants, binder and disintegrant properties in formulations. Some of these starches can be substituted for commercially available chemically modified starches as excipients. It has been also studies that the modified versions of the native forms of these starches have properties that can be considered for including them as promising candidates in controlled drug delivery systems as well. Starch nanoparticles have been of great interest for drug delivery due to their relatively easy synthesis, biocompatibility, and vast amount of botanical sources. The modified forms of these starches had superior disintegrant properties to commercial super-disintegrant like sodium starch glycolate, which also indicate that they could be used as intra-granular disintegrant in tablet formulations for which rapid release is desired as a substitute for the synthetic disintegrant. Their application as excipients can add value to some of these underutilized crops to provide starch with special properties for specific pharmaceutical need. This review summarizes the current knowledge on the starches extracted from tropical plants that has been studied for their potential usefulness as pharmaceutical excipients.

Keywords: Disintegrants, Super-disintegrant, tropical starches, gelatinization, polymer modification

DEVELOPING A TOPICAL DRUG DELIVERY SYSTEM FOR FLUCONAZOLE GEL

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In addition to treating superficial and systemic fungal infections, fluconazole is a triazole antifungal. There are many side effects associated with the oral use of fluconazole. In order to reduce the dose of the drug and avoid side effects such as liver damage and kidney damage, this formulation is made in order to improve patient compliance and reduce the dosage of the drug. By using a polymer with different concentrations, such as Carbopol 945 & NaCMC, this research aimed to formulate & evaluate different formulations of a topical gel containing fluconazole. Penetration was enhanced with methanol.

Physical appearance, pH-value, spreadability, and drug content were evaluated for formulated fluconazole topical gel. In terms of physical characteristics, the gel was well formulated. As the polymer concentration in formulations F3 (105.20%) & F6 (110.5%) is higher, they show good drug content. F4 (99.30%) had the highest yield. Polymer concentration decreases the spreadability of gel. In order to prevent the risk of skin irritation, the formulation had a pH of 6-9.

Keyword: Carbopol 945; homogeneity; topical drug delivery system; sodium carboxymethyl cellulose; polymer; Fluconazole; irritation.

A REVIEW ON SPECTROPHOTOMETRIC METHOD DEVELOPMENT FOR ANALYSIS OF STATINS BY GREEN CHEMISTRY

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Green chemistry is the branch of chemistry also referred as sustainable chemistry, that deals with the design and optimization of processes and product in order to lower the use of toxic substance. It mainly focus on technological approaches to prevent pollution and reducing the consumption of non-renewable resource. This article describes basic concepts of the green chemistry and its sustainability in cardiovascular drugs.

To understand the spectrophotometric method development for analysis of cholesterol lowering drugs statins using green solvents.

Carcinogenic Solvents are referred as extremely toxic substances In view of the facts, green chemistry strategies trigger a new hope in the synthesis, analysis of different active compounds to meet the demands of saving environment. Different analytical techniques such as UV-Visible spectroscopy, Chromatographic techniques etc are used to quantify and qualify the active constituents in formulations. By using green solvent the carcinogenicity is reduced for saving environment. Statins are now among the most frequently prescribed agents for reducing morbidity and mortality related to cardiovascular diseases and analysis of these drugs is a current problem because of their solubility. Range of statins are analysed quantitatively by using carcinogenic solvents in analytical methods. These methods are scope for sustainability of green chemistry as those solvents shall be replaced by the greener solvents to increase the reproducibility.

All the developments shows that green chemistry is the most effective and efficient in the chemical and pharmaceutical sectors for the quantification of statins in bulk and pharmaceutical dosage forms.

EXTRACTION OF POLYPHENOLS FROM VITIS VINIFERA AND COMPARATIVE STUDY OF ANTIOXIDANT, ANTIFUNGAL AND ANTIMICROBIAL ACTIVITY

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The aim of the present study is to extract the polyphenols from Vitis vinifera and determine the antioxidant activity, antifungal activity and antimicrobial activity of the natural phenols.

The grape seed extract was prepared from seeds. The phytochemical constiutuents and the total phenolic hydrogen and also flavonoids were assessed. The antioxidant property of the extract was evaluated by using the nitric oxide scavenging method. The antifungal activity of the extract was determined by using well diffusion method. The antimicrobial activity of the extract was tested against the Gram positive and Gram negative bacterial strains by zone of inhibition method

From the comparative study the extract from Vitis vinifera inhibit the growth of aspergillus niger during antifungal activity and aslo showing the antioxidant property , but it shows the minimal inhibition against the gram positive and gram negative bacteria.

Keywords: Vitis vinifera, antifungal, antioxidant property, antimicrobial

AN OUTLOOK OF RECENT ADVANCES IN ELECTROCHEMICAL NANOTECHNOLOGY FOR THE DETECTION OF ANTIBIOTICS

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Nanomaterials have been identified as having outstanding thermal, mechanical, optical, and electrical properties and hope materials for opening new gates in the future. Antibiotics, often known as antibacterial agents, are well-known on a global scale and are frequently used to cure illnesses as well as to promote animal growth. Due to their capacity to boost the efficacy of feed and hence accelerate growth, antibiotics have been widely utilized in both animal and human medicine. Antibiotic environmental pollution and related health issues are a severe problem as a result of their improper disposal. The detection of antibiotic residues using nanostructured electrochemical platforms made of various materials, including as metal nanoparticles, magnetic nanoparticles, metal-organic frameworks, nano-material-based biosensors, and quantum dots, has been presented as a potential solution to this issue. Furthermore, nanomaterials-based biosensors have a great field in the evaluation and detection of antibiotics and they can be diverse bio-matrices. Several analytical methods have been blocked for accurate and reliable monitoring of antibiotic residue in natural resources. Here, focusing on the biosensors for the detection of antibiotics with high sensitivity is improved and stated.

KEYWORDS: Antibiotics, Nanomaterials, Electrochemical detection, Biomatrices, Biosensors

AN OVERVIEWOF THE PATHOPHYSIOLOGY AND TREATMENT OF PREMENSTRUAL DYSPHORIC DISORDER

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A severe mood disorder known as premenstrual dysphoric disorder (PMDD), which affects millions of women worldwide, is characterized by cognitive-affective and physical symptoms in the week leading up to menstruation. As an endocrine disorder or disorder related to hormones, PMDD is frequently referred to. But in addition to physical symptoms, persons with PMDD may encounter a variety of mental health issues, such as anxiety, suicidal thoughts, and sadness.Numerous studies have suggested that the symptoms are caused by cyclical changes in the levels of oestrogen and progesterone.Serotonin levels may fall dramatically in PMDD-afflicted women. The sad mood, cravings for food, and poor cognitive performance of PMDD are all related to low serotonin levels. 5 The best treatment for PMDD is selective serotonin receptor inhibitors (SSRIs), for this reason.A woman must experience both physical symptoms (such as bloating and breast discomfort) and mental changes to be diagnosed with PMDD (eg, sadness, and crying). These signs and symptoms must appear before the period (and disappear after the onset of the period).Premenstrual dysphoric conditions can be effectively treated with antidepressants that slow serotonin reuptake.The symptoms of PMDD are more quickly relieved by these medications than those of serious depression, therefore women don't necessarily need to take them daily.Although they offer more possibilities, hormone therapies are typically regarded as secondary treatments.Changes to one's diet and way of life may also aid with symptom relief. This article clearly explains the pathophysiology and treatment of PMDD.

Keywords: Premenstrual Dysphoric Disorder (PMDD), Serotonin, selective serotonin receptor inhibitors (SSRIs).

ANALYTICAL METHOD VALIDATION REPORT FOR ALFACALCIDOL ASSAY IN ALFACALCIDOL 1.0 MCG CAPSULE BY HPLC.

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A Simple, Selective, precise HPLC method has been developed for the determination of alfacalcidol in pharmaceutical formulation. Curcumin was analyzed by HPLC using C18 analytical column (Thermoscientific silica, 250 X 4.6mm, 5µm or equivalent) with UV detection at 265nm. The mobile phase Mix 920 Volumes of n-Hexane, 40 Volumes of IPA, 40 Volumes of Tetrahydrofuran and 2 Volumes of Acetic acid in 1000 mL beaker and Mixed well then sonicate for 5 minutes. The chromatography was performed by isocratic elution at a flow rate of 2mL/min. The detector response for the alfacalcidol was linear over the selected concentration range from 1to 10 µg/ml, with a correlation coefficient of 0.9999.The accuracy was between 98.0% to 102.0%. The precision (R.S.D) among the six sample preparations was 0.9 %. The method was validated according to International conference of harmonization guidelines in terms of accuracy, precision, specificity, robustness, Ruggedness, and solution stability method. The method development of Alfacalcidol was applied successfully for HPLC analysis of pharmaceutical dosage form.

Keywords: alfacalcidol, HPLC analysis, pharmaceutical formulation, Validation.

BIOANALYTICAL METHOD DEVELOPMENT AND THERAPEUTIC DRUG MONITORING OF CARBAMAZEPINE

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Background: Carbamazepine is a standard antiepileptic medication that has structural similarities with tricyclic antidepressants. Carbamazepine in plasma may be detected using a variety of techniques, including Therapeutic Drug monitoring (TDM). Carbamazepine TDM has been touted as beneficial in a number of trials, although definitive criteria for TDM have yet to be established.

Method: To evaluate Carbamazepine concentrations in human plasma, a bioanalytical technique was devised and validated using liquid chromatography (LC). Mean blood levels of Carbamazepine were 4995.54ng/mL in men and 3485.92ng/mL in females, according to an analysis of plasma concentrations in 84 epileptic participants receiving 100 to 400 mg/dose.

Results: Inter- and intra-day precision at 70 ng/ml, 550 ng/ml, and 950 ng/ml for Carbamazepine are 0.02-0.04, 0.03-0.08, respectively, whereas for Diclofenac these values are 0.01-0.03 and 0.02. All of these values were calculated in accordance with ICH criteria.The findings of TDM for Carbamazepine with Diclofenac as a comedication were statistically significant, with the mean blood levels reaching steady state in 84 patients using the medicine for a prolonged period of time. Mean serum concentrations were 4995.54ng/ml in women and 3485.92ng/ml in males. The total dosage range of the study was around 100 - 400 milligrams.

Conclusion: The proposed technique for determining Carbamazepine concentration was quick, precise, and accurate. Consequently, randomized, controlled trials (RCTs) in a wider population with a broad range of dose to correspond with the population's overall serum levels and several comedications for dose modifications to achieve the maximal safe dosage in the individual are anticipated.

Keywords: Bioanalytical method development, validation, Epilepsy, Carbamazepine, Diclofenac, Therapeutic drug monitoring.

KINETIC SPECTROPHOTOMETRIC DETERMINATION OF SOME SELECTED ANTI-RETROVIRAL DRUGS IN BULK AND PHARMACEUTICAL DOSAGE FORM

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A simple, accurate, reliable and sensitive kinetic spectrophotometric method for quantitative analysis of Emtricitabine and Tenofovir Disoproxil Fumarate in bulk and pharmaceutical dosage form has been developed. The proposed method is based up on oxidation reaction of drugs using alkaline potassium permanganate in the presence of sodium hydroxide at 60C, resulted in formation of green coloured product, absorbed maximally at 610nm. Initial rate and fixed time methods were adopted for construction of calibration curve over a concentration range of 4-36µg/ml. Molar absorptivity, Sandell's sensitivity, Limit of Detection, Limit of Quantification were also calculated. The proposed method was applied successfully for the determination of Emtricitabine and Tenofovir in pure drug and commercial dosage form.

Keywords: Emtricitabine, Tenofovir Disoproxil fumarate, Kinetic Spectrophotometric, Potassium permanganate, Initial rate method, Fixed time method.

REVIEW ON NANO MEDICINE

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Nano medicine, which was only a dream or at best a possibility is now into a reality. The use of drugs with local application and oral ingestion followed by parenteral administration. Introduction of pressurized systems added a note worthy dimension to the targeting drug to the affected organs and numerous techniques and devices have been experimented with to approach the problem of developing rational and therapeutically superior systems in which drug delivery is based upon. May the spirit of search in discovering better remedies and optimizing drug action emerge to provide superior medication to the suffering humanity. From the crude drugs to supramolecules, from drug extracts to drug loaded erythrocytes, liposomes and other carriers vis a vis the growing emphasis on site specific and receptor specific drug delivery systems; there has been a complete shift in the approach of ingredients the pharmacist is adopting. RATIONALE: Able to understand the importance of nano medicine.

KEYWORDS- LIPOSOMES, ERYTHROCYTES, TARGETTING DRUGS, NOVEL DRUG DELIVERY, SUFFERING HUMANITY.

CARBAZOLE LINKED CHALCONE DERIVATIVES -A VERSATILE APPROACH FOR DISEASE

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Chalcones are a class of phenolic chemicals with many cytoprotective and modulatory properties. These are found in large quantities in edible plants and are thought to be precursors of flavonoids and iso-flavonoids. On both benzene rings, chalcones have conjugated double bonds and a fully delocalized -electron system. Molecules with this structure have comparatively low redox potentials and a higher chance of undergoing electron transfer processes. Chalcone derivatives have anti-cancer, antioxidant, anti-inflammatory, antihypertensive, antimalarial, antiulcer, antiviral, antiprotozoal, cardiovascular, and mutagenic effects, among others. Many carbazole derivatives have been investigated for cytotoxic efficacy, and some have entered clinical trials, but only a handful have been authorised for the treatment of cancer so far, due to issues such as severe side effects and multidrug resistance in the clinical use of many carbazoles. The Carbazole linked Chalcone system, on the other hand, might have considerable cytotoxic properties. This review work also addressed the biosynthesis of Chalcone and its prospective use in a variety of illnesses . The authors also reviewed the importance of carbazole-chalcone derivatives in cancer therapy. Carbazole derivatives containing a Chalcone counterpart should be studied further for use in the treatment of a variety of deadly illnesses.

Keywords: Chalcones,Flavonoids , Disease and Cytotoxic efficacy.

THE DEVELOPMENT OF A NOVEL STABILITY-INDICATING RP-HPLC METHOD FOR THE SIMULTANEOUS EVALUATION OF RILPIVIRINE AND CABOTEGRAVIR IN PURE API FORM AND TABLET DOSAGE IN ACCORDANCE WITH ICH GUIDELINES

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This study's focus is on the simultaneous assessment of Rilpivirine and Cabotegravir using RP-HPLC in bulk and tablet dosage form.

Materials and methods: The separation was carried out on a Zorbax SB C18 (4.6 x 150mm, 5 m) analytical column using a mobile phase of 40% Water (0.1 percent Formic Acid): 60% Acetonitrile. Using a UV detector, the eluents were found at 248.0 nm.

Results: Under optimal circumstances, Rilpivirine and Cabotegravir were separated at 2.084 and 3.2mins, respectively. The detection limit for Rilpivirine was 1.02µg/mL, while the detection limit for Cabotegravir was 3.30µg/mL.Cabotegravir had a percentage mean recovery of 100.02 percent, but Rilpivirine had a recovery rate of 100.72 percent.

Conclusion: The percentage of degradation was determined to be extremely low in each stressful environment. It was found that optimized conditions were incredibly ideal for simultaneously determining all of them in both marketing dose form and bulk form.

Key words: Cabotegravir, Rilpivirine, method development, validation, and RP-HPLC.

CHITOSAN NANOPARTICLES DELIVERY IN BLOOD BRAIN BARRIER

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Nanotechnology is a rapidly developing field that is influencing research in a wide range of fields. Nanoformulations are a revolutionary way of medication delivery. This Review Article contains a brief introduction about Nanoformulations and its types like Nanoparticles, Nanoemulsions, Micelles, Dendrimers, Liposomes. This article gives a clear and detailed note on structure and function of the blood brain barrier and the Drugs which are permeant to Blood Brain Barrier. Gabapentin is a first-line medication for the treatment of neuropathic pain caused by diabetic neuropathy, postherpetic neuralgia, and central pain. Chitosan nanoparticles, in particular, have shown high potential for drug transport to the brain. Chitosan is a biodegradable, biocompatible, non-toxic, non-allergenic, and low-cost polymer natural widely used in various applications and approved for human use. This article covers Nanotechnology approaches for crossing the Blood Brain Barrier, Delivery of drug in the blood brain barrier and the advantages of the Nanoformulations to know about the Delivery in Blood Brain Barrier and Different Nanotechnology approaches for Research Purpose.

Keywords: Nanoparticles, Nanoformulations, Blood brain barrier, Gabapentin, Chitosan.

COMPARISON OF THE IMPACT OF DIFFERENT METHODS OF EXTRACTION ON THE YIELD OF ESSENTIAL OIL OBTAINED FROM THE PEELS OF CITRUS MAXIMA

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Citrus maxima (Merr.) of Rutaceae family contains good amount of essential oil in their fruit peels. Essential oils were extracted from the shade dried peels of Citrus Maxima using solvent extraction, steam distillation and hydrodistillation method. The yield and major phytoconstituents of essential oil were compared for all the three method of oil extraction. It was observed that there were no significant differences in the essential oil yield and in the presence of major phytoconstituents. The yield of hydrodistillation and steam distillation were comparably higher than solvent extraction method. Steam distillation had higher yield when compared to the hydrodistillation method. Essential oil yield was rapid and simple with Hydro distillation than in steam distillation as steam steam is not accessible to all the peels. As a conclusion it can be stated that essential oil extraction can be done either by steam if we need high yield or hydrodistllation method if we need it in a short period of time.

Key words: Citrus maxima, hydro distillation, steam distillation, solvent extraction

DESIGN OF NEWER PYRIDINE LINKED PYRAZOLE DERIVATIVES AS POSSIBLE E.COLI FABI INHIBITORS

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A novel derivatives of 5-[(2-aminophenyl)diazenyl]-4-[2-(pyridin-4-yl)hydrazinylidene]-2,4-dihydro-3H-pyrazol-3-one were synthesized and anti Escherichia coli activity were screened. Based upon the spectral data of the newly synthesized were characterized. The design of the novel compounds was done using in-silico methodology. The lead, pyridyl pyrazole derivatives was identified by Virtual screening technique. By using Lead optimization the pharmacokinetic behavior was predicted and binding interactions were analyzed by docking studies. Antibacterial activity was performed by agar well diffusion method by using Escherichia coli NCIM2918. Activity profile were compared to the standard ofloxacin. So, in the antibacterial screening for representative compounds, the chloro, methoxy and acid substituted derivatives showed significant activity.

KEY WORD: Antibacterial screening, Escherichia coli, In-silico methodology, pyridyl pyrazole

TOXICOLOGICAL EVALUATION AND PHARMACOKINETIC ASPECTS OF PREPARED NIOSOMAL FORMULATION

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The present research article was conducted to study the toxicity profile of prepared niosomal formulations of Valacyclovir and ganciclovir niosomes. The designed study was conducted on 7-9 weeks old Wistar rats. Each formulation contains three groups with 6 animals in a group. Acute toxicity was performed to study the general behavioural pattern of mice. All the animals were administered with prepared niosomal formulations of Valacyclovir ganciclovir for 30 days. Sub-acute toxicity studies were performed to study the toxic effects of prepared niosomal formulations. Different biochemical, haematological parameters, body and organ weight, and histopathology of stomach, intestine, liver and kidney. All the animals were observed throughout the experimental period for any observable toxic symptoms and mortality. At the end of fourth week decrease in body weight was observed when compared to control animals. There was significant increase in WBC and significant decrease in Hb, RBC and platelets was observed. No significant changes were observed in aspartate aminotransferase, alanine aminotransferase, total bilirubin urea, cholesterol and glucose. Significant increase in alkaline phosphatase and triglycerides and the decrease in total protein, albumin, and creatinine levels were observed. Mild parenchymatous degenerations of tubular epithelium in kidney were observed. In present study, Valacyclovir ganciclovir niosomal formulations were found to be moderately toxic especially in the gastrointestinal tract .

KEY WORDS: Valacyclovir ,ganciclovir niosomes,biochemical,haematological parameters.

COMPARISON OF EFFICACY AND SAFETY OF SINGLE AND COMBINATIONAL THERAPY OF SGLT-2IN IN TREATMENT OF DIABETES MELLITUS

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Diabetes mellitus is a chronic condition which requires firm glycaemic control with the help of medications and life style changes. Sodium glucose cotransporter 2 inhibitors are novel drugs which exhibit immense benefits on diabetic patients. Currently FDA approved three SGLT-2in wherein the mode of action is directed towards kidney in potentiating glucose excretion and has pleiotropic effects on reducing HbA1c levels, patient body weight, lipid profile to some extent and blood pressure. Their major positive effects are believed to be focused on cardiovascular and renal functions. SGLT-2in especially dapagliflozin was indicated not only in the management of type 2 diabetes mellitus but also approved for type 1 diabetes mellitus thus providing a way to reduce insulin dose. Risk of hypoglycaemia is significantly increased with use of SGLT-2in and insulin in type 1 diabetics but there is no risk when used alone. Many clinical trials were performed and few ongoing trials also suggested good efficacy and safety profiles with use of SGLT-2in. Although use of SGLT-2in alone are known to be efficacious, their use with other anti-diabetic drug classes presented promising effects. However, SGLT-2in are also associated with adverse events such as urinary and genital tract infections, diabetic ketoacidosis, fractures, amputation and kidney injury thus requiring special attention to minimise such effects with appropriate diagnosis and management for better patient survival outcomes. Appropriate SGLT-2in use with close patient monitoring, considering prior preventive measures and medication adherence are factors that improve quality of life.

Keywords: diabetes mellitus, SGLT-2in, hypoglycaemia, adverse events.

DRUG DELIVERY SYSTEM- AN OVERVIEW

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Drug delivery is a broad field of research on the development of novel materials or carrier systems for effective therapeutic delivery of drugs. This is an overview of the current Drug Delivery Systems (DDSs) starting with various routes of drug administration. Various drug formulations are then described as well as devices used for drug delivery and targeted drug delivery. There has been a considerable increase in the number of new biotechnology-based therapeutics. Most of these are proteins and peptides, and their delivery present special challenges. Cell and gene therapies are sophisticated methods of delivery of therapeutics. Nano particles are important for refining drug delivery. In addition to being vehicles for drug delivery, nanoparticles can be used as pharmaceuticals as well as diagnostics. Most of the advances in targeted drug delivery have occurred in therapy of cancer. Drug delivery to the brain across the blood-brain barrier presents many challenges. Refinements in drug delivery will facilitate the development of personalized medicine. The ideal DDS is defined. Commercial aspects, challenges, and future of DDSs are discussed.

Keywords : DDS, Nanoparticles ,Cancer and Brain barrier

FORMULATION AND EVALUATION OF HERBAL ANTI ACNE GEL

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Acne vulgaris (AV) is a disease of the pilosebaceous unit that causes noninflammatory lesions and inflammatory lesions. Acne vulgaris, a commonly seen disease among the youth, occurs at puberty and continues into adulthood. Staphylococcus aureus and Propionibacterium acne are considered as the major skin bacteria that cause the formation of acne. Acne vulgaris is a common dermatological condition allied with depression, anxiety, and other psychological sequelae. Acne vulgaris is another name for acne. It is a chronic inflammatory condition. It appears on the face, neck, upper chest, upper back, and other areas. The topical treatments that are currently available have few side effects. From much research, a confidence has been grown in people's mind on Herbal medications as they are safer than synthetic one. The side effects like contact allergy, local irritation, xerosis of the skin etc are the major reason to avoid synthetic drugs. The present research work done with formulation and evaluation of herbal anti-acne gels. The sample material used for the manufacturing of the formulations was from the leaves and flower extracts of Cassia auriculata, root of Hemidesmus indicus, seeds of Terminalia chebula, leaves of Andrographis paniculata and root of Glycyrrhiza glabra. Propionibacterium acne and Staphylococcus aureus, the causative organisms of acne when compared with standard. Thus, the significant antibacterial activity may be due to their phytochemical or secondary metabolites.

Keywords: Acne vulgaris, herbal medications, herbal anti acne, Propionibacterium acne, pilosebaceous.

AN REVIEW ON GREEN SOLVENTS AND METRICS OF GREENESS FOR ANALYTICAL PROCEDURES

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Green analytical chemistry promotes utilizing fewer harmful chemicals and reagents, energy-efficient tools, and little waste production. The development of solventless or solvent-minimized extraction techniques, the use of less toxic solvents, and the miniaturization of sample preparation equipment are the emerging trends in analytical method development. The twelve GAC principles act as a fundamental road map for fostering greenness in the analytical processes. Despite these recommendations, it's often impossible to avoid taking some undesirable actions. Therefore, it is crucial to examine and, if feasible, lessen the impact of analytical techniques on the environment and employees by determining how green they are. Several criteria have been devised for the evaluation of the greenness of analytical techniques. Some crucial instruments for evaluating the greenness of analytical procedures are the Analytical Eco-Scale, Green Analytical Procedure Index, and Analytical Greenness Metric. To calculate the analytical procedure's green index, each of these metrics takes into account various components of the analytical process. These metrics, their guiding concepts, and instances of how they were applied to particular analytical techniques were all covered in this overview.

Keywords: Analytical eco-scale; Analytical greenness metric; Environmental impact; Green analytical chemistry; Green analytical procedure index; Miniaturization.

THE EFFICACY OF NANO-DRUG DELIVERY SYSTEMS: IS IT WORTH THE HYPE?

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Nano-drug delivery systems are gradually becoming the current "talk of the city" due to their efficiency in treating different diseases in a more advanced manner when compared to the conventional drug-delivery systems. It's well known that drugs can be given through various routes of administration such as the popular oral, subcutaneous, intravenous route, and so on. It's quite surprising that formulating these same drugs as nano-particles and administering them to the patient could produce better results. Different studies have shown the effects of nano-drug delivery systems in targeting cancer cells, ameliorating pulmonary arterial hypertension, and providing improved treatments for ophthalmic conditions like, for instance, glaucoma, etc. Nano-drug delivery systems have been proved to show targeted action at the necessary site or organ, low toxicity, and fewer systemic side effects in most of the studies. These new insights can provide an enhanced understanding of the benefits of nanoparticle formulation of drugs as well as open up new pathways for future creative techniques in dealing with arising medical conditions. Furthermore, these formulations generally consist of polymer or liposome-based or coated nanoparticles since they are easily biodegradable, meaning they have a higher ability to get disintegrated, and at the same time, aren't harmful to living tissues, displaying more compatibility. New connections can be bridged from the utilization of nano-particles to the treatment of emerging diseases worldwide. In fact, data from these studies could provide a foundation for ground-breaking and innovative strategies in coping with or fighting even the current COVID-19 pandemic.

Keywords: nanoparticles, advanced, targeting, compatibility, innovative

SAFETY AND EFFECTIVENESS OF CEFOPERAZONE SULBACTUM AND PIPERACILLIN TAZOBACTAM IN GRAM NEGATIVE NOSOCOMIAL INFECTIONS

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The incidence of gram-negative nosocomial infections continues to rise and the range of effective treatments has become increasingly limited due to antibiotic resistance. In nosocomial infections, starting empirical treatment with agents with anti-pseudomonal activity is a widely accepted treatment approach. Cefoperazone sulbactam (CS) and piperacillin tazobactam (PTZ) are beta-lactam/beta-lactamase inhibitor combinations (BLBLIs) are the most commonly used broad spectrum antibiotic for nosocomial infections. These two agents have similar anti-microbial spectrum and active against Gram-positive and Gram-negative organisms, including Pseudomonas aeruginosa. This retrospective study conducted between 1st January 2017 to 31st December 2018, compared the safety and effectiveness of CS and PTZ on gram-negative nosocomial infections. This retrospective study included 308 patients treated with CS or PTZ empirically for at least three days. Results in CS and PTZ group shows the treatment success rate in CS and PTZ group are 50% and 51.2%, 28-day mortality rate is 46.1% & 42.8% and antibiotic-related side effects is 50.6% & 46.1% respectively (Tabel 1). All safety and effective parameters were similar except prolonged prothrombin time (19.4% vs 6.4%). According to this study results, CS and TZP have equal safety and effectiveness for the empirical treatment of Gram-negative nosocomial infections. CS may be preferred over PTZ for patients with bleeding or other haematological disorder.

KEYWORDS: Cefoperazone sulbactam, Piperacillin tazobactam, Nosocomial infections, Safety and Effectiveness.

ACCELERATING 3D PRINTING OF PHARMACEUTICAL PRODUCTS USING MACHINE LEARNING - A REVIEW

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The field of 3D printing has revolutionized various industries, including the pharmaceutical industry. 3D printing has the potential to provide personalized, on-demand drug products, improve drug delivery systems, and enable the rapid production of medical devices. However, the current 3D printing process for pharmaceutical products is slow and inefficient, leading to high production costs and limited access to personalized drugs. To address these challenges, researchers have turned to machine learning algorithms to optimize the 3D printing process. Machine learning algorithms can analyze large data sets and identify patterns that can help to streamline the 3D printing process. These algorithms can optimize the printing speed, reduce the likelihood of defects, and ensure the accuracy of the final product. The use of machine learning in 3D printing has several benefits, including faster production times, improved efficiency, and reduced costs. Machine learning algorithms can also be used to predict the properties of the final product, such as drug release rates and solubility, which can help to optimize the design of the drug product.Furthermore, the use of machine learning in 3D printing can also help to address the challenges associated with the regulatory approval of 3D printed pharmaceutical products. The ability to predict the properties of the final product can help to ensure that the product meets the required standards and regulations.In conclusion, the use of machine learning algorithms in 3D printing has the potential to revolutionize the pharmaceutical industry. The ability to produce personalized drugs quickly and efficiently could improve patient outcomes and reduce the cost of healthcare.

Keywords : Machine learning, 3D-Printing, Personalized medicine, Pharmaceutical product, algorithm

IMMUNOBOOSTING AGENTS FROM MARINE SOURCE - A REVIEW

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Immune system is a complex group or network which involves in the biological process of resisting the foreign invaders. The immune system dysfunction is responsible for various diseases like allergy, asthma, arthritis, cancer and other infectious diseases. Immunoboosting agents increase the immune responsiveness of the body against pathogens by activating the both specific and non-specific immune system. There are many immunoboosting agents in various system of medicine like in allopathy (immunostimulating agents), homeopathy (Rhu toxicodendron, mercurius solubilis), unani (Asgand, elwa, fowah), ayurveda (Rasayan of yashtimadhu, aswagandha, amalki) marine (Spirulina platensis,Aplidium albicans,Tetraselmis chuii, Ecteinascidia turbinate, Monostroma nitidum). Tetraselmis chuii is a unicellular flagellated marine green microalgae which has been used for centuries in traditional Chinese medicine. Tetraselmis chuii is rich in antioxidant properties and have rich in Proteins, Omega-3 fatty acid, Vitamin A, Vitamin B1, B2, B6, B12, Vitamin C, Vitamin E. which can help protect the body from free radical damage. Additionally, it has been shown to have anti-inflammatory and anti-cancer properties. Taking Tetraselmis chuii as a supplement can help to improve overall health and well-being. In future we go for formulation in the marine source of tetraselmis chuii.

Keywords: Immunoboosting, Tetraselmis chuii, Marine microalgae

IMPACT OF SOCIAL DETERMINANTS AND MEDICATION ADHERENCE ON QUALITY OF LIFE IN HYPERTENSION AND DIABETES PATIENTS

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Chronic diseases like Hypertension and diabetes are major public health problems in India and their prevalence is rapidly increasing. There is a need to assess the impact of social determinants and medication adherence on quality of life in patients suffering from chronic diseases. This study aimed to assess the impact of socio-economic status and medication adherence on quality of life in patients with hypertension and type II diabetes.

This study was a prospective cross-sectional study that included 2880 patients with hypertension and type II diabetes attending tertiary medical hospitals in the Khammam region. Data were collected by interviewing patients using the MMS 8 scale and SF36 questionnaire. In univariate analysis, age, gender, and marital status had a significant effect on the quality of life ($p < 0.0001$). In multivariate analysis, education level, occupational conditions, mean monthly income, medication adherence had a significant effect on the quality of life in patients with hypertension and diabetes with p values <0.0001. Patients with a high degree of education, high income, and good relationships with their families had a high health-related quality of life. This study confirmed that age, gender, singleness, socioeconomic status, and medication noncompliance were associated with lower quality of life. There is an inverse relationship between the duration of disease and health-related quality of life in patients. The most vulnerable group of patients must be identified and evaluated by planning necessary interventions to improve the quality of if in patients with chronic diseases.

Keywords: Hypertension, Type II Diabetes, Socioeconomic status, Quality of life, SF -36, cross-sectional study

IN SILICO ANAYSIS OF ATP7B GENE INHIBITOR USING PHARMACOPHORE MODELLING AND MOLECULAR DOCKING

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ATP7B gene present on chromosome 13 associated with excreting excess copper into bile and out of the body and any defect and mutation affects the excretion of copper from body and copper start accumulating in body and known as Wilson disease. Pharmacophore modelling ATP7B gene inhibitor plays a very useful role for the selection of required result compounds. These pharmacophore models are created by collecting most relevant structural features of biological active molecules. It's a useful tool for drug discovery and lead optimization processes and can be used as novel drug selection in future for the treatment of Wilson disease.

FROM RICINUS COMMUNIS LINN FOR ANTI-ALZHEIMER'S AND ANTI-PARKINSON'S ACTIVITIES.

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Ricinus communis have been widely used in the traditional medicine such as abdominal disorders, arthritis, backache, muscle aches, chronic headache, sleeplessness. Kaempferol-3-O-Beta-D-Xylopyranoside is found in the dried leaves of the Ricinus communis linn. Alzheimer's disease is the most prevalent form of dementia that affects memory, thinking and behavior. It is a progressive neurological illness characterized by early memory impairment and cognitive impairment and cognitive impairment that can impact behavior, speech and motor system. Parkinson's disease is a neurodegenerative condition that primarily affects dopamine-producing neurons in the substantia nigra region of the brain. Parkinson's disease is a central nervous system ailment that causes tremors and affects movement. Damage to nerve cells in the brain causes Dopamine levels to decline, resulting in Parkinson's disease symptoms. Docking is a method which predicts the preferred orientation of one molecule to a second when a ligand and a target are bound to each other to form a stable complex. The docking study was done for Kaempferol-3-O-Beta-D-Xylopyranoside from Ricinus communis linn using the Fe65PTB2 and 3Q27 Parkinson's proteins. The Fe65PTB2 and 3Q27 Parkinson's protein ligands are promising candidates for Alzheimer's & Parkinson's drugs. For this analysis, Autodock tools v1.5 and auto dock v4 program and molegro molecular viewer v2.5 were used. For the present study, the crystal structure of Fe65PTB2 & 3Q27 Parkinson's proteins were retrieved from the protein data bank (PDB) and used for the computational analysis. The ligands were docked to the target protein complexes Fe65PTB2 & 3Q27 Parkinson's proteins using autodock tools.

Keywords : Ricinus communis linn, Kaempferol-3-O-beta-D-xylopyranoside, Alzheimer's disease, Fe65PTB2 Protein, 3Q27 Parkinson's protein.

OLAX SCANDENS: THE PLANT OF THE RESEARCHERS- A REVIEW

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Plants had been a source of food for human beings from the start of the evolution of mankind. Besides food, herbs served us as the source of medicines to treat ailments. Plants had been investigated for the chemical moieties that are potent in treating many diseases. With the development of science and technology, there had been various drugs, synthesized to treat diseases. But the chemicals that were synthesized had serious adverse effects and side effects. So there has been a focus on herbs and medicinal plants in search of the alternatives for synthetic drugs. In this paper, Olax scandens had been reviewed for its Pharmacognostic, Phytochemical and Pharmacological profiles which revealed the presence of various phytoconstituents like glycosides, tannins, phenols, flavonoids, alkaloids etc. Few areas include the Himalayas and sub- Himalayan regions like northern parts of Bihar, Kumaon. The plant also grows widely in Deccan forest and the Western Ghats. The plant is native to countries like India, Srilanka, Bangladesh, Malaysia, Burma, Thailand, Vietnam and Java. Olax is s scandent shrub which grows to 5m height. The leaf is simple, alternate and oblong with the lanceolate surface. The inflorescence is axillary, racemose and panicle. The flowers are white, and the fruits are drupes and ovoid in shape. The plant was proven to exhibit anti-bacterial, laxative, anti-inflammatory, anti-diabetic, antipyretic activities.

Keywords: Olax, Antipyretic, Pharmacology, Laxative

SYNTHESIS OF LI2CU2(MOO4)3 AS HIGH GEARED POSITIVE ELECTRODE FOR EMERGING TECHNOLOGY

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The energy storage field, particularly in the highly mobile electrode materials, has endorsed an outstanding increase in terms of the precise charging time of supercapacitors. One of the key areas of research in the field of electrochemical energy storage has been the creation of sophisticated nanomaterials that serve dual functions of high energy density and high power density. Hence, treasuring an effective material that can support both quick ion intercalation and maintain large cycle stability is a challenge. The challenges were overcome by successfully synthesizing a NASICON-type material, Li2Cu2(MoO4)3, using the combustion process. X-Ray Diffraction (XRD), Field Emission Scanning Electron Microscopy (FESEM), X-Ray Photoelectron Spectroscopy (XPS) and Ultra -Violet Differential reflectance spectroscopy (UV-DRS) and electrochemical analysis were used to for the characterization and electrochemical properties of the synthesized compound. When the flexible device is assembled, it may produce strong electrochemical stability, specifically the retention of the original value even after numerous cycles. These investigations imply that the synthesized compound Li2Cu2(MoO4)3 may be a viable option for high conductivity Supercapacitors.

A BIO ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR QUANTIFICATION OF GLYCOPYRROLATE AND NEOSTIGMINE IN RAT PLASMA BY LC-MS AND ITS APPLICATION TO PHARMACOKINETIC STUDY

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A highly sensitive and rapid (LC–MS) method was developed and validated for simultaneous estimation of Glycopyrrolate and Neostigmine in Rat plasma. Plasma was extracted by using Acetonitrile, using Rivastigmine as an internal standard. Multiple reaction monitoring (MRM) in positive ion mode was used, Precursor Ion(m/z) and Highest Intensity (m/z) for glycopyrrolate 399.34 → 310.68 for Neostigmine224.29 - 160.52 and 251.38 → 81.22 for Rivastigmine. System suitability for Glycpoyrrolate and Istd area ratio was found to be 0.19 and 0.34 and for Neostigmine 0.26 and 0.14. Precision (%CV) is 0.45 and 3.57 for Glycopyrrolate at HQC and LQC, respectively. Precision (%CV) is 1.13 and 2.79 for Neostigmine at HQC and LQC, respectively. The standard curves were linear over the concentration range of 2-40 ng/mL of Glycopyrrolate and 10-200 ng/ml for Neostigmine. LOD and LOQ were found to be 3pg/mL and 10pg/mL for both the drugs respectively. % Mean Accuracy HQC, MQC, LQC and LLQC was 94.42%, 98.76%, 96.65%, 99.52% for Glycopyrrolate and for Neostigmine 100.13%, 99.41%, 100.98%, 101.08%. %Mean Recovery for three concentration levels of Glycopyrrolate was 95.76% - 99.71% and for Neostigmine 99.35% - 102.65%. This method is successfully applied in the Pharmacokinetic study of rat plasma.

Key words: Glycopyrrolate, Neostigmine, LC-MS method, Rat plasma, Pharmacokinetic study.

A STUDY ON POST COMPLICATION EFFECT DIAGNOSIS OF COVID-19 PATIENTS

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COVID 19 with 30 million documented infections and 1 million deaths worldwide the coronavirus disease 2019 (COVID-19) pandemic continues unabated. The clinical spectrum of severe acute respiratory syndrome coronavirus (SARS-CoV) 2 infection ranges from asymptomatic infection to life-threatening and fatal disease. However, while most people who develop COVID-19 fully recover, some people develop a variety of mid-term and long-term effects like fatigue, breathlessness and cognitive dysfunction (for example, confusion, forgetfulness, or a lack of mental focus). Some people also experience psychological effects as part of post COVID-19 condition. These symptoms might persist from their initial illness or develop after their recovery. They can come and go or relapse over time. Post COVID-19 condition can affect a person's ability to perform daily activities

The experience of having severe COVID-19 might be another factor. People with severe symptoms of COVID-19 often need to be treated in a hospital intensive care unit. This can result in extreme weakness and post-traumatic stress disorder, a mental health condition triggered by a terrifying event. "long COVID," refers collectively to the constellation of long-term symptoms that some people experience after they have had COVID-19. People who experience post COVID-19 condition sometimes refer to themselves as "long-haulers."

Keywords : SARS-CoV-2, life-threatening, Post COVID 19 condition, Long-term effects.

OMADACYCLINE: A NOVEL TETRACYCLINE ANTIBIOTIC IN THE TREATMENT OF CELLULITIS

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An infection caused by bacteria that affects the skin and tissues nearby is known as acute bacterial skin and skin structure infections (ABSSSI). Cellulitis, erysipelas, wound infection, significant cutaneous abscess, etc. are among the complex or non-complicated ABSSSIs that may be reported. Cellulitis is a common bacterial infection that causes swelling, redness, and soreness, as well as a rise in body temperature in the infection's target location and a fever. Antibiotic medicines are the normal course of therapy for all bacterial infections. Omadacycline, an antibiotic of the aminomethylcycline class from the tetracycline family, was very recently discovered and is being used to treat ABSSSI. By overcoming resistance that is known to impact older generation tetracyclines via ribosomal protection proteins and efflux pump mechanisms, changes to its structure, notably the amino methyl substituent at the C9 position, result in an increased range of anti-microbial effectiveness. Against both Gram positive and Gram negative bacteria, this medication is effective. Both an oral and IV version of the medicine successfully completed two phase 3 clinical studies, demonstrating that it is equally safe and well-tolerated as Linezolid. Omadacycline has demonstrated its effectiveness in the OASIS 1 and OASIS 2 trials with few side effects. In-depth information about the efficacy and safety of omadacycline in treating cellulitis is provided in this review, along with a summary of the highlights of the entire pharmacological profile.

Key Words: Acute bacterial skin and skin structure infections, Omadacycline, Cellulitis, Tetracycline, Linezolid.

THERAPEUTIC CHALLENGES AND RECENT PREVENTIVE MEASURES IN WERNICKE'S ENCEPHALOPATHY.

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Thiamine deficiency results in Wernicke's encephalopathy (WE), a neurological disorder. In the general population, the prevalence rate of WE varies from 0.4% to 2.8%. Wernicke's encephalopathy often manifests as confusion, problems with the oculomotor system, and movement incoordination, notably ataxia. About 80% of people with untreated acute episodes of mental abnormalities first have behavioral issues and memory loss that are later diagnosed as Korsakoff syndrome; if these acute episodes are left untreated, it might result in death in severe conditions. About 50% of all WE cases have alcoholism as their major cause, while WE may sometimes be brought on by people who are not alcoholics. The lack of vitamin B1 is the main contributor to WE development. Alcohol-induced thiamine deficiency is the catalyst for WE development to begin. Ophthalmic issues, particularly quick involuntary eye movements, are the main indicator of WE. It may be diagnosed with MRI, which has a high specificity of 93% but a poor sensitivity of just 53%. Thiamine 250 mg daily over the next three to five days, spread out over 30 minutes, diluted in 50-100 mL of ordinary saline, is the recommended immediate therapy for WE. For two to three days, thiamine 500 mg IV t.i.d. Clinicians find it very challenging in understanding the predisposing factors, radiological imaging, and symptoms to diagnose the condition and provide therapy right once. This review discusses the underlying causes, clinical symptoms, pathophysiology, risk factors, diagnosis, and therapy of WE.

Keywords: Complications of alcoholism, Wernicke's encephalopathy, Immediate treatment, Thiamine, Prophylaxis.

EVALUATION OF LIPID PEROXIDATION AND IN VIVOANTIOXIDANT ACTIVITYOF VARIOUS EXTRACT OF OLAX SCANDENS (ROXB.) ON PARACETAMOL-INDUCED HEPATOTOXICITY RATS

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Liver contribution is commonly categorised by means of an growth in sure biochemical parameters, inclusive of transaminases, and a lower in antioxidant enzymes. Current research was to look at antioxidant potential of Olax scandens Roxb. (family Olacaceae) on paracetamol treated hepatotoxicant rats. The Olax scandens was extracted with various solvents (PE, EA and methanol) by Soxhlet extractor and unrefined various concentrate used for applied for lipid peroxidation and invivo antioxidant action. Paracetamol (2000mg/kgb.wt.) supplementation to rodents hepatotoxicant on the fifth day of the treatment period and treated orally. Hepatotoxicity induced by way of paracetamol (2g/kg b.Wt.) on the 5th day of the investigational period and given orally. Paracetamol treated rats to showed that expanded action of TBARS and reduction the enzymes levels such as Superoxide dismutase (SOD), catalase(CAT),Glutathione peroxidise(GPx),Glutathione S transferase(GST) and Glutathione (GSH) in liver and kidney. Oral supplementation of methanol concentrates of Olax scandens (200 mg/ kgb.Wt.) given rats were most important reduction lipid peroxidation (TBARS) and additionally enormously multiplied the enzymes levels along with Superoxide dismutase(SOD), catalase(CAT),Glutathione peroxidise(GPx),Glutathione S transferase(GST) and Glutathione (GSH) in liver and kidney as accompanied by using EA concentrates. The methanol concentrates of Olax scandens shows that likely be because of its reactive oxygen species scavenging and antioxidant activities because of may be presence of phytoconstituent.

Keywords: Olax scandens; Paracetamol; Superoxide dismutase; Catalase; GST: GPX; GSH.

PHYTOCHEMICAL INVESTIGATION, TLC AND HPTLC STUDY OF CINNAMOMUM MALABATRUM

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Cinnamomum malabatrum is belongs to the family lauraceae, it is available in the western ghats and south India, 10 kgs of leaves were collected, shade dried and made into powder form, the powder was subjected to extraction by different solvents, Petroleum ether, Methanol and Aqueous extract were mixed with activated charcoal and filtered it in order to remove the intense color, the petroleum ether, Methanol extracts were dried by vacuum distillation, whereas Aqueous extract was added n – butanol it will form the Azeotropic mixture and make distillation process, then it was subjected to Rota evaporator for removal of moisture, the both extracts were kept in desecrator, now these are subjected to primary phytochemical study, here we find positive results for Alkaloids, Saponins, Flavonoids and Phenolics and negative results for Glycosides, in further study was Thin layer chromatography, in petroleum ether extract yellow color spots at the top indicates phenolic and orange color spots indicates the flavonoid compounds the Rf value was calculated as 0.13, 0.412,in Methanol extract yellow color spots at the top indicates flavonoids and orange colour tailing indicates the phenolic compounds the Rf value was calculated as 0.23, 0.34,in aqueous extract yellow color spots at the top indicates flavonoids and orange color spots with florescent tailing indicates the phenolic compounds, the Rf value was calculated as 0.32, 0.37. HPTLC finger print analysis of ethyl acetate fraction of methanolic extract gave 6 peaks, among 6 peaks 4 the peak rf value and 6 th peak rf value very close to the Gallic acid and Quercetin respectively. HPTLC finger print analysis of ethyl acetate fraction of methanolic extract gave 8 peaks, among 8 peaks 4, 6, 7thpeak rf values were compared with reference standard in 7 th rf value was very close to the Phenolic compound Thymol.

Key words: Cinnamomum malabatrum, Phytochemical investigation, TLC, HPTLC

AN INTERPRETATION OF POLYPHARMACY AND POTENTIALLY INAPPROPRIATE MEDICATIONS USE IN GERIATRIC PATIENTS: A PROSPECTIVE OBSERVATIONAL STUDY

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Introduction: Potentially Inappropriate Medication (PIM) is defined as drugs which is used among older adults should be avoided due to high risk of adverse reactions exceed their health benefits when compared with alternative therapies. In the general older population, polypharmacy and PIMs have been found to be a risk factor for the development & progression of frailty. The purpose of the study is to estimate the no.of patients prevalent under PIM & Polypharmacy, with the age group of >65 years.

Methodology: A prospective observational study was conducted in tertiary care public hospital, south India. A total of 80 In-patients aged >65 years admitted between the month October-2022 to January-2023 are included, the prevalence of patient using PIM and Polypharmacy are recorded. The 2019 AGS Beers criteria was applied to assess PIM use. Descriptive statistics was used to determine the patient's use of PIM & Non-PIM. Polypharmacy was categorised as (No-polypharmacy, Polypharmacy, Hyper-polypharmacy) by evaluating case report form.

Conclusion: The evidence presented indicates that PIM and polypharmacy are exceedingly prevalent among patients aged 65 and older. The majority of the population was simultaneously prescribed PIM and polypharmacy, which can cause life-threatening adverse medication responses.

THE IMPLEMENTATION AND EVALUATION OF PHARMACEUTICAL CARE PLAN IN STROKE PATIENTS AT TERTIARY CARE HOSPITAL

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Objective: To assess the pattern and prevalence of adverse drug reactions (ADRs) reported by the neurology department and review the benefits of the pharmaceutical care plan. Materials and

Methods: A total of 148 stroke patients with previous medication history correlated with current complaints leading to hospitalization were included in the prospective study for one year in the neurology department. Results: This study identified non-adherence (50%) and ADRs (38%). Ignorance of the disease, its complications, and the possible adverse effects of self-medication have been identified as risk factors. The medication-related problems were mainly observed with antimicrobials, CNS drugs, CVS drugs, and inflammatory and immune modulators.

Conclusion: The risk factors involved are lack of knowledge about the disease, prescribed therapy, and its benefits. Appropriate patient counselling about the disease and benefits of prescribed medication by the clinical pharmacist with other health care professionals is crucial in improving the patient's quality of life and economic burden. In the patient's medication therapy, warfarin has more adverse events, and an observation of the patient's plasma concentration levels increased. Key Words: Adverse events; Drug-related problems; Hospitalization; Pharmaceutical care plan; Warfarin.

Keywords: Adverse events; Drug-related problems; Hospitalization; Pharmaceutical care plan; Warfarin

FABRICATION, FORMULATION AND STATISTICAL OPTIMIZATION OF IRBESARTAN LOADED MICROSPONGE'S DRUG DELIVERY SYSTEM USING FOOD PROTEIN AS A STABILIZER

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Background: Microsponges are tiny sponges sponge-like spherical particles with a large porous surface, which can be filled with a wide variety of drugs and can circulate around the body until they encounter the specific target site and stick on the surface and begin to release the drug in a controlled and predictable manner. Objectives: The present study was carried out to exploit the feasibility of polymeric microsponges as an alternative carrier for targeting Irbesartan for improving poor oral bioavailability and overcome the first pass metaboloism. Methodology: Irbesartan loaded microsponges with different polymers, whey protein were developed by solvent diffusion method with factorial design was evaluated for various physicochemical parameters and in vitro drug release. On the basis of production yield and practicability of the method, this method was selected for the formulation. Results: Infra-red (IR) studies revealed that there was no interaction between the drug and polymer which showed compatibility. XRD of formulation confirmed that formation of amorphous product which might lead to enhanced solubility of the drug. Furthermore, the batches are needed to be observed for different evaluation parameters. On the basis of observation and the interpretation the final conclusion will be drawn. The SEM study revealed that the particles had almost round and uniform shape with porous and spherical in nature. Conclusion: The controlled drug delivery via the polymer and whey protein based systems has been proposed to be conquest both in present and in future; as having copious prospective advantages for scientific as well as economic reasons.

Keywords: Microsponges, Solubility enhancement, Bioavailability, Particle size, Factorial design

THERAPEUTIC AND OPERATIONAL FACTORS INFLUENCING THE ANTIBIOTIC TREATMENT DURATION FOR CELLULITIS- A PROSPECTIVE STUDY

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Cellulitis is a frequent cause of hospital admission of adult patients. Increasing prevalence of multi-resistant microorganisms, comorbidities, predisposing factors and medical and surgical therapies might affect cellulitis response and recurrence rate. The recommended duration of antibiotic therapy for patients hospitalized with cellulitis is 5 to 14 days. However, factors that affect the duration of treatment have rarely been examined.

Methods: Prospective and observational study was conducted with 45 adult patients with cellulitis of the lower extremities who were treated with antibiotics in a tertiary care government hospital. Comorbidities, microbiological, clinical, diagnostic, treatment (surgical and antibiotic) data were analyzed according to the cellulitis response. Good response implied cure. Poor response implied failure to cure or initial cure but relapse within 30 days of hospital discharge. The relationship between the duration (days) of treatment with antibiotics and clinical factors were analyzed.

Results: Antibiotic duration correlated significantly with patient age and with C-reactive protein levels before treatment. Duration for patients with diabetes mellitus & blood stream infection was significantly longer than that in patients without them. On multivariate analysis, poor response was independently associated with longer duration of antibiotics included patient age, C-reactive protein levels before treatment, presence of diabetes mellitus, and presence of blood stream infection. Prior episodes of cellulitis, venous insufficiency, immunosuppression, and development of sepsis were associated with poor treatment responses, and non-surgical trauma with good responses, in the multivariate analysis.

Conclusions: Duration of treatment with antibiotics for cellulitis is associated with patient age, C-reactive protein levels, coexisting diabetes mellitus, and coexisting blood stream infection. These findings should be considered when treatment plans for cellulitis are devised.

KEY WORDS: Antibiotics regimen, cellulitis, ABSSSI.

A CRITICAL ANALYSIS OF VARIOUS METHOD USED TO IDENTIFY PIM IN ELDERLY PATIENT: A REVIEW

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The term "potentially in appropriate medications" (PIM) refers to drugs which is used among elderly patient should be avoided due to a significant risk of adverse reaction. Due to its high prevalence and related adverse effects including ADRs, morbidity, usage of healthcare services and increased expenditures, the prescribing of inappropriate medication has become a major public health solicitude. Several PIM screening tools are anticipated to lower the adverse drug reactions and promotes rational drug use. The American Geriatrics society (AGS) beers criteria, Screening tool to alert to right treatment (START), Screening tool of older people's prescription (STOPP) are the crietria implemented to detect the PIMs. This study primarily focus on the tools used in evaluating the PIM and the detailed information regarding the criteria.

Keywords: Potentially inappropriate medications, older adults, Screening tools, explicit criteria, adverse drug reactions.

A REVIEW ON MOLECULAR DOCKING IN DIABETES

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Introduction: Incidence of Diabetes Mellitus (DM) is increasing every day among every population of the world.

There are 366 million people presently suffering from DM and it would up surge to 552 million till 2030. In 2000, the pervasiveness of Type 2 DM worldwide among adults was projected to be approximately 171 million whereas in 2015 this number raised up to around 415 million. Diabetes Mellitus is a cluster of metabolic disorder, an illness of hyperglycemia in which person grieves from disorders like failure of pancreas to produce insulin or insensitivity of cells towards insulin (insulin resistance). Diabetes Mellitus was previously called as "non-insulin dependent diabetes mellitus" (NIDDM) Herbal drugs are also used for the treatment of diseases and disorders with its less side effects, easy availability, and low cost.

AIM/Objectives: To supplement the insulin needs, small molecules that can be administered through oral route and can mimic insulin action are considered in the present study

Method: Molecular docking and virtual screening are fast, economical, and reliable approaches for identifying both a potential druggable protein target as well as a novel drug (lead molecule) through rational drug designing (RDD) or computer-aided drug design (CADD). RDD or CADD is now being used to annotate and evaluate large pharmacological libraries swiftly.

Conclusion: The small molecules that are administered through oral route are considered for the supplementation of the insulin need.

REVIEW ON PHARMACOECONOMIC COMPARATIVE STUDY OF INSULIN ANALOGUES IN TREATMENT OF DIABETES MELLITUS

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Background: Diabetes mellitus is a condition which accounts for ≥10% of total medical cost in many developing countries. Insulin analogues were considered to be optimum treatment process in patients with both type 1 and type 2 diabetes mellitus. Many research studies and clinical trials in different countries revealed that administration of insulin analogues considered as most efficacious, cost-saving and decrease in HbA1c levels, hypoglycemic risk and post-operative diabetic related complications. Few studies also suggested that treatment outcomes and quality of life have been improved with use of insulin analogues in diabetes patients. Switching of regimens from conventional insulin's to insulin analogues (biphasic Aspart 30) had shown greater efficacy and cost effectiveness in countries like Brazil, Saudi Arabia and Indonesia.

Objective: The purpose of the study is to form basis to evaluate pharmacoeconomics of insulin analogues in Indian scenario. The pharmacoeconomic studies comprises of both direct and indirect costs. Adherence is an important factor to reduce overall treatment costs. Furthermore, insulin analogues are available in different devices to provide optimum glycaemic control.

Methods: Meta-analysis of different observational, randomized controlled studies.

Conclusion: Among rapid acting and long acting insulin analogues, insulin Aspart is cost-saving and more effective followed by insulin Lispro and insulin Detemir is cost saving and less effective followed by insulin Glargine respectively. This review analysis provides basis to do pharmacoeconomic analysis in India.

Keywords: Diabetes Mellitus, Insulin Analogues, Quality Of Life, Cost Effectiveness.

SOIL NITROGEN MANAGEMENT: AS AN ELEMENT OF SUSTAINING SOIL PRODUCTIVITY AND PROFITABILITY OF CROPS.

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One of the leading challenges the world facing in this century is the food production for continuously increasing population and the climate changes due to raising temperatures worldwide. For Countries like India agriculture is the backbone of economy. To fulfill the food requirements of growing population and making agriculture a profitable option for the farmers, soil health is the area of prime focus for long term soil fertility and productivity. For a healthy crop nitrogen is an important nutrient. Nitrogen is a growth and yield determining nutrient which leads to rapid increase in application rates of the same. By Managing nitrogen content in soil, losses can be minimized and yields be profitable. Various research shows that management of nitrogen gives promising results in increasing yield as well as sustaining the productivity of soil. A research work on the nutrition management of soil highlighting nitrogen and its uses, shows enhanced productivity of rice and wheat crops ameliorating adverse soil physical condition.

Another work of research on application of nitrogen shows major yield and growth inclination on maize wheat cropping system. Nitrogen management requires special attention, and as well as awareness for various methods of using, remote sensing tools to predict crop N demand precisely traditional techniques like balanced fertilization, Integrated Nitrogen Management (INM). Efficient nutrient management can therefore be used as a part of global strategy to ensure food security.

Key words: Soil nitrogen, Nitrogen and Nutrient management.

INSIGHTS AND HOPES IN USING STEM CELLS OF HUMAN UMBILICAL CORD TO TREAT VARIOUS DISEASES

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Stem cells are units of biological organization that are responsible for the development and the regeneration of organ and tissue systems. They are able to self-renew cells that can differentiate into specialized cell type. There are many examples of successful clinical applications of stem cells. As best understood in the blood, skin and gut, stem cells are the seeds that sustain tissue homeostasis and regeneration, while in other tissues like the muscle, liver, kidney and lung, various stem or progenitor cells play facultative roles in tissue repair and response to injury. There are four main sources of stem cells, i.e. embryonic tissues, fetal tissues, adult tissues and differentiated somatic cells after they have been genetically reprogrammed, which are referred to as induced pluripotent stem cells (iPSCs). Human umbilical cord is attractive source for autologous and allogenic stem cells that are currently amenable to treatment of various diseases. Human umbilical cord stem cells are -in contrast to embryonic and fetal stem cells- ethically noncontroversial, inexpensive and readily available source of cells. Umbilical cord, umbilical cord vein, amnion/placenta and Wharton's jelly are all rich of many types of multipotent stem cell populations capable of forming many different cell types. In addition, their ability to engraft in injured organs and modulate immune and repair responses of host tissues suggest that transplantation of such cells may be useful for the treatment of various degenerative and inflammatory diseases affecting major tissues/organs. This study will focus on the understanding of current status in stem cells processing and future direction of its application in medicine.

SYNTHESIS, CHARACTERISATION AND EVALUATION OF AZETIDINE-2-ONE DERIVATIVE

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Azetidinone derivatives were reported to possess antibacterial, antifungal, antitumor, antitubercular activity, anti-HIV, analgesic, anti-inflammatory, and ulcerogenic activity.

A new series of Azetdine-2-one derivative were synthesized by the reaction of Schiff base((Z)-N_ (4-dimethylamino)benzylidene)pyrimidine-2-amine) with chloroacetyl chloride respectively. The reaction completion and the purity was confirmed by Thin Layer Chromatography on precoated aluminum sheets (Silica gel 60 F254) using benzene and alcohol as mobile phase and visualized by iodine vapours.

The chemical structures of the synthesized compounds were confirmed using Fourier Transform Infra Red Spectroscopy, Proton Nuclear Magnetic resonance spectroscopy.

The antimicrobial activity shows that the compound showed mild antibacterial activity against Staphylococcus aureus and Escherichia coli

KEYWORDS: Azetidine-2-one derivative , Chloroacetyl chloride, Schiff Base.

THE CARDIAC TOXICITY OF ANABOLIC STERIODS

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Anabolic steroids are synthesis derivation of testosterone that were developed as adjunct therapy for a variety of medical condition. Hypertension, ventricular remodeling, myocardial ischemia, and sudden cardiac death have each been temporally and causally associated with anabolic steroid use in human. Abuse of AAS has been linked to a variety of different cardiovascular side effect. In case reports, acute myocardial infarction is the most common event presented. In chronic treatment with anabolic steroids induces ventricular repolarization disturbances.

Key words: Testosterone, cardiovascular, steroids.

THE ROLE OF ARTIFICIAL INTELLIGENCE IN THE DETECTION OF FOOD ADULTERATION

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Food serves as a major source of energy for living organisms, enabling them to develop and thrive on earth. The ability to absorb the nutrients required for full growth and development depends critically on the quality of the food that one consumes. Food adulteration is a fraudulent practice that deceives consumers in order to reduce the nutritional content or quality of food for financial advantage. Since the turn of the century, the food business has been outraged by this scam, which has also caught the public's attention. The various methods for detecting food adulteration and the criteria used to assess the quality of the food have been emphasized. Artificial intelligence (AI), also known as machine vision, is playing an increasingly significant role in food handling and quality assurance. According to Mordor Intelligence, AI in the food and beverage sector must register a CAGR of 28.64% between the years 2018 and 2023. Here is a brief overview of how AI is advancing hygiene and quality activities with greater accuracy and proficiency. This study aims to systematically declare the contribution of artificial intelligence to the detection of food adulteration. Through its applications, machine learning and deep learning's potential for improving food quality has been examined.

KEYWORDS: Artificial Intelligence, Food Adulteration, Quality prediction, Food Industry.

TO EVALUATE THE EFFECTIVENESS ABOUT HEMODIALYSIS TREATMENT ON CHRONIC KIDNEY DISEASE PATIENTS IN ADULTS AND GERIATRICS

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Chronic kidney disease is a world health problem in the world. It will occur to all age group of population. This study was done in vijaya super speciality hospital in Nellore district, Andhra Pradesh. The study was done at 18 october 2021 to end of december 2022. The objective of the study to to evaluate the effectiveness about hemodialysis treatment on chronic kidney disease patients in adults and geriatrics. Hemodialysis is a process of purifying the blood. This type of dialysis achieves the extracorporeal removal of waste products such as creatinine and urea and free water from the blood when the kidneys are in a state of kidney failure. Hemodialysis is one of three renal replacement therapies (the other two being kidney transplant and peritoneal dialysis). An alternative method for extracorporeal separation of blood components such as plasma or cells is apheresis. The result of the study from 18 October 2021 to end of December 2022, This study was followed a prospective observational study to collect the data in ckd inpatients by using proforma form. The group of population are selected 142 ckd patients in that 68 patients are adult and 74 patients are geriatric. In this study are followed a hemodialysis treatment to ckd volunteers. The hemodialysis in adults are increasing values of creatinine (17%) BUN (18.4%) and decreasing value of creatinine (24%) BUN (22.1%) and geriatrics are in creatinine (23%) BUN (23.2%) and decreasing value of creatinine (22%) BUN (22%). The conclusion of the study was hemodialysis treatment is more effectiveness in adults when compared to geriatrics in ckd patients by analyzing the creatinine and bun values.

Keywords: chronic kidney disease, hemodialysis, geriatrics, effectiveness, adult, creatinine and bun.

FORMULATION, OPTIMIZATION AND INVITRO & INVIVO BIOLOGICAL EVALUATION OF NANOEMULSION OF CLOFARABINE AS POTENTIAL ANTITUMOR DRUG DELIVERY SYSTEM.

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Clofarabine is a second-generation purine nucleoside analogue with antineoplastic activity. The objective of this study was to prepare clofarabine nanoemultions as potential antitumor drug delivery system. Nano-emulsion of clofarabine was prepared by high-pressure homogenization method. Different nano –emulsion sample formulas were prepared . The prepared formulations were characterized by parameters such as average diameter of nanoparticles in suspension form, poly- dispersity index, zeta-potential and entrapment efficiency (ee) and in-vitro drug release studies. Furthermore, the cytotoxicity and cellular uptake of drug in to cancer cell linings were investigated.

Keywords: nanoemulsions, clofarabine, high-pressure homogenization, encapsulation efficiency

PHARMACOVIGILANCE AMONG PATIENTS WITH MULTI DRUG RESISTANCE TUBERCULOSIS (MDR-TB) AND EXTENSIVELY DRUG-RESISTANT TUBERCULOSIS (XDR-TB) TREATMENT – A PROSPECTIVE STUDY

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Aim: The main aim of this study is to assess adverse drug reactions among the patients treated with different regimens for MDR and XDR-TB. Materials and Methods: Patients who were diagnosed with MDR and XDR-TB of either gender. The causality assessment of the ADRs was done by using the WHO and Naranjo's scales. Results: Among the 508 study participants, 161 (31.69%) were observed to be with various adverse drug reactions in this study. In this study, most of the ADRs were observed to be with gastrointestinal related (29.52%) followed by nausea & vomiting (20.07%), swelling and pain at the injection site (3.54%) and ototoxicity (4.33%). According to the Naranjo's scale, the causality assessment was done and it was observed that among the 161 cases, 9(5.59) were observed to be definite,79 (53.55) were observed to be possible ADRs 85 (46.44%) were observed to be probable ADRs and whereas the remaining 7(4.34) were observed to be doubtful ADRs. Conclusion: According to the Naranjo's causality assessment, most of the ADRs were possible ADRs followed by probable, most of the ADRs were observed to be with moderate severity followed by mild severity.

Key Words: Tuberculosis, Adverse drug reactions, multidrug resistance, extensively drug resistance.

Due to the 2019 pandemic caused because to the coronavirus disease (COVID19) has led to the investigation of different drugs for their efficacy and therapeutic benefits for the people suffering from the Covid-19 disease because of its high prevalence, easy spreading of the virus mortality rates due to severe respiratory viral infection. Many pre-existing medications have been known to provide a rapid and effective response due to their known effects, characteristics, and the dose to be used.

Objective: To show the advantageous effect of using combination therapy of Corticosteroid (Methylprednisolone) with Remdesivir as opposed to using monotherapy of Remdesivir in the treatment of COVID-19 patients.

Methods: The study conducted is a retrospective observational study carried out for six months in the Medical Records Department. A total of 150 patients affected with COVID-19 were admitted to the Hospital. The patients were organised into two different groups, with 100 patients in Group-1 (Solumedrol with Remedesivir) and 50 patients in Group-2 (Remedesivir). The patients were administered with desired doses of drugs, and the subsequent data was collected in the patient data collection form. The patient's demographic information, hemodynamic parameters, laboratory values, symptoms, and conditions were collected.

Results:Patients who were treated with a combination of Corticosteroid (Methylprednisolone) with Remdesivir showed a high frequency of efficacy and greater therapeutic outcome when compared to Remdesivir as monotherapy. The results have the potential to assess the severity of COVID-19 from the hemodynamic parameters and biomarkers. From this, we are able to conclude that when the patient is given the combination therapy of the Corticosteroid (Methylprednisolone) with Remdesivir, there is a significant improvement in the health of the patient, and they are more hemodynamically stable, their cough and SOB is also treated as opposed to the Group-2 patients who have been administered Remdesivir as a monotherapy.

Conclusion: Our study found a significant and effective therapeutic outcome from the usage of Corticosteroid (Methylprednisolone) when given in with the Antiviral drug Remdesivir as opposed to the monotherapy of Remdesivir

Keywords: COVID-19, Corticosteroid, Methylprednisolone, Remdesivir, Pandemic, and Coronavirus.

EVALUATION OF ANTIHYPERLIPIDEMIC ACTIVITY OF RIVEA HYPOCRATERIFORMIS DESR. LEAVES IN INVITRO

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Rivea hypocrateriformis Desr.is a shrub belongs to the family Convolvuceae. The plant is available in subtropical areas of Sri Lanka, India and Nepal also. Traditionally it is used to treat arthritis, mental disorders, cancer and for antiimplantation. In vitro antihyperlipidemic studies was investigated in HepG2 cells. Cell viability studies (MTT assay) were performed with four extracts of Rivea hypocrateriformis leaves. From the viability studies 2 extracts are selected and treated with oil red O staining to measure the oleic acid (0.5mM) induced hepatic lipid accumulation in HepG2 cells. The obtained results from the extracts of Rivea hypocrateriformis Desr (RHCE, RHEE) significantly inhibited the size of lipid droplets in dose dependent manner and is compared with the standard drug Atorvastatin (10µM) proving a antihyperlipidemic potential.

Keywords: Antihyperlipidemic, HepG2, Oleic acid

DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF SUBSTITUTED OXADIAZOLE DERIVATIVES AS NEW SCAFFOLDS AGAINST BUTYLCHOLINESTREASE

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Novel anti-butylcholinesterase inhibitors containing, oxadiazole derivatives, were designed and these molecules were subjected to molecular docking study. The docking study revealed that the designed compounds possess significant to moderate interaction with the targeted enzyme cholinesterase. Among them compound 3 (10.5 K/cal) and 6 (10.2K/cal) showed similar docking compared to donepezil (12.76 K/cal). Remaining compound shows good to moderate activity compared to standard drug. All the synthesized compounds were screened for their in vitro cytotoxicity activity against Human SH-SY5Y neuroblastoma cell lines. Among them, compounds 3 (45.85 µg/mL), 6 (51.12 µg/mL), and 1 (71.4 µg/mL) were the most potent ones. In addition, ADMET prediction results indicated that these compounds might be less toxic and display more interesting pharmacokinetic properties.

KEY WORD: Anti-butylcholinesterase, oxadiazole, Molecular docking study, Donepezil, Human SH-SY5Y neuroblastoma cell lines, ADMET.

SPECTROSCOPIC INVESTICATION AND MOLECULAR MODELLING STUDIES OF HYBANTHUS.

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Spectroscopy is increasingly used to investigate and monitor the solid state forms of pharmaceutical materials and products. Spectroscopy can achieve a measurement rate of one million spectra per second, non-destructive sampling, compatibility with fiber optics and safety also make it attractive for in-line monitoring. The Plant-based antimicrobial drugs are more efficient than of synthetic drugs. Despite extensive research and different tools have been developed it still remains a challenge for early detection of health affecting diseases. One of the most important Indian traditional medicines is Hybanthus. Hybanthus ability to improve the testosterone (hormone levels) in men, it has other wonderful medicinal uses like treating anemia and improving immunity, reducing body heat. It also reduces blood sugar levels, urinary infection and antibiotic. The Infrared spectrum of cells yields a precise image of all the chemical bonds present in the sample, different drug actions are likely to each yield a unique biometric characteristic of the therapeutically agent under investigation. We investigate the electronic and optical properties of the various antibiotic medicines. Density Functional Theory (DFT) is progressively becoming vital for the drug designing process. Different types of characterization techniques are available to study the physical, chemical and biological properties of the drugs. Few of them are, FT-IR Spectroscopy, FT-RAMAN Spectroscopy and UV-VIS Spectroscopy. While the above techniques are quite useful for diagnostic purposes in oncology, we now suggest the use of these technologies in new antibiotic drug discovery. It would be quite interesting to investigate and compare the effect on FTIR, FT-Raman and UV-Vis spectra of different antitumor drugs in order to assess the potential existence of specific “molecular spectroscopy” of different classes of molecules.

Key Words: FTIR, FT-Raman, Hybanthus, Condensed Fukui function, UV-Visible.

IMPROVED ECO-FRIENDLY SILVER NANOPARTICLE SYNTHESIS FOR COLOURING DEGRADATION WITH THE USE OF BANANA PEEL (MUSA ACUMINATA) EXTRACT

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Physical and chemical approaches are currently being replaced with state-of-the-art natural silver nanoparticles. The use of environmentally friendly synthetic nanoparticles for wastewater treatment is becoming more and more important due to its potential advantages over existing methods. Banana peel extract (Musa acuminata) (BPE). was employed in the current investigation to make silver nanoparticles. In this paper, we explore a green method for producing silver nanoparticles from bananas. In this all-natural synthesis, we created biodegradable silver nanoparticles using banana peel extract (BPE), a natural reducing agent. The colour of the reaction medium changed from pale yellow to brown after the addition of the aqueous banana peel extract (BPE) to the silver nitrate solution, indicating the reduction of silver ions to silver nanoparticles. The UV-Vis spectra of silver nanoparticles at various concentrations were investigated. The synthesised nanoparticle solution in a 6 mM solution exhibits a 435 nm SPR band. As the concentration rises, it is seen that the SPR rises as well. Additional analysis of the AgNPs was done utilising XRD, FTIR, and SEM techniques. X-ray diffraction was used to reveal the crystalline nature and purity of the produced silver nanoparticles (XRD). The effective functional molecules in charge of reducing and stabilising the silver nanoparticles produced by banana peel extract were identified by FTIR analysis (BPE). For additional investigations on dye deterioration, 6mM solution is taken. After one hour of continuous centrifugation, the concentration is dried, and the degradation experiments are conducted using powder form. The photocatalytic activity of the synthesized silver nanoparticles was examined by degradation of methylene blue under using dried nanoparticles. Green synthesized silver nanoparticles were effectively degrading the at 72 h of exposure time.

Keywords : Nanoparticles, Banana peel, Dye degradation

SINGLE CRYSTAL GROWTH OF L-TARTARIC ACID AND ITS CHARACTERIZATION FOR OPTICAL APPLICATIONS

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Optically good quality crystals of L-Tartaric Acid were grown by slow evaporation solution growth technique (SEST) at ambient temperature. Its crystal structure and cell parameters were confirmed by single crystal X-ray diffraction analysis. UV-Vis analysis exposes excellent optical transparency of the title material and lower cut off wavelength was observed. Optical properties are measured to know its behavior towards electromagnetic spectrum. The second harmonic generation was tested by Kurtz-Perry powder technique the efficiency of L-tartaric single crystal is comparatively greater than the referenced (KDP) single crystal

Key Words: SEST, Crystal growth, UV-Vis analysis, Second Harmonic Generation

SINGLE CRYSTAL GROWTH OF L-TARTARIC ACID AND ITS CHARACTERIZATION FOR POTENTIAL APPLICATION

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Single crystals of L-Tartaric Acid were grown by solvent evaporation technique at room temperature. Its crystal structure was confirmed by single crystal X-ray diffraction analysis. The functional groups were identified by Fourier transform infrared spectral analysis. The as grown L-Tartaric acid single crystals can be used as a potential candidate for NLO material as well as in electronic and optoelectronic devices. The second harmonic generation was tested and emission of green radiation confirm the NLO behavior of the grown crystal.

Key Words: Single Crystal XRD, Solvent Evaporation technique FT-IR, NLO and SHG

GROWTH AND THERMAL ANALYSIS OF L-TARTARIC ACID SINGLE CRYSTALS

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Single crystals of L-Tartaric Acid were grown by low temperature solution growth technique at ambient temperature. Its unit cell dimensions and crystalline structures were confirmed by powder X-ray diffraction analysis. Thermal studies such as Thermogravimetric and Differential thermal analysis were carried out to find the thermal stability of the crystalline material and the material was stable upto 170˚C. The second harmonic generation was tested and efficiency was compared with KDP.

Key Words: Low temperature solution growth, Growth from solutions, Powder XRD, Thermal studies and SHG

GROWTH AND OPTICAL STUDIES OF L-TARTARIC ACID SINGLE CRYSTALS FOR NLO APPLICATIONS

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Single crystals of L-Tartaric Acid (LTA) were grown by solvent solution evaporation technique at room temperature. The phase and structural information was assessed with powder X-ray diffraction. The Ultraviolet–Visible spectroscopy exposes the excellent transmittance properties of LTA crystal. Photoluminescence spectrum shows strong emission in the violet region and the determination of non-linear optical absorption coefficient was also taken into account with respect to the absorbance spectra. Kurtz and Perry powder SHG experiment shows the green emission which is relatively higher than standard KDP..

Key Words: Powder XRD, UV-Vis analysis, Photoluminescence, Second Harmonic generation

EXPERIMENTAL AND QUANTUM CHEMICAL CALCULATION OF METHYL LINOLEATE

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The investigator may better understand the origin of the plant by using the GCMS to compare the components of this drug of abuse. In this paper, we offer a research on the soxhlet apparatus for the extraction of bioactive chemicals from high polar solvents. using FTIR, Studies of the compound's structural and vibrational characteristics using UV-Vis and GCMS spectroscopy have been conducted. Density-functional theory techniques were used to calculate the compound quantum chemical equation. The chemical has a great affinity for attaching to biomolecular compounds, as shown by the natural bonding orbital, molecular docking, and global reactivity value.

Keywords: FT-IR,GCMS,UV-Vis, DFT, Methyl Linoleate.

DUFOUR EFFECT

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The purpose of this study is to examine the effect of Dufour on parabolically accelerated plate past MHD flow through viscous fluid with uniform temperature and varying mass diffusion. The considered fluid conducts electricity. The set of dimensionless area differential equations is solved by using the Laplace transformation technique and finding the value of velocity, temperature and concentration profiles. The outcomes are found by graphs for various boundaries such as thermal Grashof number, mass Grashof number, Prandtl number, Schmidt number, Dufour value and time. The velocity profile decreases by increasing the values of magnetic parameter, radiation parameter and acceleration parameter. The temperature profile increases by increasing the values of thermal radiation and Dufour number.

Keywords: Dufour effect, Parabolically accelerated plate, Heat transfer, Mass transfer, MHD.

SYNTHESIS OF TI3C TX NANOCOMPOSITE AS AN ELECTRODE FOR SUPER CAPACITOR APPLICATION

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$Ti3C_2$ Tx, a 2D Titanium Carbide in the Mxenes family, is obtained from Ti3 Al C_2 through selective etching of the Al Layes. Due to its good conductivity and high volumetric Capacitance, Ti3 C2 Tx is regarded as a promising candidate for Super Capacitors. In this paper, the fabrication of $Ti3C_2$ Tx/ RGO Composites with different proportions of Ti3 C2 Tx and RGO is reported, in which RGO ad, as a Conductive bridge to Connect different Ti3 C2 Tx blocks and a matrix to alleviate the volume change during charge / discharge process. In addition RGO nano sheets, can serve as a second nano sales current Collector and support as well as the electrode. The electrochemical Performance of the as fabricated Ti3 C2 Tx /RGO electrodes Characterized by CV, CCD, and EIS, are also reported. A heighest Specific Capacitance (s) of 154.3 F/g at 2 A/g is obtained at the Ti3 C2 Tx : RGO Weight ratio of 7: 1 combained with an outstanding capacity retention (124.7 F/g) after 6000 cycles at 4 A/g

Keywords: Ti3 C2 Tx Mxene, 2D material. Energy Store, Super Capacitor application.

GROWTH, OPTICAL, SEM AND LASER DAMAGE THRESHOLD OF L-ALANINE SINGLE CRYSTALS FOR NON-LINEAR OPTICAL APPLICATIONS

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Single crystal of L-alanine (LA), nonlinear optical material has been grown from solution by slow evaporation solution growth technique (SEST) at ambient temperature. From the XRD studies, the crystal crystallisation in a orthorhombic with space group P21 21 21. The unit cell dimensions obtained are a = 6.023Å, b= 12.343 Å, C = 5.784 Å. The lower cut off wavelength was observed at 245nm. The surface morphology of grown crystal was carried out using Scanning Electron Microscope. The optical tolerance was estimated using Laser Damage Threshold. The Second Harmonic Generation of the powdered sample was confirmed with the green emission of light and it is relatively 1.4 times greater than that of standard KDP.

Keywords: Single crystal growth, optical characterisation, nonlinear optical crystal (NLO), SEM and LDT analysis.

PHOTOCATALYTIC ACTIVITIES OF ZNO/CUO NANOCOMPOSITES VIA FACILE HYDROTHERMAL ROUTE

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Zinc oxide-Copper oxide (ZnO/CuO) nanocomposite has attracted much attention due to their excellent tunable photocatalytic, electrical, optical, and magnetic properties. In this work, ZnO/CuO nanocomposites are prepared by facile hydrothermal process. The structural, morphological and optical characteristics of the prepared samples are analyzed using powder XRD, SEM, TEM, UV and PL analysis. The powder XRD analysis confirmed the hexagonal wurtzite/monoclinic phase of ZnO/CuO nanocomposites. The sphere with rod-like particles is observed from the SEM and TEM analysis with the average particle size range of 20-25 nm. The prepared ZnO/CuO nanocomposites exhibited good photocatalytic activity against Congo red dye is a kind of promising semiconductor photocatalyst in dye industry.

Keywords: Metal oxide, Nanocomposites, Hydrothermal method, Photocatalytic activities

FACILE MICROWAVE SYNTHESIS OF SNO2/NICO2O4 NANOCOMPOSITE AS ELECTRODE MATERIAL FOR SUPER CAPACITOR APPLICATION

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Mixed transition metal oxides have attracted great attention due to their improved properties over simple oxides in energy storage applications. Hybrid nanomaterials with hierarchical structure have received a great deal of attention as sensing materials due to their high surface area, excellent catalytic performance, and robust structures. In this present work, we have successfully synthesized SnO2 / NiCo2O4 by simple, economical and environmentally friendly microwave irradiation method. X-ray diffraction (XRD) measurement was carried to identify the phase of the synthesized materials. The observed peaks from the XRD confirms the planes of cubic structure of NiCo2O4 attributed to a higher diffusion rate, smaller charge-transfer resistance and more structural stability. The sharp and strong XRD peaks are indicative of a high crystallinity and high purity of the nano crystalline samples. The morphology studies, SEM and TEM, have been carried out on the NiO/NiCo2O4/SnO2 nanocomposite. Raman studies of the nanocomposite confirmed successful hybridization of a mixed transition metal oxide. Surface area and pore volume have been calculated by BET measurement.

GROWTH, STRUCTURAL, OPTICAL AND LASER DAMAGE THRESHOLD STUDIES OF HIPPURIC ACID SINGLE CRYSTALS FOR POTENTIAL APPLICATION

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The optically good quality single crystals of Hippuric Acid (HA) with dimension of 20 × 15 × 5 mm3 were grown by slow evaporation solution growth technique at ambient temperature. It crystallizes in an orthorhombic system with space group P212121. The functional groups and vibrational frequencies were identified using FT-IR and FT-Raman spectral analysis. The optical transmittance of the grown crystal was determined by using UV-Vis-NIR spectral analysis and it has good optical transparency in the entire visible region. Lower cut off wavelength of Hippuric acid was observed at 304 nm and it shows direct allowed transition with optical energy band gap of 4.07eV and the linear refractive index of the grown crystal was found to be 1.3703. Optical constants such as extinction coefficient and optical conductivity were calculated. The band tail energy of the grown crystal was analysed and it appears to be minimum, which indicates that the hippuric acid has good crytallinity. The electronic polarizability (α) of the hippuric acid crystal was calculated. The second harmonic generation was tested by Kurtz-Perry powder technique and efficiency compared to standard potassium dihydrogen phosphate (KDP) crystals. The laser damage threshold value was measured for the grown crystal by using Nd:YAG laser.

Key Words: Single Crystal growth, Spectral analysis, UV-Vis-NIR analysis, SHG and Laser damage threshold

SYNTHESIS OF RGO/ZNO NANOCOMPOSITE AS AN ELECTRODE FOR SUPERCAPACITOR APPLICATION

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In this work, the ZnO and rGO/ZnO nanocomposite were synthesized using wrute for solvothermal method, as an electrode material for supercapacitor applications. The synthesized nanostructures were characterized by X-ray diffraction patterns, to confirm the ZnO and rGo/Zno structural properties. Hr-TEM and FE-SEM to know the chemical composition present in the nanostructures. Raman spectroscopy is to confirm the functional groups and stretching of chemical bonds present in the compound. The results were compared with DFT calculations. DFT calculations are calculated using WIEN2K code. The band structure, density of states Morphological, phase and structural properties of ZnO and rGO/ZnO nanocomposite were studies using electron microscopy, Raman spectroscopy and X-ray diffraction, respectively. Electron microscopy revealed decoration of ZnO nanoparticles on rGO sheets. Raman analysis confirms the phase and hybridization. XRD patterns corroborated the crystal structure of ZnO and formation of nanocomposite. The synthesized ZnO and rGO/ZnO nanocomposite exhibits excellent electrochemical performance in comparison to pure ZnO, which demonstrate its potential as an electrode material for supercapacitor applications.

Keywords: ZnO nanoparticles, rGO/ZnOnanocomposite, Energy storage, Supercapacitor application.

STRUCTURAL, OPTICAL AND MECHANICAL STUDIES OF A SINGLE CRYSTAL FOR DEVICE FABRICATION

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Good quality single crystals of 2-Amino-1-methyl-5H-imidazole-4-one were grown by slow evaporation solution growth method at ambient temperature. Optical transparency single crystals were harvested from mother solution and subjected to Single crystal X-ray diffraction for further confirmation. Optical studies like UV-Visible analysis and microhardness studies were carried out. The microhardness test was carried out to verify the mechanical strength of the grown crystal and Vickers microhardness studies was carried out on the surface of the single crystal with various loads at room temperature with the indentation time as 7 sec. Vickers hardness numbers (Hv) were calculated and it is found to increase with the applied load. Mayer's index number 'n' was also calculated. Vickers hardness, fracture toughness (Kc), brittle index (Bi), yield strength (σv) and the elastic stiffness constant (C11) were calculated.

Key Words: Single Crystal growth, UV-Vis analysis, Mechanical studies, Yield Strength and fracture toughness

COMPARISON OF PHARMACOLOGICAL PROPERTIES AND PHYTOCHEMICAL CONSTITUENTS OF METHYL 11-DOCOSENOATE BY IN-VITRO AND IN SILICO STUDIES

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The purpose of this study was to determine the phytochemical constituents and pharmacological properties of Methyl 11-docosenoate . The phytochemical constituents, pharmacological benefits and their mechanisms were previously presented in a number of studies including In vitro and In vivo studies from published books, journals and articles. This paper studies includes In vitro and In Silico studies. The chemical structures are drawn using ChemDraw Ultra were many phytochemicals that can be extracted from its constituent parts; the bark, fruits, leaves, flowers, roots, twigs and seeds. The predominant extracted phytochemical taken as flavonoids . In Vitro studies precise application of toxicants, quantification of pathways and kinetics of toxicant interactions, evaluated by Column chromatography and diverse identification for bio-active compound by using GC-MS,FT-IR and NMR .These phytochemical contribute to the pharmacological activities of this plant as an antioxidant, anti-diabetic, and for having antimicrobial ,anti-cancer and cytotoxic activities. This species contains a broad range of phytochemicals with curative properties that can be greatly beneficial to man. Notably, this paper focused only on flavonoids extracted from methanol extract. Thus, further study needs to be done on Methyl 11-docosenoate unlock additional potential activities and to pinpoint the exact mechanisms of how these activities can be induced, leading to new drug discoveries which have fewer side effects by using docking studies.

Keywords: Bioactivities; Flavonoids, In vitro, In silico, GC-MS,FT-IR,NMR

BI-CEO2-NANO-COMPOSITEMATERIAL SYNTHESIZED, CHARACTERIZATION AND IT'S MULTI APPLICATIONS

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In this present study, we reported the highly quantum yield reusable of undoped CeO2 and doped Bi-CeO2 nano-material by solgel precipitation method and sonication technique. This prepared nano composite materials were by X-ray diffraction, field-emission scanning electron microscopy with

high-resolution transmission electron microscopy techniques, the elementary dispersive X-ray analysis and diffuse reference spectra(UV-Vis DRS)analysis was supported this article the various parameter are measured.This nano-material was high Photocatalytic activity for industrial application and antibacterial activity was medicinal applications and electro chemical application had also been investigated.

Keywords: Photocatalytic properties, Electrochemical properties, Antibacterial activity.

FRACTAL MODEL FOR TONGUE DIAGNOSIS

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Diagnosis of tongue diseases using fractal concept is the central theme of experimental and theoretical investigation. The variation of intensity and texture complexity of tongue including patches on the tongue are calculated by fractal dimension methods. Box Counting Method and radial distance measure are employed in identifying the shape of the tongue. Conventional Box Counting Method is compared with Sobel improved Box Counting Method. Lacunarity is used to analyze the texture of tongue. Analysis of the shape of tongue and evaluation of its dimension using Mathematical techniques saves time and increases the quality of diagnosis.

Keywords: Fractals, Tongue Diagnosis, Percolation Model, Lacunarity, Radial Distance.

A STUDY ON FRACTAL AND NETWORK ANALYSIS USING RAILWAY MAP

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This paper describes the research of self-similarity in fractal characteristics and how it is applied in the Network. That is from a combinational standpoint. The percolation theory defines the behaviour of networks when nodes or links are destroyed, and fractals for graphs show that it is conceptually connected to graphs. The network describes finite ramified self-similarity sets, with a focus on post-critically finite ones. This demonstrates the network's intricacy, random walk, and connection. Lastly, the topological properties that determine the railway route map may be studied using Voronoi diagrams and Delaunay triangulation. Percolation theory is the most basic paradigm for depicting a phase transition. This model generates fractals.

KEYWORDS: Percolation Theory, Fractals, Networks, Delaunay Triangulation, Voronoi diagram.

SORET EFFECT OF THERMAL RADIATION ON A PARABOLIC FLOW PAST IN THE PRESENCE OF ISOTHERMAL VERTICAL PLATE WITH UNIFORM MASS DIFFUSION

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An abstract result of warm radiation impacts on a wavering stream over an explanatory move of an extreme isothermal perpendicular plate with outfit heat transmission has been determined. The plate fevers as perfectly as the fixation intensity close to the plate are raised uniformly. The dimensionless governing equation has been derived by working Laplace transform technique. The impact of velocity profile and temperature profile are deliberate for various physical criterions like thermal radiation parameter, Grashof number for thermal and mass, Schmidt value and Prandtl value. It is realized that the value of velocity rises up with raising upsides of the warm (or) mass Grashof value. The float is truly turned around with respect to the warm radiation boundary.

Keywords: Rotation Parabolic, Thermal Radiation, Vertical Plate, Soret Effect.

HALL AND HEAT SOURCE EFFECTS OF FLOW PAST A PARABOLIC ACCELERATED ISOTHERMAL VERTICAL PLATE IN THE PRESENCE OF CHEMICAL REACTION AND RADIATION

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This article narrates study of Hall current ,Heat Source with Radiation & Chemical reaction of First-order viscous fluid flow , incompressible fluid with heat and mass transfer past an accelerated isothermal vertical plate with Rotation. The Inverse Laplace Transform Technique is used to solve the ascendant mathematical statement. The numerical values are given after our study of the Acceleration, Thermal reading and adsorption for certain Parameters, including Thermal Grashof number, Prantdl number, Schmidth number, and Mass Grashof number. Based on the study we have deduced, that-Velocity Rises when Heat Source, Hall Current and Grashof Values rises, Velocity reduces when Radiation rises. Also, Temperature falls when radiation rises and temperature rises when Heat Source rises. Concentration reduces when chemical reaction increased.

ANALYSIS OF FRACTAL IN GRAPH THEORY

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This paper analyses fractal graphs, which are based on the study of fractal geometry, and deduces some of its properties. For this derivation, fractal methods are used and they are explained via graphs. Fractal graph consequences were created as a result of the focus of graph theory on the interaction between edges and vertices. Additionally, the differences between fractal graphs and other well-known graphs are illustrated using a few relevant graphs.

Keywords—Cycle, Fractal, Graph, Strongly Regular Graph, Tree.

A SIMPLE STUDY ON THE ROLE OF RECOIL MOTION & SHAPE DEFORMATION IN FISH LOCOMOTION

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Fish locomotion has always garnered major interest from researchers as models can be emulated for efficient performance in underwater frontiers. Shape deformation & recoil motion play diverse roles in engaging prey-predator purposes of fish swimming. In this paper, we attempt to identify the potential means of shape deformation and recoil motion under the effect of internal forces like vertical weight and buoyancy alongside hydrodynamic lift and horizontal thrust & drag. Using a simplified 2D model in terms of impulse equations we obtain oscillating recoil velocity components that effect the overall swimming performance.

Keywords: Recoil Motion , Shape Deformation , Impulse Equations.

AN APPLICATION OF TRIANGULAR FUZZY NUMBER IN MEDICAL DIAGNOSIS

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Medical Diagnosis is the process of determining which disease or condition explains a person's symptoms and signs, it is most often referred to as diagnosis with the medical context being implicit. In this paper, clinical applications with fuzzy logic through well known triangular fuzzy number in medical diagnosis were being applied in women real life situations. Here we deal with the analysis of polycystic ovarian syndrome (PCOS) under various parameters with numerical examples.

Keywords: PCOD, PCOS, Fuzzy numbers, Defuzzification, Triangular fuzzy number.

EQUITABLE EDGE COLORING OF SPLITTING GRAPH OF CERTAIN GRAPHS

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An equitable edge coloring of G is an assignment of colors to all the edges of a graph G for which no two adjacent edges receive the same colors and difference for any two color classes by at most one. The minimum number of colors required for such coloring is called the equitable edge chromatic numbers. In this paper, we proved that the equitable edge chromatic number of splitting graph of ladder, triangular ladder, slanting ladder, sunlet graph, triangular snake graph respectively.

Keywords: Splitting graph, equitable edge coloring, equitable edge chromatic number

COMPUTING SOME DEGREE BASED TOPOLOGICAL INDICES FOR ANTIBACTERIAL DRUG

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Any graphical representation of combined points and connecting line is called a graph. Let G=(V,E) be a graph. A graph in this context is made up of vertices (also called nodes or points) which are connected by edges (also called links or lines).Chemical graph theory is a subject of mathematics that combines graph theory and chemistry. The molecular graph is a unique type of chemical graph that depicts the structure of molecules. Consider a linked, finite, multiple-edged, molecular graph that has no loop. Atoms and bonds are represented by vertices and edges in this type of molecular graph. The translation of chemical structures into numerical graph invariants is a common application of chemical graph theory. Any graph that models a particular molecular structure can be given a topological graph index, also known as a molecular descriptor. Top(G)=Top(G') if G and G' are two graphs that are isomorphic to one another. In this work, the ABC index , Redefined first, second, and third Zagreb indices, forgotten index, Harmonic index, The Hyper Zagreb index, The augumented Zagreb index, Second modified Zagreb index, The amoxicillin antibiotic's sum connection index, Randic connectivity index, reciprocal Randic index, and Sk index are computed for the antibiotic drug amoxicillin.

ANALYSING BINOMIAL AND POISSON DISTRIBUTION

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In this paper, analyzation among the theoretical frequency distributions are carried out which is based on the expectations of past experience. Usually the expectation is on an average basis for large experiments. Many theoretical distributions are available such as Binomial distribution, Poisson distribution, Normal distribution, etc. For this analyzation, Binomial and Poisson distributions are applied to discuss the problems related to real life situations.

KEYWORDS Binomial distribution, Poisson distribution, Discrete probability distribution, Random variables,

CLOSED ELEMENTS IN B-ALMOST DISTRIBUTIVE FUZZY LATTICES

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This paper introduces the idea of an implicative filter, which is an extension of a filter for B-Almost distributive fuzzy lattices. Also, the characteristics of fuzzy homomorphisms (BADFL) and their kernel are obtained from an implicative filter. Furthermore, the fuzzy congruence relation is defined based on the implicative filter. The characteristics of bounded implicative sub semilattices and closed elements in a B-Almost distributive fuzzy lattice are studied.

Keywords: B-Almost Distributive Fuzzy Lattice (BADFL), Homomorphism, Kernel, Closed Element, Bounded Implicative Sub-semilattice, Pseudo-complementation on ADFL, Implicative Filter.

TOPOLOGICAL INDICES OF CERTAIN ANTIVIRAL DRUG COMPOUND INVOLVED IN HAIR DYE

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Chemical graph theory plays a dominant role in the field of graph theory which involves in the study of the topology of a chemical compound. In this paper, the structural properties of several antiviral chemical compounds in hair dye paraphenylenediamine, resorcinol, paraben aminophenol, ammonia, peroxide, sulphates. The bond measures and distance are calculated for these chemical compounds by using topological indices. These topological indices are used to be aware of this risk, and know what to do. The substance may either be an irritant, directly damaging the skin, or an allergen, triggering an allergic reaction that affects the skin.

Keywords : Bond additive measures, drug, molecular descriptors, Wiener indices, Szeged.

DEFENDING MEDICAL INFORMATION NETWORKS FROM CYBER THREATS USING CO-SECURE SET DOMINATION

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Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from digital attacks. It's also known as information technology security or electronic information security. Individuals and organizations are exposed to significant risks due to cyber security, including financial, political, and social aspects. A growing number of cyberattacks have targeted healthcare over the past decade, and the sophistication of these attacks has increased dramatically. There is an awareness of this new era both in industry and in government. Cyberattacks are of particular concern for the health sector because attacks can directly threaten not just the security of systems and information but also the health and safety of patients. Hospitals are among the least secure and most vulnerable organizations in terms of cybersecurity. In order to protect a healthcare network's nodes and links from attacks, mobile guards need to be placed on the nodes. This paper uses the Bloom graph for massively parallel computers, which is a potential structure. Co-secure set domination is used to find the minimum number of guards required to protect the bloom network.

Keywords:Graph theory, Bloom network, Co-secure set domination, Edge cover.

AN ANALYSIS ON TRANSPORTATION PROBLEM USING DECAGONAL NEUTROSOPHIC ENVIRONMENT

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In this study, we actually discuss how Decagonal Neutrosophic number is conceptualised from a distinct point of view. Neutrosophic Set Theory wide features have recently provided researchers with a variety of dimensions. Decagonal Neutrosophic numbers and their unique characteristics are the main topic of this research. The disjunctive situations of this number are defined concurrently whenever the truthiness, falsity, and hesitation portions are dependent and independent of one another. This study introduces the fundamental aspects of Decagonal Neutrosophic numbers along with its application to a real-world operation research problem. This method is more trustworthy than other approaches due to its logical score and accuracy function. In this study, we truly discuss how Decagonal Neutrosophic number is conceptualised from a distinct perspective.

Keywords: Transportation Problem, Decagonal Numbers, Neutrosophic Numbers.

ESSENCE OF L-M HOMOMORPHISM AND CONGRUENCE RELATIONS ON T- FUZZY MODULAR L-IDEALS

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This work investigates the concept of congruence relations for the group of all triangular norm of fuzzy modular l-ideals (fml-ideals). Consider I_f the set of all T-fuzzy modular l-ideals defined on the commutative l-m group. This study aims to introduce the research of fuzzy congruence relations on family of T- fuzzy modular l-ideals, as well as key features for the relationship and its congruence connections. After that, we concentrated into the idea of l-m homomorphism on T-fuzzy modular l-ideals.

Keywords: T-fml-ideals, congruence relations, l-m homomorphism, family of T-fuzzy modular l-ideals.

DUFOUR IMPACT OF CHEMICAL REACTION ON A PARABOLIC FLOW PAST IN THE PRESENCE OF ISOTHERMAL VERTICAL PLATE WITH UNIFORM MASS DIFFUSION

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Abstract results of chemical reaction re action on pulsating streams over the conditional course of an extreme isothermal vertical plate with equipment heat transfer are determined. The lamellar row is perfect as the fixing strength near the plate increases evenly. The dimensionless master equation was obtained using the working method of the Laplace transform. The effects of the velocity profile and temperature profile are intended for different physical criteria such as chemical reaction parameters. Grashof numbers for heat and mass, Schmidt values and prandtl values. It is clear that the velocity value increases as the upper part of the warm (or) Grashof mass increases. The floats are actually positioned relative to the boundaries of heat chemical action.

Keywords: Rotation, Parabolic, Thermal radiation, vertical plate, Dufour effect.

GRAPHS ARE PROPER AND LUCKY

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Let f: V(G)→N used to label the nodes of a graph G. The sum of neighbor nodes is not same then it is lucky graph. The sum of the neighbor nodes and neighbor labels are not same then it is proper lucky graph. A Gear graph contains 2n+1 vertices and 3n edges. A Tortoise graph contains odd 2n+1 vertices and (3n-3)/2 edges. A Snail graph contains 2n+1 vertices and 3n edges. A Mirror graph contains n+m vertices and 3n-2 edges. In this paper we showed the gear graph, tortoise graph, snail graph and mirror graph are lucky graph and proper lucky graph. Also we determined the lucky number and proper lucky number of gear graph, tortoise graph, snail graph and mirror graph.

Keywords: Gear graph, Fan graph, Tortoise graph, Snail graph, Mirror graph, Lucky graph, Proper Lucky graph

MEDIAN PRIME IDEALS OF PSEUDO-COMPLEMENTED ALMOST DISTRIBUTIVE FUZZY LATTICES

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In pseudo-complemented almost distributive fuzzy lattices, coherent ideals, strongly coherent ideals, and ρ-closed ideals are introduced, and their characterization theorems are derived. For every ideal of a pseudo-complemented almost distributive fuzzy lattice to become a coherent ideal, a set of equivalent conditions are established. In order to characterize fuzzy boolean algebras, the concept of median prime ideals is introduced, and certain equivalent conditions are obtained for every maximal ideal of a pseudo-complemented almost distributive fuzzy lattice to become a median prime ideal.

Key words: Median prime ideal, Coherent ideal, Maximal ideal, Pseudo-complement, Almost Distributive Fuzzy Lattice.

S – IDEALS AND S – FILTERS IN GENERALIZED ALMOST DISTRIBUTIVE FUZZY LATTICES

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In this article, we have seen the concept of S – Ideals and S – Filters of Generalized Almost Distributive Fuzzy Lattices (GADFL) as a generalization of an Almost Distributive Fuzzy Lattices (ADFL). We obtained results on S – Ideals of fuzzy lattices in the sense of GADFL. We proved some results on S – Filters of GADFL. A result analogous to separation theorem is obtained for distributive fuzzy lattices in respect of S – Ideals and S – Filters. Further, we extend the classical proof of this ideals and filters for GADFL. Also, we furnished some characterizations of S – Ideals and S – Filters of GADFL.

Keywords: Fuzzy Lattices, Almost Distributive Fuzzy Lattices (ADFL), Generalized Almost Distributive Fuzzy Lattices (GADFL), S – Ideals and S – Filters.

SORET EFFECT OF THERMAL RADIATION ON A PARABOLIC FLOW PAST IN THE PRESENCE OF ISOTHERMAL VERTICAL PLATE WITH VARIABLE MASS DIFFUSION

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A decision has been made regarding the abstract impact of warm radiation on a wavering motion over an explanatory flow of an extreme isothermal perpendicular plate with equipped warmth transmission. The fixation depth close to the plate is consistently raised, and the plate fevers do so as well. The Laplace rework technique was used to generate the dimensionless governing equation. For numerous bodily criterions like thermal radiation parameter, Grashof range for thermal and mass, Schmidt fee, and Prandtl price, the impact of velocity profile are planned. It is discovered that the price of speed increases along with rising benefits of the comfortable (or mass Grashof rate). The float has unquestionably grown spherical in relation to the warm radiation barrier.

Keywords: Rotation, Parabolic, Thermal radiation, vertical plate, soret effect.

THE TOTAL VERTEX STRONG GEODETIC NUMBER OF A GRAPH

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A vertex strong geodetic set S of x of G is called a total vertex strong geodetic set of G if G[S] has no isolated vertex. The minimum cardinality of a total vertex strong geodetic set of G is called the total vertex strong geodetic number of G and is denoted by tsg_x (G). Any total vertex strong geodetic set of cardinality tsg_x (G) is called a tsg_x-set of G. Some of the standard graphs are determined. Necessary conditions for sg_x (G) to be n or n-1 are given for some vertex x in G. It is shown for every pair of integers a and b with $2 \leq a \leq b$, there exists a connected graph G such that sg_x (G)=a and tsgx (G)=b for some x in G.

Keywords: strong geodetic number, vertex strong geodetic number, total vertex strong geodetic number.

INTUITIONISTIC FUZZY HYPERSOFT SETS IN THE FIELD OF INFORMATION TECHNOLOGY USING TOPSIS APPROACH

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Due to competing criteria and the availability of several alternatives, decision-makers around the world struggle to make the right choices in daily life. Numerous studies have been conducted in the area of multi-criteria decision making (MCDM) in an effort to find a strong decision-making methodology. The main objective of this paper is the solution of Intutionistic fuzzy hypersoft sets as an extension of the technique for order preference by similarity to an ideal solution (TOPSIS). Additionally, a computational model that addresses decision-making concerns has been developed, and its interpretation is provided with the aid of a numerical example for the choice of a candidate in an IT firm. In this paper, the proposed methodology is made purely and effectively to address issues with decision-making by identifying the optimal possibilities.

Keywords MCDM, TOPSIS, Decision Making Methodology, DM Problems.

FRACTAL MODEL FOR TONGUE DIAGNOSIS

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Diagnosis of tongue diseases using fractal concept is the central theme of experimental and theoretical investigation. The variation of intensity and texture complexity of tongue including patches on the tongue are calculated by fractal dimension methods. Box Counting Method and radial distance measure are employed in identifying the shape of the tongue. Conventional Box Counting Method is compared with Sobel improved Box Counting Method. Lacunarity is used to analyze the texture of tongue. Analysis of the shape of tongue and evaluation of its dimension using Mathematical techniques saves time and increases the quality of diagnosis.

Keywords: Fractals, Tongue Diagnosis, Percolation Model, Lacunarity, Radial Distance.

A STUDY ON FRACTAL AND NETWORK ANALYSIS USING RAILWAY MAP

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This paper describes the research of self-similarity in fractal characteristics and how it is applied in the Network. That is from a combinational standpoint. The percolation theory defines the behaviour of networks when nodes or links are destroyed, and fractals for graphs show that it is conceptually connected to graphs. The network describes finite ramified self-similarity sets, with a focus on post-critically finite ones. This demonstrates the network's intricacy, random walk, and connection. Lastly, the topological properties that determine the railway route map may be studied using Voronoi diagrams and Delaunay triangulation. Percolation theory is the most basic paradigm for depicting a phase transition. This model generates fractals.

KEYWORDS: Percolation Theory, Fractals, Networks, Delaunay Triangulation, Voronoi diagram.

COMPUTING SOME DEGREE BASED TOPOLOGICAL INDICES FOR ANTIBACTERIAL DRUG

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Any graphical representation of combined points and connecting line is called a graph. Let G=(V,E) be a graph. A graph in this context is made up of vertices (also called nodes or points) which are connected by edges (also called links or lines).Chemical graph theory is a subject of mathematics that combines graph theory and chemistry. The molecular graph is a unique type of chemical graph that depicts the structure of molecules. Consider a linked, finite, multiple-edged, molecular graph that has no loop. Atoms and bonds are represented by vertices and edges in this type of molecular graph. The translation of chemical structures into numerical graph invariants is a common application of chemical graph theory. Any graph that models a particular molecular structure can be given a topological graph index, also known as a molecular descriptor. Top(G)=Top(G') if G and G' are two graphs that are isomorphic to one another. In this work, the ABC index , Redefined first, second, and third Zagreb indices, forgotten index, Harmonic index, The Hyper Zagreb index, The augumented Zagreb index, Second modified Zagreb index, The amoxicillin antibiotic's sum connection index, Randic connectivity index, reciprocal Randic index, and Sk index are computed for the antibiotic drug amoxicillin.

ANALYSING BINOMIAL AND POISSON DISTRIBUTION

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In this paper, analyzation among the theoretical frequency distributions are carried out which is based on the expectations of past experience. Usually the expectation is on an average basis for large experiments. Many theoretical distributions are available such as Binomial distribution, Poisson distribution, Normal distribution, etc. For this analyzation, Binomial and Poisson distributions are applied to discuss the problems related to real life situations.

KEYWORDS Binomial distribution, Poisson distribution, Discrete probability distribution, Random variables, Parameter.

PHYTOCHEMICAL ANALYSIS OF TRIDAX PROCUMBENS LINN LEAVES

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Tridax procumbens (T. procumbens) Linn. is a medicinal plant found in tropical, sub-tropical and mild temperate regions around the world. Tridax Procumbens L. is commonly called as "Coat Buttons" or wild daisy or Tridax daisy. Medicinal properties of plants are due to presence of some bioactive chemical constituents. The present study of Tridax procumbens L. leaves suggest that all natural products can be turned bioactive molecules as every diverse molecule possessing one kind or multiple kinds of biological & pharmacological activities. The leaves are known to contain flavonoids, alkaloids, carotenoids, hydroxycinnamates, lignans, benzoic acid derivatives, phytosterols and tannins. The plant is also associated with endophytes to produce secondary metabolies by endophytes possessing antibacterial and antifungal activities. Tridax Procumbens L. leaves contains element like sulphur, iron, sodium, & chlorines as well as gluoside, amino acids, flavanol, synergic acid, tannin, steroids, polysaccharides, pectin, hemicellulose, phenols, alkaloids, fats & volatile oils etc. It shows the presence of some elements which are also observed in few drugs like anti-viral, antibacterial, anti-fungal, anti-biotic, anti-Cancer, anti-ulcer, anti-pyretic, anti-healing, antidandruff, hypotensive etc.

Keywords: Tridax procumbens Linn, phytochemical, bioactive, flavonoids

AN APODICTIC REVIEW ON TRENDS AND APPROACHES IN SYNTHETIC AZO TEXTILE DYE REMEDIATION.

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The applications of dyes on textile materials like fibre, yarn with the goal of achieving colour with desired colour fastness is referred to as Dying process in textile industries. These synthetic chemical dyes include natural, synthetic, direct disperse, reactive, solvent dye. Some of these synthetic dyes are known to be potential carcinogens. The most significant groups of synthetic dyes are azo dyes. Azo dye is a direct dye (i.e.) these dyes colour the fibre directly. They tend to bioaccumulate in the environment and have hazardous effects in humans. It is also vital to ensure that the degraded products do not pose a threat to aquatic life or vegetation. Many approaches, including physic and/ or chemical processes, have been used in the treatment of industrial wastewater containing dye but such methods are often costly and not environmentally safe. Bioremediation is one of the most popular remediation approaches because of its cost effectiveness and eco-friendliness. Phytoremediation is one such bioremediation approach that has emerged as a green, passive, solar energy driven and cost- effective approach for environmental clean-up when compared to physical or chemical and even other biological methods. Recent researchers had also started studying the potential of plant microbe integrated remediation systems because of its higher efficacy in remediation. This review may provide insights on various remediation techniques used for azo dye remediation and insights on the potential of plant microbe integrated remediation systems for effective remediation of azo dyes.

Key words: Textile dye, Azo dye, Bioremediation, Phytoremediation.

SORET EFFECT OF THERMAL RADIATION ON A PARABOLIC FLOW PAST IN THE PRESENCE OF ISOTHERMAL VERTICAL PLATE WITH UNIFORM MASS DIFFUSION

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An abstract result of warm radiation impacts on a wavering stream over an explanatory move of an extreme isothermal perpendicular plate with outfit heat transmission has been determined. The plate fevers as perfectly as the fixation intensity close to the plate are raised uniformly. The dimensionless governing equation has been derived by working Laplace transform technique. The impact of velocity profile and temperature profile are deliberate for various physical criterions like thermal radiation parameter, Grashof number for thermal and mass, Schmidt value and Prandtl value. It is realized that the value of velocity rises up with raising upsides of the warm (or) mass Grashof value. The float is truly turned around with respect to the warm radiation boundary.

Keywords: Rotation Parabolic, Thermal Radiation, Vertical Plate, Soret Effect.

HALL AND HEAT SOURCE EFFECTS OF FLOW PAST A PARABOLIC ACCELERATED ISOTHERMAL VERTICAL PLATE IN THE PRESENCE OF CHEMICAL REACTION AND RADIATION

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This article narrates study of Hall current ,Heat Source with Radiation & Chemical reaction of First-order viscous fluid flow , incompressible fluid with heat and mass transfer past an accelerated isothermal vertical plate with Rotation. The Inverse Laplace Transform Technique is used to solve the ascendant mathematical statement. The numerical values are given after our study of the Acceleration, Thermal reading and adsorption for certain Parameters, including Thermal Grashof number, Prantdl number, Schmidth number, and Mass Grashof number. Based on the study we have deduced, that-Velocity Rises when Heat Source, Hall Current and Grashof Values rises, Velocity reduces when Radiation rises. Also, Temperature falls when radiation rises and temperature rises when Heat Source rises. Concentration reduces when chemical reaction increased.

TOPOLOGICAL INDICES OF CERTAIN ANTIVIRAL DRUG COMPOUND INVOLVED IN HAIR DYE

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Chemical graph theory plays a dominant role in the field of graph theory which involves in the study of the topology of a chemical compound. In this paper, the structural properties of several antiviral chemical compounds in hair dye paraphenylenediamine, resorcinol, paraben aminophenol, ammonia, peroxide, sulphates. The bond measures and distance are calculated for these chemical compounds by using topological indices. These topological indices are used to be aware of this risk, and know what to do. The substance may either be an irritant, directly damaging the skin, or an allergen, triggering an allergic reaction that affects the skin.

Keywords : Bond additive measures, drug, molecular descriptors, Wiener indices, Szeged.

AN ANALYSIS ON TRANSPORTATION PROBLEM USING DECAGONAL NEUTROSOPHIC ENVIRONMENT

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In this study, we actually discuss how Decagonal Neutrosophic number is conceptualised from a distinct point of view. Neutrosophic Set Theory wide features have recently provided researchers with a variety of dimensions. Decagonal Neutrosophic numbers and their unique characteristics are the main topic of this research. The disjunctive situations of this number are defined concurrently whenever the truthiness, falsity, and hesitation portions are dependent and independent of one another. This study introduces the fundamental aspects of Decagonal Neutrosophic numbers along with its application to a real-world operation research problem. This method is more trustworthy than other approaches due to its logical score and accuracy function. In this study, we truly discuss how Decagonal Neutrosophic number is conceptualised from a distinct perspective.

Keywords: Transportation Problem, Decagonal Numbers, Neutrosophic Numbers.

CLOSED ELEMENTS IN B-ALMOST DISTRIBUTIVE FUZZY LATTICES

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This paper introduces the idea of an implicative filter, which is an extension of a filter for B-Almost distributive fuzzy lattices. Also, the characteristics of fuzzy homomorphisms (BADFL) and their kernel are obtained from an implicative filter. Furthermore, the fuzzy congruence relation is defined based on the implicative filter. The characteristics of bounded implicative sub semilattices and closed elements in a B-Almost distributive fuzzy lattice are studied. Observation of every BADFL is a pseudo-complemented ADFL and the set of all closed elements of a BADFL(B,A) forms a fuzzy Boolean algebra with the operation.

Keywords: B-Almost Distributive Fuzzy Lattice (BADFL), Homomorphism, Kernel, Closed Element, Bounded Implicative Sub-semilattice, Pseudo-complementation on ADFL, Implicative Filter.

DEFENDING MEDICAL INFORMATION NETWORKS FROM CYBER THREATS USING CO-SECURE SET DOMINATION

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Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from digital attacks. It's also known as information technology security or electronic information security. Individuals and organizations are exposed to significant risks due to cyber security, including financial, political, and social aspects. A growing number of cyberattacks have targeted healthcare over the past decade, and the sophistication of these attacks has increased dramatically. There is an awareness of this new era both in industry and in government. Cyberattacks are of particular concern for the health sector because attacks can directly threaten not just the security of systems and information but also the health and safety of patients. Hospitals are among the least secure and most vulnerable organizations in terms of cybersecurity. In order to protect a healthcare network's nodes and links from attacks, mobile guards need to be placed on the nodes. This paper uses the Bloom graph for massively parallel computers, which is a potential structure. Co-secure set domination is used to find the minimum number of guards required to protect the bloom network.

Keywords: Graph theory, Bloom network, Co-secure set domination, Edge cover.

DUFOUR IMPACT OF CHEMICAL REACTION ON A PARABOLIC FLOW PAST IN THE PRESENCE OF ISOTHERMAL VERTICAL PLATE WITH UNIFORM MASS DIFFUSION

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Abstract results of chemical reaction re action on pulsating streams over the conditional course of an extreme isothermal vertical plate with equipment heat transfer are determined. The lamellar row is perfect as the fixing strength near the plate increases evenly. The dimensionless master equation was obtained using the working method of the Laplace transform. The effects of the velocity profile and temperature profile are intended for different physical criteria such as chemical reaction parameters. Grashof numbers for heat and mass, Schmidt values and prandtl values. It is clear that the velocity value increases as the upper part of the warm (or) Grashof mass increases. The floats are actually positioned relative to the boundaries of heat chemical action.

Keywords: Rotation, Parabolic, Thermal radiation, vertical plate, Dufour effect.

GRAPHS ARE PROPER AND LUCKY

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Let f: V(G)→N used to label the nodes of a graph G. The sum of neighbor nodes is not same then it is lucky graph. The sum of the neighbor nodes and neighbor labels are not same then it is proper lucky graph. A Gear graph contains 2n+1 vertices and 3n edges. A Tortoise graph contains odd 2n+1 vertices and (3n-3)/2 edges. A Snail graph contains 2n+1 vertices and 3n edges. A Mirror graph contains n+m vertices and 3n-2 edges. In this paper we showed the gear graph, tortoise graph, snail graph and mirror graph are lucky graph and proper lucky graph. Also we determined the lucky number and proper lucky number of gear graph, tortoise graph, snail graph and mirror graph.

Keywords: Gear graph, Fan graph, Tortoise graph, Snail graph, Mirror graph, Lucky graph, Proper Lucky graph

SORET EFFECT OF THERMAL RADIATION ON A PARABOLIC FLOW PAST IN THE PRESENCE OF ISOTHERMAL VERTICAL PLATE WITH VARIABLE MASS DIFFUSION

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A decision has been made regarding the abstract impact of warm radiation on a wavering motion over an explanatory flow of an extreme isothermal perpendicular plate with equipped warmth transmission. The fixation depth close to the plate is consistently raised, and the plate fevers do so as well. The Laplace rework technique was used to generate the dimensionless governing equation. For numerous bodily criterions like thermal radiation parameter, Grashof range for thermal and mass, Schmidt fee, and Prandtl price, the impact of velocity profile are planned. It is discovered that the price of speed increases along with rising benefits of the comfortable (or mass Grashof rate). The float has unquestionably grown spherical in relation to the warm radiation barrier.

Keywords: Rotation, Parabolic, Thermal radiation, vertical plate, soret effect.

S – IDEALS AND S – FILTERS IN GENERALIZED ALMOST DISTRIBUTIVE FUZZY LATTICES

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In this article, we have seen the concept of S – Ideals and S – Filters of Generalized Almost Distributive Fuzzy Lattices (GADFL) as a generalization of an Almost Distributive Fuzzy Lattices (ADFL). We obtained results on S – Ideals of fuzzy lattices in the sense of GADFL. We proved some results on S – Filters of GADFL. A result analogous to separation theorem is obtained for distributive fuzzy lattices in respect of S – Ideals and S – Filters. Further, we extend the classical proof of this ideals and filters for GADFL. Also, we furnished some characterizations of S – Ideals and S – Filters of GADFL. AMS Subject Classification: 06D72, 06B10, 06D72, 06D99.

Keywords: Fuzzy Lattices, Almost Distributive Fuzzy Lattices (ADFL), Generalized Almost Distributive Fuzzy Lattices (GADFL), S – Ideals and S – Filters.

VALIDATED GRADIENT STABILITY INDICATING RP-HPLC METHOD FOR DETERMINING LIDOCAINE AND RELATED SUBSTANCES IN PHARMACEUTICAL FORMULATION

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A stability-indicating reversed phase liquid chromatography method has been developed and validated for the determination of Lidocaine and its related substances in bulk and pharmaceutical dosage form. Threeimpurities (impurity A, E & H) and degradation products generated from forced degradation studies were characterized byusing a columnInertsil ODS 3V 250 mm, (4.6 mm, 5µm) employing 0.1% orthophosphoric acid buffer, Acetonitrile andmethanolin the ratio of 40:56:4 as mobile phase with a 1 mL/min flow rate.The compounds were detected at 230 nm. The test solution and its related substances were found to be stable for 48 hrs. The developed method resolved the drug from its known impurities (impurity A, E, H) and also from additional impurities generated when it was subjected to forced degradation studies. The developed LC method was validated according to the ICH guidelines with respect to specificity, linearity, range, accuracy, precision, Robustness, limit of detection & quantification. Thus the method was found to be satisfactoryand can be implemented in quality control laboratories and in stability testing departments.

Key words: Lidocaine, Related Substances, stability-indicating method, ForcedDegradation, Method Development and validation.

COLORIMETRIC AND FLUORESCENCE SENSING OF ANIONS USING AMINO-NAPHTHOQUINONE BASED RECEPTOR

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The amino-naphthoquinone based receptor and its metal chelates as simple and highly selective fluoride ion receptors. The receptor and its metal [Cu(II), Co(II), Zn(II), Ni(II)] chelates were synthesized and characterized using ESI-MS, UV–Vis, FT-IR and 1H NMR techniques. The structure of the receptor was confirmed by single crystal XRD study. The fluoride ion sensing properties of these receptors have been investigated using several spectral techniques such as UV–Vis, fluorescence and 1H NMR in addition to electrochemical and theoretical studies. The ligand and its complex showed high selectivity for visual fluoride ion detection over other anions such as Cl−, Br−, I−, AcO−, NO3−, H2PO4−, and CN− in DMF. The ligand senses fluoride ions through H-bond formation and such H-bond formation was found to increase as a result of coordination of the metal ion with the ligand. The addition of F- anions, the 1H NMR spectrum of ligand and Zn(II) complex shows chemical shifts for the NH proton at δ 11.88, and 8.13 ppm, respectively. After the addition of 2.0 molar equiv. of the anions, the signal corresponding to NH disappeared completely, this confirms the interaction between these groups with the F- anion. This indicates deprotonation and the formation of $HF^{-}2$ in the 1H NMR spectrum of the ligand as a new signal at δ 15.92 ppm.

Keywords - amino-naphthoquinone based receptor, 1H NMR in addition, NH proton

ELECTROCHEMICAL SENSOR BASED ON GRAPHENE/COBALT (HEXACYANOFERRATE) FOR THE DETECTION OF DOPAMINE

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Owing to the distinctive redox behaviour and ionic conductivity, transition metal hexacyanoferrates (MHCF) have been identified as the potential candidate for wide variety of applications including molecular magnets, electrochemical sensors, display technologies, batteries, hydrogen storage etc., [1]. Alternatively, preparation of graphene based MHCF composite materials renders outstanding electrochemical sensing characteristics of various analytes, thanks to the profound rise in the electrocatalytic behaviour due to the synergistic effect of graphene and MHCF [2]. In the present research, an attempt has been made in graphene/cobalt hexacyanoferrate (G/CoHCF) composite materials by mixing aqueous solution of potassium ferricyanide (K3Fe(CN)6] and cobalt chloride (CoCl2) using graphene as the template by adopting drop-by-drop method and by maintaining the temperature at 20oC for 1 hr. The prepared composite materials are characterized using various tools such as Fourier Transform Infrared Spectroscopy (FT-IR), X-ray diffraction (XPS), Fourier Transform Scanning electron microscopy (FE-SEM) etc., Cyclic voltammetry (CV) was used to profile the electrochemical behaviours of dopamine, corroborating the synergetic electrocatalytic contribution of graphene and cobalt hexacyanoferrate (CoHCF). This fact is revealed by the decrement in the oxidative potential and increment in the current responses of the dopamine. Furthermore, the quantitative measurements were done by employing amperometry and differential pulse voltammetric techniques. Finally, the electrochemical sensing characteristics of the resultant composites (G/CoHCF) on the real-time samples are demonstrated.

Keywords: Dopamine (DA), Electrochemical Sensor, Reduced Graphene oxide (RGO), Metal hexacyanoferrate, Biological samples

DEVELOPMENT OF K–CARRAGEENAN AND *ACACIA NILOTICA* BASED HYDROGELS FOR WOUND DRESSING APPLICATIONS

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Wound healing is a dynamic process by which skin or other body tissue repairs itself after trauma. The development of an efficient wound dressing that deals with a combination of polymers and herbal extracts is commonly called "hydrogels". These hydrogels can donate water to the wound site and thus help in maintaining a moist environment, which helps in faster wound healing and protecting the body from wound infection. Plants and their extracts have enormous potential in the treatment of wounds. The aim of the present study is to develop an effective hydrogel which deals with a combination of polymers (chitosan (CS) and carrageenan (CRG)) and herbal extracts for wound dressing. The stability of CS-CRG was developed by varying the pH (3-12) during gel preparation. Then the formulated hydrogels were loaded with *Acacia nilotica* and it was characterized physically and biologically by dispersion study, fluid absorption, swelling behaviour and hemocompatibility. The results showed that the hydrogels were stable and maintained the moisturising effect at pH 4. The synthesized hydrogels exhibited significant antibacterial activity against *Klebsiella sp*., followed by *Acinetobacter* and *Bacillus sp*. Based on the results, the synthesized hydrogels are found to be highly acceptable for wound dressing applications.

Key words: Hydrogel, chitosan, wound dressing and herbal extract.

ELECTROCHEMICAL SYNTHESIS OF ISOINDOLIN-1-ONES FROM O-ALKYNYLATED BENZAMIDES VIA DOMINO OXIDATION-REDUCTION SEQUENCE

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Isoindolin-1-ones, also known as phthalimidines or benzo fused γ- lactams are important scaffolds which are found in a large variety of naturally occurring as well as synthetic, biologically and pharmaceutically active compounds.[1] The conventional methods were employed to synthesize isoindolin-1-ones using either harsh conditions or expensive metal catalysts like Rh, Pd, etc[2]., Recently, electro-organic synthesis gained an important role in synthetic organic chemistry due to promote complex and challenging bond constructions under sustainable conditions.[3] In this context, we proposed a sustainable electrochemical method to access isoindolin-1-ones from o-alkynylated benzamides using cost-effective, bench stable ferrocene as a catalyst under mild reaction conditions.

Key words: Electro organic synthesis, Amidyl radical, Sustainable

REVIEW ON ECONOMIC ANALYSIS OF MARKETED SURPLUS AND MARKETABLE SURPLUS OF FRUITS IN INDIA

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The main and fundamental purpose of writing a review is to create a readable synthesis of the best resources available in the literature for an important research question or a current area of research. A complete understanding of the past studies helps the policy makers to frame appropriate policies while making the best use of the available resources. With this background, a review was conducted with respect to marketable and marketed surplus of fruits in India. Accordingly, a review on the work of Md Jahurul Islam (2019) have shown that the marketable surplus was greater than the net marketed surplus. The results have indicated that the sample respondents have retained more for consumption and other uses than the actual amount marketed. Another similar study conducted by Sunil Kumar (2020), to identify the current situation of marketable surplus and post harvest losses of guava, at two blocks namely Behat and Punwarka of district Saharanpur, UP. Objective was to find the production and marketable surplus of guava and to find out the total losses during different post harvest procedures. Here multistage random sampling method was used to select the sample respondents. The results of the study have shown that the sample farmers were selling their guava through different marketing channels and More then 60% of the farmers depends on hired out contractor. As the size of orchard increase production and marketable surplus have also increased and the post harvest loss of guava is occurring at both field and market stage. Furthermore, the study undertaken by Mahesh Maske et al (2012) to analyze marketable surplus and price spread of papaya in Raipur district of Chhattisgarh. Objective is to examine the effective measures to reduce marketing losses at various stages and emphasized on the strengthening of institutions, establishment of processing units and development of market infrastructure in the area. The study showed that the quantity produced at the farms have increased as the size of holding increased. The study conducted by Okuduwor A.A (2023), to evaluate the determinants of marketable surplus of African Bush Mango Kernal (Ogbono) in Kolokuma/Opokuma Local Government Area of Bayelsa state, Nigeria. The study have shown that, the ogbono was mostly used for household purposes and the excess was sold and identified the quantity of ogbono produced. The age of producers, quantity of ogbono for household consumption and gift were found to be significant factors influencing marketable surplus of ogbono in the study area.

Key words: Marketed Surplus, Marketable Surplus, Fruits

EMPIRICAL ESTIMATION OF MARKETED AND MARKETABLE SURPLUS OF AGRICULTURAL CROPS IN INDIA – A CRITICAL REVIEW

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Understanding marketed surplus and marketing behaviour of producers helps design technology, policy and institutions to facilitate the process of commercialization of agriculture. In this paper, empirical studies on marketed surplus of agricultural crops have been reviewed with a focus on the concepts and methods used, their strengths and weaknesses, and some recommendations have been made to improve estimation methodology in future studies. In the view of the above, the study conducted by D.K.Grover et. al., (2012) estimated the marketed surplus and retention of Wheat and Paddy in 3 major Wheat and Rice growing districts of Punjab (Gurdespur, Ludhiana, Ferozapur) of 300 farmers comprising marginal, small, medium and large farmers. Overall loss of paddy and wheat at different stages of handling accounts for 2.47 and 2.6 per cent of total production. Total retention of paddy was 0.64 per cent of farm production. Total retention of Wheat was 9.95 per cent of the farm production. The marketed surplus of Paddy and Wheat was about 99.37 and 90.06 per cent. The entire marketed surplus was disposed off in month immediately after harvesting and 99 per cent was sold to MSP. Similarly, Ram Singh Yadav et.al., (2020) analysed marketable and marketed surplus of cereals and oilseeds in Azamgarh district of Uttar Pradesh. The purposive-cum random sampling design was used for the selection of district, block, village and respondents. Marketable surplus was calculated using Total production less consumer requirements. The marketed surplus was calculated using quantity actually sold + post stock sold out (if any) + distress sale – loss. On an average per farm total production, marketable surplus, marketed surplus of Paddy was 2036.60, 1715.06, 1715.06 quintals respectively. Total production, marketable surplus, marketed surplus of Wheat was 1812.01, 1253, 1253 respectively. Whereas total production, marketable surplus, marketed surplus of Mustard was 261.60, 139.18, 139.18 quintals respectively. Pramod Kumar et. al., (2013) have estimated marketed and marketable surplus of maize, bengal gram and redgram in Karnataka. 4 districts viz., Belgaum, Bijapur, Davangere and Gulbarga were selected. The survey has been conducted on a sample of 412 respondents from 4 districts, 8 talukas and 12 villages. Of the total production, 88.29 per cent of Bengal gram, 86.47 per cent of maize, 90.71 per cent of redgram was marketed. The rest was retained by the household for their consumption. Out of total production of all the crops, 87.51 per cent was marketed and 9.22 per cent was retained by the households. The unit elasticity of marketed surplus of all the 3 crops substantiated that with increase in output there was proportionate increase in marketed surplus. Prof. Ramendu Roy (2013) analyzed the marketed surplus and marketed surplus in the whole state of Uttar Pradesh for major food grain crops (Bajra, Wheat and Arhar). The percentage of marketed surplus to production of Bajra was 61.69 per cent, that of Wheat was 61.19 per cent and arhar was 76.71 per cent. Hence based on the above studies, it could be concluded that the markets need to be regulated so as to save the farmers from the clutches of the exploitative middlemen. Sale of almost entire marketed surplus of farmers immediately after harvesting has serious implications in the form of handling and storage costs to the procurement agencies. Farmers need to be encouraged to opt for farm level storage through helping in creation of efficient storage structures at farm level. Staggered procurement by having functional rise in price from post-harvest to lean period may help in this regard. Farmers must be educated or be aware that boosting marketing surplus is more essential than boosting agricultural production in their farms.

Key words: Marketable surplus, Marketed surplus, Cereals, Pulses, Marketing

BIOSYNTHESIS OF ZINC OXIDE NANOPARTICLES USING BIOSURFACTANT PRODUCED BY PRIESTIA ARYABHATTAI STRAIN SPK593 ISOLATED FROM OIL CONTAMINATED SOIL

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Zinc oxide nanoparticles are an emerging novel nanomaterial and several methods have been reported for its synthesis. Biosurfactants are surface-active compounds produced by a wide range of microorganisms. Biosynthesis of nanoparticles using biosurfactant gained more attention nowadays as they are less toxic and eco-friendly.

Aim and Objective: To synthesis zinc oxide nanoparticles using biosurfactant produced by bacteria isolated from oil contaminated soil samples.

Methodology: Bacterial strains isolated from oil contaminated soil samples were screened for the production of biosurfactant. An efficient biosurfactant producing bacterial strain was selected and identified as *Priestia aryabhattai* strain spk593 by morphology, biochemical characterization and molecular studies. The purified biosurfactant was further subjected to characterization studies such as FT-IR, 1H and 13C NMR.

To synthesize zinc oxide nanoparticles, purified biosurfactant was added to zinc acetate dissolved in isopropanol, after vigorous stirring NaOH was added drop wise and kept overnight for stabilization. The synthesized nanoparticles were characterized by UV-Visible spectroscopy, Scanning electron microscopy and Energy dispersive X-ray spectroscopy (EDS). The nanoparticles formed an adsorption peak at 259nm, characteristic of zinc oxide nanoparticles. The electron micrographs of zinc oxide nanoparticles showed various ranges of particles from 38nm to 96nm in size.

Conclusion: The zinc oxide nanoparticles were synthesized using biosurfactant produced by Priestia aryabhattai strain spk593 isolated form oil contaminated soil and verified. The formed zinc oxide nanoparticles are less toxic and can be employed in the process of bioremediation.

Key words: Biosurfactant, zinc oxide nanoparticles, oil degrading bacteria, bioremediation

AN ECONOMIC ANALYSIS OF MARKETED SURPLUS AND MARKETABLE SURPLUS OF VEGETABLES – A REVIEW

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It is considered to be very much essential to understand the marketed surplus and marketing behaviour of producers to help design technology, policy and institutions to facilitate the process of commercialization of agriculture. In this paper, empirical studies on marketed surplus of agricultural crops have been reviewed with a focus on the concepts and methods used, their strengths and weaknesses, and some recommendations have been made to improve estimation methodology in future studies. With this above background, the study undertaken by Prakash Chandra Deogharia, (2017) was reviewed and it was found that the study has analysed the marketable and the marketed surplus of selected vegetables (Tomato, Potato, Cauliflower) and its distribution in different marketing channels in three districts of Jharkhand. Multistage random sampling method was used for selection of 150 vegetable cultivators. The study found that price has no impact on marketed surplus. Furthermore, S.H. Baba et al (2010), have assessed the growth of vegetable sector in relation with technology mission, extent and determinants of marketed surplus and price spread of vegetables in the Kashmir valley. The study is based on both secondary and primary data. On an average, producers' marketed surplus has been found more than 92 per cent of the total production of selected vegetables. This Study has emphasized on the strengthening of institutions, establishment of processing units and development of market infrastructure in the area. Praveen Dukpa and T. Zarenthung Ezung (2021) carried out the study in Phek district, Nagaland, where the production and marketing of vegetables are well recognized. Three primary vegetables, cabbage, beans, and potato, were selected for the study of the sample population of 300 farmers. Structure and pre-tested questionnaires and interview methods were used to collect the data. The result shows that the production, marketable surplus, and marketed surplus of cabbage was found to higher than beans and potato. To enhance and boost up production and marketed surplus, it is recommended to prioritize development, and extension services.

Key words: Marketed Surplus, Marketable Surplus, Major Vegetables.

ASSESSMENT OF MARKETED AND MARKETABLE SURPLUS OF RICE AND WHEAT IN INDIA – A CRITICAL REVIEW

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The studies on marketed surplus and marketing behaviour of producers helps to design appropriate technology, policy and institutional frameworks to facilitate the process of commercialization of agriculture and to improve the development of the entire economy. With this background, In this paper, empirical studies on marketed surplus of rice and wheat crops have been critically reviewed with a focus on the concepts and methods used, their strengths and weaknesses, and some recommendations have been made to improve estimation methodology in future studies. Anwesha Dey, et.al (2022) assessed the Marketable surplus of Rice and Wheat in Rohatas District of Bihar. The survey findings highlighted that Marketable surplus directly escalates with increase in farm size. The study have shown that the size of land holding was a positive influencing factor to that of marketable surplus. The disposable pattern clearly indicateed that due to lack of storage facilities, Transportation and credit facilities a large number of farmers vend their products to village traders immediately after harvest. Furthermore, Mohana Priya K.S, et.al (2020) estimated the marketable and marketed surplus of Paddy. To identify the factors influencing marketed and marketable surplus, multiple regression technique was employed. On average, the marketed surplus and marketable surplus was 77.17 per cent and 78.88 per cent respectively. In addition to that Vijay paul sharma (2016) reported to estimate the marketed and marketable surplus of Rice and Wheat based on data collected from about 918 rice producers and 1193 wheat growers in leading producing states like Punjab, Haryana and Madhya Pradesh and examine important factors, which determined the level of marketed surplus on various categories of farm households. These trends clearly indicated that the government has almost monopsony in Rice and Wheat procurement and restricted the participation of private sector. The results of marketed surplus have shown that about 78 per cent of total Rice production was sold in the market and varied about 63 per cent on marginal farmers to about 81 per cent on medium and large farmers.

Key words: Rice and Wheat, Marketable surplus and Marketable Surplus.

ANALYSIS OF AN M/G/1 QUEUE WITH DELAYED REPAIR SYSTEM ON MULTIPLE WORKING VACATIONS

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The asymmetric transition representation and an M/G/1 queue with delayed repairs on multiple working vacation working policies are addressed in this paper. The system receives users according to a Poisson distribution. When the system is idle, the server enters vacation mode and remains there for an exponentially distributed amount of time at random. To find the chance-generating function for the system's total number of customers, an additional technique is used. Also, there is a chance that the patch will be delayed before it is even started. The system's major metrics and a few significant exceptional circumstances are discussed. In this essay, the effects of a vacation interruption and a waiting server are examined. Analysis' findings indicate that after some time.

Key words: M/G/1 Queue, Delayed repaired system, Steady State, breakdown, Multiple working vacation, Supplementary Variable Method. MSC 2020 Number: 60K25; 68M07; 90B22; 90C90.

SPIRULINA - A BIOFERTILISER TO ENHANCE SOIL PRODUCTIVITY

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Assessment of soil health is of great significance as soil health is decreasing. This is due to various parameters such as continuous cultivation, soil erosion, nutrient loss and un-balanced nutrient compensation (Jamal Uddin et al., 2019). To increase food supply, chemical fertilizers have been used for cultivating various crops. It is a well-known fact that these chemical fertilizers have detrimental effects on the environment as they cause accumulation of nitrogen and phosphorus. At high concentrations, chemicals do not have a significant impact on crop yield (Gitau MM et al., 2021).

Microalgae improve plant growth and plant yield. Spirulina platensis is a rich source of nutrients for plants. Microalgal biomass provides a rich source of metabolites in agriculture. Spirulina platensis is capable of fixing atmospheric nitrogen which plays an important role in building soil fertility. The concentration of soil nutrients such as organic carbon, nitrogen, phosphorus and potassium are a good indicator of the physico-chemical and biological properties of the soil. Cultivation of microalgae needs high energy and is labour intensive.

The application of biofertilizers are increasing due to their non-toxic nature. Based on the findings of this study, it may be concluded that Spirulina platensis is a suitable biostimulant. With the Chinese cabbage seedlings, 20% foliar spray application and seed soaking for 36 hours worked well. Further greenhouse experiments and field trials to be conducted to further confirm the beneficial applications of Spirulina as a biofertiliser which can also enhance the soil's physio-chemical properties as shown with the fenugreek seedlings.

FORMULATION OF ELECTROSPUN NANOFIBERS FILM FOR WOUNDCARE APPLICATION USING PVA / CHITOSAN / SILK SERICIN

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The wound dressing was formulated with the protein Sericin (SS) as main substance made into nanofibers (NF) with electrospinning technique along with natural and synthetic polymers of chitosan (ch) and polyvinyl alcohol (PVA). The synthesized NF were characterized both physically and biologically. The ratio of electrospun film with PVA /Ch / SS were 50:30:10.The topography of the developed NF was measured using Scanning Electron Microscopy in the range of 150nm in diameter. The film of NF showed potent anti bacterial activity, hemocompatability, 80% cell viability at levels of 200 micrograms/ml and HET CAM test had no allergic reaction. The results showed that the silk sericin based NF will be significantly used for wound dressing

Key words: Wound dressing; Silk sericin; nanofiber film; electrospinning; anti bacterial activity.

INTUITIONISTIC FUZZY HYPERSOFT SETS IN THE FIELD OF INFORMATION TECHNOLOGY USING TOPSIS APPROACH

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Due to competing criteria and the availability of several alternatives, decision-makers around the world struggle to make the right choices in daily life. Numerous studies have been conducted in the area of multi-criteria decision making (MCDM) in an effort to find a strong decision-making methodology. The main objective of this paper is the solution of Intutionistic fuzzy hypersoft sets as an extension of the technique for order preference by similarity to an ideal solution (TOPSIS). Additionally, a computational model that addresses decision-making concerns has been developed, and its interpretation is provided with the aid of a numerical example for the choice of a candidate in an IT firm. In this paper, the proposed methodology is made purely and effectively to address issues with decision-making by identifying the optimal possibilities.

Keywords MCDM, TOPSIS, Decision Making Methodology, DM Problems.

An Economic analysis of Major Banana Market in India

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Abstract

The study aims to investigate the major banana varieties and their market integration in India based on monthly price data for the investigation period from January 2006 to December'2022 of banana markets in India. Price analysis namely seasonal index, coefficient of variation, price volatility and market integration were arrived for major market centres for banana in India and major varities viz., karpooravalli, poovan and nendran in Coimbatore Tamil Nadu. The selected markets are Mangalore market in Karnataka, Attingal market in Kerala and Coimbatore market in Tamil Nadu. The results of the price analysis found that among the varieties there is no price shock to other varieties due to uniqueness of the produce. Thus a strong integration of major Banana markets in India is confirmed that the price of one market influence the price of other markets through the result of the study. Price of banana in the market is highly influenced by arrivals in the market, climatic conditions, and shifting towards alternate crops. The price variation depends on the trade activities like export, import, global and domestic demand - supply dynamics and crop condition in major growing countries.

Keywords: Banana market integration, price analysis.

Nesting Characteristics of Stingless bees, *Tetragonula iridipennis* Smith. (Apidae, Hymenoptera)

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Stingless bee or dammer bee, *Tetragonula iridipennis* Smith is the smallest of the honey producing bees. They are highly social insects like honey bees living in permanent colonies, nesting in dark places like cavities in tree trunks, empty logs, cracks and crevices in old walls. They are important and effective pollinators of many crops. Study of Nesting Characteristics of Stingless bees is important to enhance the meliponiculture and the reliable information on stingless bee is scanty. An external tube, an internal tunnel, a resin dump, a waste dump, a wax dump, food pots for storing pollen and honey, brood, and nest envelops like involucrum and batumen are typically found in stingless bee nests. Brood cells and food pots are made of cerumen which is a mixture of wax and resin. The comb cells will be in close proximity to one another, and they may occasionally be joined by tiny pillars or connectives made of soft cerumen. There is only one cerumen entry tube in the nest. The nest's entrance could be a straight forward hole, which is frequently extended from the nest as an exterior entrance tube. The nest's exterior entry tube serves as the entrance. Both sides of the brood space, there were storage pots or food pots. Food pots were sealed after being filled. The entire cluster resembled a tightly packed cluster of grapes. Nearer to the entrance, pollen pots were constructed. Pollen and honey pots frequently coexist in the cluster, with honey pots typically located in the nest's outermost regions. Depending on their age, the brood cells were clustered and more packed, with a clear colour variation. The colour of newly formed cells was brownish, and as they grew older, they turned straw-colored. The surface where additional cells were added to the brood cluster termed the advancing

front. Brood cells were aligned and vertically elongated and interaction between the cells. Sometimes, little pieces of paper or soft cerumen connectives are used.

Influence of Food Dyes on Tuberose Flower Spike for Tinting Techniques

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Abstract

Tinting or artificial coloring of flowers could be a potential value added business. Food dyes enhance the visual appeal of flowers, increasing their commercial and aesthetic value. An experiment was carried out to study the influence of food dyes on tuberose flower spike during the year of 2023 at School of Agriculture, Vels Institute of Science, Technology and Advanced Studies, Pallavaram. The experiment was laid out in Completely Randomized Design with 11 treatments and three replications. The food dyes of different concentrations *viz.*, Orange red (2%), Orange red (4%), Lemon yellow (2%), Lemon yellow (4%), Apple green (2%), Apple green (4%), Rose pink (2%), Rose pink (4%), Classic blue (2%), Classic blue (4%) and Control. The freshly harvested spikes of tuberose were kept in different concentration of food dyes. The results revealed that the food dyes of orange red at 4% showed superior performance in case of time taken for colour uptake (2.54 hours), Volume of water uptake (31.50 ml), Moisture content (29.70 %), Membrane integrity (87.17 %) and Phenol content (2.64 mg/g).

Key words: Food dyes, Tuberose, Tinting, Orange red and Apple green

EFFECT OF BIOPESTICIDES ON MANAGEMENT OF PADDY SHEATH ROT

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ABSTRACT

A study was conducted to investigate the interactive effects of *Pseudomonas fluorescens* (PF13) and *Eucalyptus globulus* on the treatment of rice sheath blight. In both pot and field trials, applying *P. fluorescens* as a seed treatment (10 ml/kg seed) and *Eucalyptus globulus* leaf extract (10% concentration) as a foliar spray at 45 and 60 DAT resulted in vaginal Corruption occurrence has been greatly reduced. 18, 82% (pot), and 10.21 and 10.81% (fields I&II) showed maximum biometric values in rice crops, equating with results of treatment with hexaconazole 75% WG. In contrast, the untreated control treatments recorded maximum disease incidence and minimum biometric plant growth values in rice at 55.00% (pot) and 34.31% and 34.72% (panels I and II).
Keywords: Paddy, Sheath rot, Biopesticides, *Pseudomonas fluorescens, Eucalyptus globulus*

AN ECONOMIC ANALYSIS OF PRICE FORECASTING AND SPATIAL CO - INTEGRATION OF COCONUT IN INDIA

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Abstract

The study was conducted for understanding the present situation of marketing system and price behavior of coconut in the selected markets of Tamil Nadu. The objectives of the study were to estimate Growth and Instability of area, production and productivity, to analyze the seasonal decomposition and market integration of prices of coconut in India. Secondary data was used for this study. The results showed that there was a positive growth pattern in terms of area, production and productivity for all the time periods. The results of the instability indices showed that the area, production and productivity of coconut in India was positive and thereby indicating less riskiness for growing of coconut in the country. The Coefficient of Variation of the prices of coconut in the selected markets have not shown much of variations. The seasonal decomposition of prices of coconut in the selected markets in India have shown that the prices of coconut are less from the month of May to October in almost all the selected markets in the country and the prices are higher from the month of November to April in all the selected markets in the country. Analysis of market integration shows that coconut markets in Tamil Nadu were well integrated. Thus, it was concluded that all markets should be integrated in order to avoid price variations over time and space

Key words: Compound Growth Rate, Seasonal Decomposition, Market integration, Coconut.

Value Addition of Flower Crops by Tinting techniques

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Abstract

Tinting or artificial coloring of flowers is an important value-adding technique in flower crops where the color pigments are absent or pale or dull to insisting the colour. Tinting can be done for natural flowers or artificial flowers or dried flowers. Colouring inflorescences with edible dyes enhance the visual appearance of these flowers and increase their profitable and aesthetic value. The decorative purposes that require a specific color or multi colour flowers, tinting the white flowers is an easy way to get the desired color. These colored flowers are effectively used in the bouquets preparation, flower arrangements, veni and garland preparation, stage decorations etc., Tinting techniques of flowers adopted by two methods *viz.*, stem absorption method dipping method. Where the first method to use in carnation, tuberose and gerbera and second method is flower heads are fully immersed in dye solution (daisies). The stem absorption method is to retain the colour especially white and white shaded or dull coloured flowers are mostly used for tinting. The flowers like

cut rose, tuberose, china aster, chrysanthemum, lilium, gerbera, carnation, gladiolus, gypsophila, orchids etc., are common flowers used for tinting. The colour dyes of Tartrazine, Sunset yellow, Carmosine, Brilliant blue, Royal blue, Brilliant blue, Kesar yellow, Tomato red, Rasp berry red, Orange red, Lemon yellow, Apple green, Rose pink, Classic blue are important source for food dyes to tinting of flowers.

Key words: Food dyes, Colour flowers, Tinting, Artificial Coloring and Value Addition

The role of bee pollinators in ensuring food security

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Globally, 87 of major food crops depend on animal pollination. 9% of India's agricultural GDP depends directly on pollination (Animal production excluded). Honey bees provide pollination services that are crucial for sexual reproduction and improving the quality and quantity of many agricultural crops (Van der Sluijs *et al*. 2016). Honey bee pollination is crucial for human nutrition because it ensures family food security, generates money, and provides ecological services. The improper use of pesticides has a negative impact on honey bees through poisoning, death, forage destruction, pollination services, and effectiveness. This, in turn, causes a decrease in crop productivity and bee products, which puts them in danger due to climate change. Because one-third of agricultural production depends on pollination, primarily by honey bees, declines in insect pollinators, notably honey bees, have generated concerns about the availability of pollination services to agriculture. Reduced crop yields and a broader impact on agricultural activity because of lower ecosystem productivity are two examples of the possible negative consequences of pollinator decreases. The present pollinator crisis threatens global and local food security, can worsen the problems of hidden hunger, erodes ecosystem resilience, and can destabilise ecosystems that form our life support system. Farmers are unaware of the crucial pollination services provided by honey bees to their crops (Saha *et al*. 2023).

Designing policies and strategies to employ honey bee pollination service as a tool and technology for the improvement in productivity and sustainability is necessary to close this gap in the agricultural extension system. Understanding the country's economic and pollination service demands is necessary to minimize ecological losses and harm. Using the pollination services of honey bees will also help to preserve and sustain the ecosystem and agricultural crop output. It is feasible to increase crop productivity and honey bee production by promoting and using the pollination services provided by honey bees as part of agricultural development programmes.

Key Words: Honey bees, Pollination, Food Security

PROTECTION OF CULTIVATED CROPS FROM FAUNA USING SENSOR BASED ACOUSTIC SYSTEM ACCOMPANIED WITH DIVERSION OF FAUNA WITH AUTOMATIC FEED AND WATER SUPPLY

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ABSTRACT:
Flocks of cattle and birds may cause major damage to the crop and their yield. This attempt is to address the problem by utilizing acoustic sensors for diverting the animals and birds by providing automatic feed and drinking water when they near the cultivated areas. The actual detection is performed with **PIR Motion Sensor** and indicated by an alarm. The process of execution will be like when the animals or birds come near the cultivated areas, the sensors will be activated and the sound produced will make them move away. The birds and animals come near the cultivated areas for food or water. Hence when the sound is produced from sensors, an automated feed and drinking water for the birds and animals will be activated in the corner of the fences and will attract them near it and also divert it from the cultivated areas. The sensors will also take care of the flying heights of the birds as well as the animals nearing it. The sensors utilized will be safe for living beings on a whole.

Key Words: Crop Protection, PIR Motion Sensor, Acoustic sensors, Birds/Animals menace

The impact of structural reforms on bee hives using various bottom board materials against the Greater Wax Moth, *Galleria mellonella* L. (Pyralidae, Lepidoptera), infesting *Apis cerana indica* Colonies, F

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The greater wax moth, *Galleria mellonella* caused damage to honey bee colonies resulting in heavy economic losses to beekeepers. The present study entitled “The impact of structural reforms on bee hives using various bottom board materials against the Greater Wax Moth, *Galleria mellonella* L. (Pyralidae, Lepidoptera), infesting *Apis cerana indica* Colonies, F”**.** The field experiments were conducted at the apiary of the Anbil Dharmalingam Agricultural College and Research Institute, Tiruchirappalli, at Tamil Nadu Agricultural University [(10.7554ºN, 78.6054ºE, 279’(85m)] above mean sea level).

The data of various results of laboratory experiments were subjected to a completely randomized design. The data obtained on the mean number of greater wax moth captured were analyzed after square root (X + 0.5) transformation. The results exhibited that the bottom board laminated with mica exhibited considerably (p 0.05) effective with reduced wax moth larvae (1.00), followed by the bottom board laminated with glass plate, with respect to the incidence of wax moth larvae on different treatments (1.44).

The lowest wax moth pupae incidence (0.88) on bottom board laminated with mica was considerably (p 0.05) better than that of other treatments, which included glass plate (1.88), cardboard (2.63), and OHP sheet (2.81). The largest pupal population that could be found in the untreated control group was 3.81. The bottom board with mica lamination exhibits much reduced absconding (0.25), followed by the boards with glass plate lamination (0.50), cardboard (0.75), and OHP sheet lamination (0.75). (1.00). However, the untreated control group showed greater rates of colony absconding (1.50). So, it can be concluded that laminating the bottom board with mica sheet will keep it clean and avoid cracks and fissures, both of which will make it difficult for larger wax moths to lay their eggs there.

Key words: *Galleria mellonella*; *Apis cerana indica*; Bottom board; Mica sheet and Marthandam hive bottom board

VARIATION IN OBSESSIVE-COMPULSIVE DISORDER SYMPTOMS AND TREATMENTS- AN OVERVIEW

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ABSTRACT

OCD is characterized by a pattern of unwanted thoughts and anxieties (obsessions) that cause you to engage in repetitive actions (compulsions). These compulsive thoughts and behaviours disrupt daily life and cause severe distress.

The two most popular tests used to measure OCD symptoms are the Obsessive-Compulsive Inventory-Revised (OCI-R) and the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS).

Cognitive behaviour therapy(CBT) and/or medication is the most effective treatment for OCD. To be more specific, Exposure and Response Prevention (ERP), a type of CBT, and a class of drugs known as serotonin reuptake inhibitors or SRIs , have proven to be more effective in the treatment of OCD.Selective serotonin reuptake inhibitors (SSRIs) are the central component of the pharmacological treatment of OCD.The initial pharmacological treatment in adults with OCD should be one of the following SSRIs: fluoxetine, fluvoxamine, paroxetine, sertraline, or citalopram.

Determining the symptoms and treatments of OCD remains a difficult task. Therefore, we look into the possible causes of the recurrence and the availability of OCD therapy today. In view of our discussion, we conclude by making recommendations on how to handle OCD in the changed surroundings, including the implementation of new regulations, the enhancement of research techniques, and potential directions for further study.

Keywords: obsessive compulsive disorder; symptoms; treatments; YBOCS

An overview on Peptic ulcer disease, treatment and management approach.

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Abstract:

Peptic ulcers disease is one of the most common complaints in the medical field. Peptic ulcer is a sore that develops on the lining of the oesophagus, stomach or small intestine.Ulcers occur when stomach acid damages the lining of the digestive tract. NSAIDs and H. pylori infections are believed to be the most common causes of this disease. Patients may be completely asymptomatic or present with epigastric pain and vomiting. Complications such as perforation, bleeding, or gastric outlet obstruction can occur. Treatment primarily consists of treating the underlying cause if it is H. pylori or an NSAID.The purpose of this review is to discuss treatment and management strategies for peptic ulcer disease.

Conclusion:

Peptic ulcer disease is a common condition. Early diagnosis and treatment not only cures the patients but also prevents serious and life-threatening complications.

LEVODOPA RICH BIOLOGICAL SOURCES: AN ALTERNATIVE APPROACH IN TREATMENT PARKINSON

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ABSTRACT

Parkinson's disease (PD) was first formally identified by British physician James Parkinson and named the disease as "The shaking palsy". PD is characterized by the decrease levels of dopamine in the brain. L-DOPA is a pro drug which crosses the Blood Brain Barrier (BBB) whereas dopamine cannot. L-DOPA (3, 4-dihydroxy-phenyl-L-alanine) has been considered as the gold-standard treatment for PD but have various side effects. L-DOPA is found naturally in fungal (*Acremoniumreticulcum, Aspercaillusoryzae*), marine sources such as thermophilic bacteria (Archae), Spongionella Sp.(Sponge), plants such as *Viciafaba* (Fava Bean), *Mucunapruriens*. Broad beans were found to be replenishing brain levels of L-DOPA even more quickly and for longer periods, than conventional medication. The current work is focused on identifying the natural sources contains L-DOPA. In plant, levodopa is a precursor of many alkaloids, catecholamine's and melanin and is released from *mucuna* into soils, inhibiting growth of nearby species. Plant sources were widely explored and *Mucunamonosperma* (a wild plant) contains 16.78% of L-DOPA. *Antheumgraveolens* (a vegetable) have proved to be ideal sources for extracting L-DOPA in sufficient quantity. Marine sources *Holothuriascabra* (Sea Cucumber) and fungal sources (*Acremoniumreticulum*) were found to contain L-DOPA, which can cure the disease much faster than the allopathic treatment. Various extraction methods have been compared and reviewed along with its efficiency, yield and purity of L-DOPA. The application of L-DOPA holds true in every field including therapeutics and herbicidal effects. L-DOPA obtained from chemical synthesis was found to have serious side effects. So, the L-DOPA rich natural sources like plant, fungal, food, marine, bacteria may be an alternative approach for the treatment Parkinson disease.

Keywords: L-DOPA, dopamine, Parkinson's disease, biological sources

REVIEW ON NANO MEDICINE

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ABSTRACT:

Nano medicine, which was only a dream or at best a possibility is now into a reality. The use of drugs with local application and oral ingestion followed by parenteral administration. Introduction of pressurized systems added a note worthy dimension to the targeting drug to the affected organs and numerous techniques and devices have been experimented with to approach the problem of developing rational and therapeutically superior systems in which drug delivery is based upon. May the spirit of search in discovering better remedies and optimizing drug action emerge to provide superior medication to the suffering humanity**.** From the crude drugs to supramolecules, from drug extracts to drug loaded erythrocytes, liposomes and other carriers vis a vis the growing emphasis on site specific and receptor specific drug delivery systems; there has been a complete shift in the approach of ingredients the pharmacist is adopting.

RATIONALE: Able to understand the importance of nano medicine.

KEYWORDS-LIPOSOMES, ERYTHROCYTES, TARGETTING DRUGS, NOVEL DRUG DELIVERY, SUFFERING HUMANITY.

ROLE OF SGLT2 INHIBITORS IN DIABETIC CARDIOMYOPATHY

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Diabetic cardiomyopathy, earlier observed as a human pathophysiological condition in which heart failure occurred in the absence of coronary artery disease, hypertension, and valvular heart disease. Even after adjusting for other cardiovascular risk factors, DM was linked to a nearly a 2-fold increase in the risk of incident HF in men and a 4-fold increased risk in women according to Framingham Heart Study. Novel standard treatment guidelines 2022, suggest that in patients with symptomatic HFrEF(HeartfailurewithEjectionfraction<40%),Sodium/glucose cotransporter-2 inhibitors (SGLT2i) are recommended to reduce the incidence of hospitalization and cardiovascular mortality. SGLT2 inhibitors work by inhibiting SGLT2 in the proximal tubule of the kidney and thus lowers the blood glucose levels by increasing urinary glucose excretion. With SGLT2 inhibitors, there is consistent, long-lasting decrease in both systolic (5mmHg) and diastolicblood pressure(2mmHg). SGLT2 inhibition also causes osmotic diuresis and mild natriuresis. The considerable reduction in intracellular sodium levels plays a major cardioprotective role in preventing cardiomyocyte death. SGLT2i significantly play a role by reducing the formation of oxygen free radicals thereby reducing oxidative stress, preventing the development of atheroma by restoring normal endothelial function and thus decreasing inflammation.

Besides the direct hypoglycaemic effects awaited in DM therapy, these drugs have been reported to present remarkable cardio- and renoprotective properties. Considering the frequent co-occurrence of T2DM and cardiovascular diseases, this class of drugs are of great interest due to their broader spectrum of indications for prospective use.

Activities against Lung Cancer of Biosynthesized Silver Nanoparticles: A Review

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Nanomedicine is a field that utilizes nanostructured objects to diagnose or treat diseases, and it involves various disciplines. Silver nanoparticles have demonstrated potent therapeutic properties, which can be utilized to overcome the limitations of current treatment modalities for lung cancer, among other human health issues. This review covers the preparation of silver nanoparticles using biosynthesis and their application against lung cancer using in vitro and in vivo models. The paper provides an overview of the staging, diagnosis, genetic mutations, and treatment of lung cancer, as well as its subtypes.

Keywords : Nanomedicine, Nanoparticles, lung cancer, biosynthesis

ENDEMIC MEDICINAL PLANTS IN WESTERN GHATS REGION

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ABSTRACT

The Western Ghats region in India is known for its high biodiversity and abundance of endemic plant species, many of which have traditional medicinal uses. This region is home to a diverse range of ecosystems, from montane forests to coastal plains, which support a wide variety of plant life. The endemic medicinal plants found in this region have been used for centuries in traditional medicine practices by local communities. Some of the important endemic medicinal plants found in the Western Ghats include the Malabar nut (Adhatoda vasica), Indian gooseberry (Emblica officinalis), Indian sarsaparilla (Hemidesmus indicus), Indian madder (Rubia cordifolia), Indian bael (Aegle marmelos), and the Indian trumpet flower (Oroxylum indicum). These plants have been used for a range of health conditions, such as respiratory disorders, fever, digestive issues, and skin ailments.

Despite their medicinal value, many of these endemic plant species are under threat due to habitat loss, climate change, and overexploitation. Conservation efforts, such as the establishment of protected areas and sustainable harvesting practices, are needed to ensure the survival of these valuable plant species and the traditional knowledge associated with their use. The continued study of endemic medicinal plants in the Western Ghats region can provide valuable insights into the potential for natural remedies to improve human health and well-being.

Keywords: Medicinal plants, Biodiversity, Endemic plant species, Western ghats, Ecosystem.

OMADACYCLINE: A NOVEL TETRACYCLINE ANTIBIOTIC IN THE TREATMENT OF CELLULITIS

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ABSTRACT:
An infection caused by bacteria that affects the skin and tissues nearby is known as acute bacterial skin and skin structure infections (ABSSSI). Cellulitis, erysipelas, wound infection, significant cutaneous abscess, etc. are among the complex or non-complicated ABSSSIs that may be reported. Cellulitis is a common bacterial infection that causes swelling, redness, and soreness, as well as a rise in body temperature in the infection's target location and a fever. Antibiotic medicines are the normal course of therapy for all bacterial infections. Omadacycline, an antibiotic of the aminomethylcycline class from the tetracycline family, was very recently discovered and is being used to treat ABSSSI. By overcoming resistance that is known to impact older generation tetracyclines via ribosomal protection proteins and efflux pump mechanisms, changes to its structure, notably the amino methyl substituent at the C9 position, result in an increased range of anti-microbial effectiveness. Against both Gram positive and Gram negative bacteria, this medication is effective. Both an oral and IV version of the medicine successfully completed two phase 3 clinical studies, demonstrating that it is equally safe and well-tolerated as Linezolid. Omadacycline has demonstrated its effectiveness in the OASIS 1 and OASIS 2 trials with few side effects. In-depth information about the efficacy and safety of omadacycline in treating cellulitis is provided in this review, along with a summary of the highlights of the entire pharmacological profile.

Key Words: Acute bacterial skin and skin structure infections, Omadacycline, Cellulitis, Tetracycline, Linezolid.

A STUDY OF SEMI STAR PRE STAR CLOSURE AND SEMI STAR PRE STAR INTERIOR SETS IN TOPOLOGICAL SPACES

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ABSTRACT

The aim of this research paper is to introduce and the study of s^*p^* closure set and s^*p^* interior set using s^*p^* closed set and s^*p^* open set and also discuss some basic properties of the s^*p^* closure set and s^*p^* interior set in a topological space.

KEYWORDS

Closed set, s^*p^* closed set, s^*p^* open set, s^*p^* closure set, s^*p^* interior set.

RECIPROCAL ASSOCIATION BETWEEN DIABETES MELLITUS AND DEPRESSIVE SYMPTOMS

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ABSTRACT
Diabetes and depression continue to be major public health burdens throughout the globe. Several studies suggests a reciprocal relationship between depression and diabetes. Depression occurrence is twice to thrice higher in people with diabetes mellitus when compared to non-diabetic people and they majorly remain undiagnosed . In contrast, depression increases the risk of diabetes and interferes with its daily self-management. The purpose of this review was to show the links between depression and diabetes, point out the significance of identifying depression in diabetic patients and identify the possible ways to address both diseases. A focused discussion of the proposed mechanisms underlying this reciprocal relationship is also reviewed. Another important aspect is to understand the common origins of diabetes and depression and to get aware of this quite common comorbidity, in order to improve the outcomes of management. Therefore, this review aims to highlight the most notable body of literature that dissects the various facets of the reciprocal relationship between diabetes and depression.

KEYWORDS:
Reciprocal, Depression, Diabetes mellitus, Relationship, comorbidity

FOOD SECURITY AND FOOD SAFETY - AN HEALTH ECONOMIC PERSPECTIVE

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Indian Economic growth has been complemented by Agriculture, which is the largest sector accounts for 14% of India's GDP and 58.4 % of Indians depend on agriculture and allied activities, as primary source of income. Studies and Projections based on the world population growth and diet consumption patterns indicates that agricultural production will certainly have to increase multifold in the following decades. Tamil Nadu is witnessing declining growth trend in the past two decades because of climate changes, frequent cyclones, average temperature increase, drought, season variability, heavy monsoon rainfall, floods and water logging due to improper drainage systems and make the region more vulnerable. To minimize these damages and overcome challenges, Reforms and Revolutions introduced in the 1980's by Indian scientists by adopting synthetic chemical farming methods to support farmer's livelihood, ultimately cause reactions in the yields, both positively and negatively. Despite the use of low potency pesticides, today highly toxic pesticides, prohibited insecticides or banned pesticides, are used to escalate the crops and vegetable production. Pesticide toxicity exposure during pregnancy may lead to an increased risk of birth defects, congenital anomalies, low birth weight, and abortion. Studies suggested that pesticide exposure has been linked to learning and neurobehavioral problems, as well as cancer. Multiple case-control studies and evidence reviews support the role for insecticides in risk of brain tumors and lymphocytic leukemia mainly in children. Pesticides like Acetamiprid, Endosulfan, Thiodicarb, Permethrin, Flubendiamide, Methomyl, Mancozeb, Malathion, Benomyl, Chlorpyrifos and many other chemicals used on crops, cereals, fruits, vegetables and even flowers. Vegetables mostly found to be contaminated with pesticides and insecticides were Brinjal, potato, cabbage, cucumber, onion and tomato. Studies have found that children who eat conventional foods have significantly higher levels of Organophosphorus pesticide metabolites in their urine than do children who eat organic foods. To conclude, People who eat organic food are exposed to fewer disease-causing pesticides. But, sufficient alternative provisions can be produced to satisfy the market need and if supply will not be able to match the demand does not make much sense from an economic point of view. Recommendations for a regulatory agenda to work with schools and government agencies to encourage the use of organic farm products. Pesticide products that are risk to children should be banned or to be marketed as they should not be attractive to children. Thus, this approach not only keep our health intact but also save the mankind from the side effects of pesticide residues.

Keywords: food safety, pesticide residues, food security, health economics.

Acute toxicity study of Arthra-8, a novel polyherbal formulation for osteoarthritis management

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Abstract:

Arthra-8 is a rational, novel combination of herbal extracts from eight native plants with a history of clinical use as single agents or in other combinations for the treatment of osteoarthritis (OA). The study's goal was to determine the safety of Arthra-8 in SD rats. The acute toxicity research was carried out in accordance with OECD Standard 423. For our study, we used female Sprague-Dawley rats that were between 160 and 200 g and 6 weeks old. For the purpose of investigating sightings, one animal received 2,000 mg/kg of medication (p.o.). Because the first animal had survived, a second one was given 300 mg/kg of medication. In the initial study, four rats were given 2000 mg/kg. The treated animals were monitored every day for 14 days for adverse clinical signs and mortality at 10 min, 30 min, 1, 2, 4, and 6 h after dosing. Giving animals 2000 mg/kg body weight did not cause any obvious pathological findings, abnormal clinical symptoms, or indications of death. There were no alterations in the way the animal moved, nor in its appearance or behaviour.

Keywords: Osteoarthritis, Polyherbal, Safety, *Withania somnifera*

PLANT GROWTH PROMOTION FROM RHIZOSPHERE SOILS BACTERIA AND ITS CHARACTERIZATION

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Abstract

Pathogenic microorganisms affecting plant health are a major and chronic threat to sustainable agriculture and ecosystem stability worldwide. The chemical fertilizers used in the agriculture to increase yields, kill pathogens, pests, and weeds, have a big harmful impact on the ecosystem. Because of current public concerns about the side effects of agrochemicals, there is an increasing interest in improving the understanding of cooperative activities among plants and rhizosphere microbial populations. So, there is an urgent need of fertilizer from biological sources and is accepted worldwide. Plant growth promoting rhizobacteria (PGPR) are a group of bacteria that can be found in the rhizosphere, in association with roots which can enhance the growth of plant directly or indirectly. The main goal is to promote the organic fertilizers to reduce pollution, as well as to protect the farmer's friendly earthworm and microorganisms in the soil to preserve the environment of an ecological nature. As PGPR are environmental friendly and offer sustainable approach to increase production of crops and human health. They play an important role to increase in soil fertility, plant growth promotion, and suppression of phytopathogens for development of ecofriendly sustainable agriculture. Here, the samples were collected from different location of Vellore, TamilNadu (India). Totally 3 soil samples were collected from the rhizosphere soil (a).Groundnut, (b).Tulsi, (c). Indian dandelion flower .The obtained strains some to show positive from the PGPR tests in IAA, ammonia, siderophores production, and HCN production. Even check whether the obtained strain showed positive result in LYTIC ENZYMES TEST are 1.Amylase, 2. Protease, 3.Lipase, 4.Cellulase. And study the antimicrobial properties of bacterial strain. The obtain strain showed a good potentiality as plant growth promotion that might be tried with further crops on wider scale.

KEYWORDS: Plant growth promoting rhizobacteria, Bio-fertilizers, IAA, HCN and antimicrobial study.

Study On Feebly Supra Soft Open With Respect to an Ideal Topological Spaces

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ABSTRACT

The (X F μ S I) is called ideal feebly supra soft topological space. If (X F μ S) is feebly supra soft topological space and I is ideal on X. Asub family μ of the power set P(X) of non empty set X is called a Supra topology on X. The subset A of X is say to bye feebly I-open set in the ideal topological space (X F μ S I) if A $\subseteq$scl (int A*). The a non-null collection of soft sets over a universe s with the same set of parameters E. Then $\tau \subseteq SS(X)_E$ is called a soft ideal on X.

Keywords: Feebly, Supra, Soft, Ideal

DEVELOPMENT FOXTAIL MILLET BASED BISCUIT: NUTRITIOUS BAKERY PRODUCT FOR FOOD SECURITY

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ABSTRACT

Now a day's bakery industry is looking forward for newer options to ingredients having functional and nutraceutical properties as refined wheat flour a major ingredient in bakery industry is a poor source of dietary fibre and protein. Hence, there is a need for partial or full substitution of refined wheat flour by fibre and protein rich natural ingredients and also to increase the number of nutritious snacks containing low fat composition and total caloric value. Millets provide a wide range of health benefits and are good source of energy, protein, fiber, minerals and vitamins, additional benefits of the millets like gluten-free protein content and low glycaemic index. Hence, the present study was designed to develop and standardize the foxtail millet-based biscuit. The developed products were evaluated for physical, textural and sensory quality and best accepted product was also nutritionally analysed. Biscuits were developed by incorporation of foxtail millet flour (FB) at 50, 60, 70, 80, 90 and 100 per cent containing 20 per cent fat. The physical parameters showed decreased in thickness (0.77-0.62 cm), density (1.03-0.96 g/cm^3) and increased in diameter (4.74-5.03 cm) and spread ratio of biscuit (6.15-8.11). Sensory scores revealed that 100% of foxtail millet (FBT_6) biscuit was best accepted. The significant result was observed only in taste and aroma, and mouth feel. Nutrient analyses indicated increased fibre (1.81 g) and protein (9.60 g) content. 100 per cent of foxtail millet flour biscuit was best accepted with improved nutritional quality.

Key words: Foxtail millet, Biscuit, Sensory parameters, Nutritional value

NUTRITIONAL INTERVENTION AND EDUCATION TO THE GERIATRIC SUBJECTS RESIDING IN URBAN OLDAGE INSTITUTIONS THROUGH DEVELOPMENT OF *BROWN RICE KICHIDI MIX*

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Abstract

Nutrition intervention was carried on in the old age institutions, which was one of the study area of the research. The study aimed at assessing the nutritional status of geriatric subjects living in oldage institutions in the age group of 60-100 years who were selected from the three different old age institutions located in Bangalore. The mean sensory score of the *brown rice kichadi mix* where BKM 3 variation having 60g of brown rice and 20g of green gram dhal had the best overall acceptability (8.31) in all the parameters: appearance (8.28), colour (8.03), texture (8.12), aroma (8.12) and taste (8.18). Extremely significant difference was observed in taste and overall acceptability and significant distinction was observed in texture. Nutrients composition of the *brown rice kichadi mix* consisted of energy 293. kcal, carbohydrates 73.29 g, protein 12.31 g and fat of 4.07 g and met the ¼th of RDA requirement of the geriatric subjects followed by moisture 6.35 per cent, and negligible quantity of crude fibre 3.96g and ash 1.17g. The *kichadi mix* contained fair amount of minerals: calcium 7.94mg, magnesium 5.93 mg, iron 0.87mg and zinc of 0.65mg. Nutritional education using charts prepared based on practice of fine daily activities and importance of nutrients and nutrition taught to the 91 geriatric subjects (31 males and 60 females respectively). The ready to cook *brown rice kichadi mix* contained most of the food groups and provided for taste by the subjects. Majority of the geriatric subjects participated in the intervention had extremely accepted the product based on taste and consistency.

Keywords: *Nutritional intervention, geriatric subjects, oldage istitutions and brown rice kichadi mix*

Herb Veda cookies to boost immunity

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Abstract

Herbal cookies are a baked nutritional diet enriched with several herbal medicines. By combining herbs and ayurvedic medicines in the form of cookies, HerbVeda has created an easy and effective way to get the medicinal benefits without having to worry about unpleasant tastes. Immunity is the body's ability to fight itself against microorganisms that cause disease. The immune system is a network of cells, tissues, and organs that collaborate to keep the body healthy. The purpose of this study was to investigate the effects of herbal cookies containing *Triphala churna, Withania somnifera, Moringa oleifera, Eleusine coracana*, and other natural ingredients on immune function. These have strong immunomodulatory properties. Additionally, various Ayurvedic herbs, such as triphala, ashwagandha, and moringa, have been traditionally used to boost immunity The sensory and physical parameters of the final product were evaluated, and further, the final product can be marketed after the pharmacological studies.

Keywords: immunomodulatory activity,immune system, phytocompounds, medicinal plants, polyherbal.

THERAPEUTIC POTENTIAL OF PLANT EXTRACT; ANTI-INFLAMMATORY ACTIVITY *IN-VITRO* AND *IN-VIVO*

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Abstract

Inflammation is initiated as a healing process by the tissue in response to an injury by pathogens, irritants or cell damage. Inflammation plays an important role in various diseases with high prevalence within population such as rheumatoid arthritis, atherosclerosis and asthma. Anti-inflammatory drugs do have their side-effects. The focus of research studies is upon the use of medicinal plants as anti-inflammatory agents over the past years.

The present study is aimed at the evaluation of anti-inflammatory property of the aqueous plant extract in female Sprague Dawley rat by both in vitro and in vivo methods. In vitro method was estimated by human red blood cell membrane stabilisation (HRBC) method and in vivo method was estimated using GAIT analysis, measurement using vernier calliper, CRP test, and radiological assessment.

Complete Freund's Adjuvant (CFA) has been used to induce inflammation and to study inflammatory pain in several animal models. The inflammatory response involves the release of inflammatory mediators, such as pro-inflammatory cytokines (interleukin (IL)-1, IL-6, and tumor necrosis factor-alpha (TNF-α) and non-cytokine mediators (reactive oxygen species (ROS) and nitric oxide (NO)) [10]. Therefore, the suppression of these inflammatory responses is key to preventing and treating various immune diseases.

KEYWORDS:

Anti- inflammatory, Human Red Blood Cell, C-Reactive Protein, Complete Freund's Adjuvant

ANTIUROLITHIATIC ACTIVITY OF PLANT EXTRACT

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ABSTRACT

Urinary stones, also known as urolithiasis, are a common urological disorder with high prevalence worldwide. Calcium oxalate stones are the most common type of urinary stones, accounting for 70-80% of all cases. Although several treatment options are available, the recurrence rate of urinary stones remains high. Therefore, there is a need to explore natural remedies for the prevention and management of urinary stones.

In this study, the antiurolithiatic activity of a plant extract was investigated using a rat model of calcium oxalate-induced urolithiasis. The plant extract was obtained by macerating the dried leaves of the plant in ethanol and then filtering the extract. The phytochemical analysis of the extract revealed the presence of flavonoids, tannins, and saponins.

The rats were divided into four groups, with each group comprising six rats. Group I served as the normal control and received only the vehicle, while Group II received calcium oxalate crystals (0.75%) to induce urolithiasis. Groups III and IV received the plant extract at doses of 200 and 400 mg/kg, respectively, along with calcium oxalate crystals.

The results showed that the plant extract significantly reduced the formation of calcium oxalate crystals in the kidneys of the rats. The group that received the higher dose of the plant extract (400 mg/kg) showed the most significant reduction in the number of calcium oxalate crystals. The plant extract also decreased the level of serum creatinine, which is an indicator of renal dysfunction, in the rats.

The plant extract exhibited antioxidant and anti-inflammatory properties, which were confirmed by the significant

reduction in the level of malondialdehyde (MDA) and the increase in the level of glutathione (GSH) in the kidneys of the rats. The histopathological examination of the kidney tissues revealed that the plant extract prevented the formation of calcium oxalate crystals and preserved the structural integrity of the renal tubules.

In conclusion, the results of the study demonstrate the antiurolithiatic activity of the plant extract, which is attributed to its ability to inhibit the nucleation and aggregation of calcium oxalate crystals. The extract's antioxidant and anti-inflammatory properties may also contribute to its antiurolithiatic activity. The study highlights the potential of the plant extract as a natural remedy for the prevention and management of urinary stones. However, further studies are needed to elucidate the underlying mechanisms of action and assess the safety and efficacy of the plant extract in human clinical trials.

DIABETIC WOUND HEALING ACTIVITY USING POLY HERBAL EXTRACT

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ABSTRACT

Diabetes is a heterogeneous group of metabolic disorders characterized by high blood glucose levels. In diabetic patients, prolonged inflammation of the wound leads to amputation with limited treatment. Currently wound dressing materials have many limitations. Minor wounds, cuts, and burns are an unfortunate but unavoidable part of life. However, for people with diabetes, these injuries can lead to serious health issues. Many people with diabetes develop wounds that are slow to heal, do not heal well, or never heal. Sometimes, an infection might develop.

An infection can spread to tissue and bone near the wound or reach more distant areas of the body. Sometimes, an infection can be life-threatening or even fatal if a person does not receive emergency care. The present study was designed to determine diabetic wound healing using polyherbal extract. Invitro study reveals that the synthetic scaffold used here is not cytotoxic and bio-compatible. Invitro wound healing is done in fibroblast cells. Induction of diabetes is 200-250g. The body weight of female Sprague Dawley Rat using a single dose of 40kg/g. Wound healing is an efficacy study. Wounds can be made by using a biopsy punch (4 wounds). 1st wound contains the test sample(hydrogel) 2nd wound contains (blank) 3rd wound contains (positive control) 4th wound contains(negative control)

21 days of observation can be done by checking and identifying of diameter and taking it to histology for further purposes. By the effect of the scaffold, it can occur due to anti-inflammatory and antioxidative properties which in turn reduce the time of wound contraction and lead to fast wound recovery.

Keywords : Diabetes, Polyherbal extract, Wounds, Wound healing, Invitro study

Bio-derived Zinc Oxide nanoparticles for photocatalytic dye degradation

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Abstract

Nanotechnology plays an essential role in modern material science, capable of diverse novel applications in biomedical sciences, pharmaceutical sciences, medicine, nutrition, energy etc [1]. Some pertinent materials exhibit new and enhanced physiochemical and biological properties with distinct functionalities due to their nano level size (1–100 nm). The inorganic nanoparticles such as Ag, Au, CuO, TiO_2 and ZnO have profound applications in almost every field because they are easy to prepare, inexpensive and safe for the human being. However, ZnO nanoparticles are in the scientific spotlight because of their unique properties such as semiconducting property, piezoelectric property, optical property, antibacterial property, anti-fungal and wound healing property and UV filtering property, high catalytic and photochemical activity [3]. Chemical synthesis of nanoparticles often poses a number of subsequent problems, such as the presence of toxic chemical species which may get absorbed on the surface of the nanoparticles. in environmental science and biological field. In the present study a simple and facile green route has been employed for the synthesis of ZnO using *Azadirachta Indica* leaves extract as a reducing and stabilizing agent. The as-synthesized nanoparticles were characterized and tested for photocatalytic dye degradation of methylne blue. Future work shall involve the determination of size, shape and composition of the biosynthesized ZnO NPs through scanning electron microscopy (SEM) and electron dispersion x-ray spectroscopy (EDX) and fourier transform infrared spectroscopy (FTIR) for functional group identification.

Facile hydrothermal synthesis of ZnS nanospheres and their Photocatalytic applications

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Abstract:
Semiconductor metal sulphide Zinc sulphide (ZnS) nanospheres prepared by facile hydrothermal process. The structural, morphological and optical properties of the prepared ZnS samples are subjected to various characterization studies such as powder XRD, FTIR, SEM, TEM, UV and PL analysis. The powder XRD analysis exhibited the cubic crystal structure of ZnS sample. The nanostructured ZnS spheres-like morphology is observed from the SEM and TEM analysis with average crystallite size range of 5-10 nm. The photocatalytic activities of the ZnS nanospheres showed the effective photodegradation of Congo red dye, which confirms the effective semiconductor photocatalyst.
Keywords: Semiconductor, Nanospheres, Hydrothermal process; Photocatalytic activities

Dufour effect

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Abstract:

The purpose of this study is to examine the effect of Dufour on parabolically accelerated plate past MHD flow through viscous fluid with uniform temperature and varying mass diffusion. The considered fluid conducts electricity. The set of dimensionless area differential equations is solved by using the Laplace transformation technique and finding the value of velocity, temperature and concentration profiles. The outcomes are found by graphs for various boundaries such as thermal Grashof number, mass Grashof number, Prandtl number, Schmidt number, Dufour value and time. The velocity profile decreases by increasing the values of magnetic parameter, radiation parameter and acceleration parameter. The temperature profile increases by increasing the values of thermal radiation and Dufour number.

Keywords:

Dufour effect, Parabolically accelerated plate, Heat transfer, Mass transfer, MHD.

GREEN SYNTHESIZED COPPER NANOPARTICLES: A PROMISING APPROACH FOR EFFICIENT DYE DEGRADATION

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ABSTRACT:

The growing textile industry has led to a significant increase in the discharge of dye-containing wastewater, which can cause severe environmental problems. To address this issue, the development of cost-effective and eco-friendly methods for dye degradation is crucial. In recent years, the green synthesis of copper nanoparticles (CuNPs) has gained attention as a promising approach for the degradation of dyes due to its eco-friendliness, low cost, and high efficiency.

This study highlights the importance of green synthesized CuNPs in dye degradation. CuNPs were synthesized using a green approach, utilizing fruit peel extract as a reducing and capping agent. The synthesized CuNPs were characterized using various spectroscopic techniques and were found to be stable and of a small particle size range.

The CuNPs were then evaluated for their efficiency in degrading methylene blue (MB) dye. The results showed that the synthesized CuNPs effectively degraded MB within a short time and under optimized conditions. The CuNPs also exhibited good stability and reusability for multiple cycles of dye degradation.

Overall, this study demonstrates the potential of green synthesized CuNPs as an eco-friendly and cost-effective approach for efficient dye degradation. This approach can be scaled up for industrial applications and has the potential to contribute to sustainable wastewater treatment.

Key words: Green synthesis, copper nanoparticles, dye degradation, eco-friendliness, fruit peel extract, methylene blue