



MMK & SDM Mahila Mahavidyalaya

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Institute of Bioinformatics and
Applied Biotechnology

Vision: Empowerment of Women to Face the Global Challenges

DEPARTMENT OF BIOCHEMISTRY AND IQAC
IN ASSOCIATION WITH
**INSTITUTE OF BIOINFORMATICS AND APPLIED
BIOTECHNOLOGY**

BIOTECH PARK, ELECTRONICS CITY PHASE I, BENGALURU

TWO DAYS NATIONAL CONFERENCE
On
**BIOCHEMISTRY – EMERGING SCIENCE AND
TECHNOLOGY**

14th and 15th March 2024



CHIEF EDITOR-
Dr. WETHROE KAPFO
CO- EDITOR-
Dr. CHAITANYA PANDIT

Current Developments in Phytochemical Research and its Transdisciplinary Applications

**E-PROCEEDINGS OF THE TWO DAYS NATIONAL
CONFERENCE
ON
BIOCHEMISTRY – EMERGING SCIENCE AND
TECHNOLOGY**

***THEME: CURRENT DEVELOPMENTS IN
PHYTOCHEMICAL RESEARCH AND ITS
TRANSDISCIPLINARY APPLICATIONS***

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MESSAGE FROM THE PRESIDENT OF SDME SOCIETY (R.)

Dr. D. Veerendra Heggade,

Dharmadikari, Sri Kshetra Dharmasthala, Dakshina Kannada



It is with pride that I acknowledge the Two Days National Conference on “Biochemistry-Emerging Science and Technology” themed on “current Developments in Phytochemical Research and its Transdisciplinary Applications” organized by the Department of Biochemistry and IQAC in association with Institute of Bioinformatics and Applied Biotechnology on 14th to 15th March 2024.

MMK and SDM Mahila Mahavidyalaya, being the one and only women’s college among the 56 institutions under SDM Education Society, holds a special place as it embodies the primary objective of women empowerment. I am happy to observe that the institution is working hard and smart to fulfill the vision statement “Empowerment of Women to Face the Global Challenges” through building networks with high profile and premier institutions of our country. Indeed, I am satisfied that an MOU has been successfully exchanged between MMK and SDM MMV and IBAB, Bengaluru, and this MOU is rendered active through the National Conference being one of its activities. I congratulate the Organizing Team and IBAB for joining hands together to enrich our students and scholars by focusing on a theme that is close to the heart of nature, which is plant science. I am sure with exposure to evidence driven outcomes of phytochemistry, the audience will appreciate the subject with broader perspective.

Being aware is part of one’s growth, but expressing that awareness builds character, for which it is with great admiration that the organizing committee has provided opportunities for paper presentation. I understand that this event accounts for immense planning and coordination, for which I am sure the committee, has been striving hard for months together. I, therefore, wish the very best to the organizers that the event will be successful and pray that the blessings be showered upon them.

I wish the program all success and pray Lord Manjunatha Swamy bless all.

MESSAGE FROM THE SECRETARY OF SDME (R.)

Dr. Satheeshchandra S,
Secretary, SDME Society, Ujire



It is indeed a matter of pleasure that the department of Biochemistry of MMK & SDM MMV, Mysuru, is organizing a National Conference on the theme ‘Current developments in Phytochemical research and its transdisciplinary applications’. I believe such scientific gatherings provide a platform for bringing together academicians, clinicians, researchers and students to have a fruitful interaction about the latest research and developments in the field of science.

It is beyond doubt that for most of the metabolic and life style disorders today, phytochemicals seems to be the way forward in identifying treatment solutions with improved quality of life. A newer approach to unveiling the secrets held by plants and fostering interdisciplinary collaborations that bridge traditional knowledge and cutting-edge science may be the need of the hour.

In the spirit of collaboration and intellectual exchange, I hope this conference serves as a platform for interdisciplinary dialogue where diverse perspectives converge to address the pressing challenges of our time. The young minds who are participating in this scientific discussion should be benefitted from the knowledge sharing on phytochemistry and work towards inculcating innovative ideas that will push the boundaries of phytochemical research.

I take this opportunity to congratulate the organizing team for their effort and convey my wishes for the successful conduct of this conference.

MESSAGE FROM THE DIRECTOR OF IBAB, BENGALURU

Dr. H. S. Subramanya,
Director, IBAB, Bengaluru



Plants and phytochemicals produced by them have played a vital role in preserving and promoting human health since the beginning of human evolution. Rapid advancements in technology have enabled us to understand detailed mechanism of action of phytochemicals using genomics, computational biology and other analytical techniques. It is also possible now to produce phytochemicals in scale using synthetic biology approaches. Thus, phytochemicals hold immense potential today in health care and other industrial applications and support bio-economy.

It is very timely and appropriate that SDM College in collaboration with IBAB is organizing this conference with the theme 'present phytochemical research and applications'. This conference will enable students to know about the current research and developments in this emerging area and motivate them to undertake a research career. It will also provide opportunity to the faculty and scientists to network and explore collaborations. IBAB has been wholeheartedly supporting this event and I wish a great success for the conference.

MESSAGE FROM THE PRINCIPAL

Prof. Sainath Malligemadu,

Principal, MMK & SDM MMV, Mysore



I am immensely happy that a National Conference on the theme ‘Current developments in Phytochemical research and its transdisciplinary applications’ is being organized by the department of Biochemistry. Scientific gatherings of this kind brings together brilliant minds and leading experts from the field to delve into the latest advancements, breakthroughs, and discoveries in the field of phytochemistry

I believe this conference will be a journey of exploration into the vast world of phytochemicals, a field that holds immense promise for the betterment of human health and well-being. With increasing need for alternative approaches to treatment strategies, scientific forums of this nature may play a pivotal role in providing real time answers

Through a series of presentations, insightful discussions, and collaborative exchanges, I hope this gathering will push the younger generation to unravel the mysteries surrounding these natural wonders and unlock their full therapeutic potential. In this era of rapid scientific advancement, the integration of knowledge across disciplines has become indispensable for tackling complex challenges and unlocking new opportunities.

I take this opportunity to congratulate the department of Biochemistry for their tremendous effort in bringing about this conference which may have a huge impact on alternative approaches to treatment of diseases. I pray Lord Manjunatha Swamy bless us all.

MESSAGE FROM COORDINATOR OF THE CONFERENCE

Dr. Bibha Chaudhury,
Professor, Disease Genomics
IBAB, Bengaluru



I would like to join the other members of the Conference Organizing Committee in welcoming you to, a two-day conference on Current developments in Phytochemical research and its transdisciplinary applications. We would like to thank all the speakers and participants for attending the conference. We promise to make it worth your time.

We are living in an era where wellness and health are the prime focus. Several scientific studies have highlighted the role of phytochemicals in prevention of diabetes, obesity, cancer, cardiovascular diseases etc. We have been consuming phytochemicals such as carotenoids, polyphenols, isoprenoids, phytosterols, saponins, dietary fibers, polysaccharides, etc., and have experienced the impact on health. Researching on phytochemicals derived from plants may aid in discovery of new drugs.

We have put together a series of speakers who will enlighten us with their research on phytochemicals, and their impact on treatment of infectious disease, cancer, neurological disorders, metabolic disorders, maintenance of gut health, identification of the phytochemicals from plants and unraveling the mechanism of action of phytochemical using next generation sequencing approaches. To encourage budding researchers, oral and poster presentations have been organized.

We thank the sponsors of the event and encourage participants to visit their stalls and sit through their presentations to learn about the advances in tools and techniques guiding biology research.

We'd like to especially thank our organizing committee for coordinating and putting up a program to make this a successful event. We thank our steering committee for providing continuity, guidance, and valuable advice. And, we thank you, our authors and attendees, without whom the conference would not be possible.

Please get in touch with the organisers and student volunteers for any help.

Thank you and Welcome!

MESSAGE FROM CONVENOR OF THE CONFERENCE**Dr Wethroe Kapfo,**Head and Assistant Professor, Department of Biochemistry
MMK & SDM MMV, Mysore

Biochemistry helps one to develop a unique appreciation to biology. This subject is an amalgam of basic sciences, life sciences and biotechnology. As interdisciplinary as it gets, the scholar is convinced that it is dependent on the rest. Rather, as time passes, discoveries and novel applications are being reported and yet to be reported.

The topic of the conference “Biochemistry- Emerging Science and Technology (BEST)” is a reminder of the responsibility that the true nature of the subject holds in explaining fundamental biological phenomena in the best effective way possible. As a student of science, it becomes our duty to learn, unlearn and relearn in order to make a difference. Such aspect led to the theme “Current Developments in Phytochemical Research and its Transdisciplinary Applications”. In order to guide the events pertaining to the theme, a scientific advisory committee was created comprising of subject experts. Phytochemistry has advanced towards different applications like therapy, drug discovery, bioinformatics, pharmacognosy, Ayurveda, etc. making it a transdisciplinary theme.

The latest developments in the field can be highlighted through the invited speakers from diverse backgrounds who have contributed significantly to Phytochemistry, and also through the discourse of knowledge by poster and oral presentations. The event indeed is ambitious to reach out to a diverse audience of students, research scholars, faculties and industry and facilitate wide networking from them.

I am grateful to the Almighty for the opportunity and I am very thankful to the supportive Management, Prof. Sainath Malligemadu, Principal of the college, Prof. Bibha Chaudhari, IBAB and Dr. Chaitanya Pnadi, Co-Convenor of the program. All execution is possible through a dedicated team of which I am very fortunate. I, therefore, anticipate the event to have fulfilled its objective to provide an opportunity for the participants to have their knowledge enriched and new ideas kindled.

MESSAGE FROM CO-CONVENOR OF THE CONFERENCE

Dr Chaitanya Pandit,

Assistant Professor, Department of Biochemistry
MMK & SDM MMV, Mysore



Phytochemicals, the bioactive compounds found in plants, have captivated the interest of scientists, researchers, and health enthusiasts alike for their potential therapeutic properties. From the humble beginnings of traditional medicine to the forefront of modern scientific inquiry, phytochemicals have emerged as pivotal agents in the pursuit of novel treatments and preventive strategies against a myriad of diseases.

The theme of this conference underlines the importance of collaboration and exchange of ideas in harnessing the potential of science for the betterment of society. Through this platform, we aim to foster dialogue, exchange of insights, and collaboration among researchers, academicians and industry professionals.

I wish that this conference will serve as a catalyst for collaboration, innovation, and progress, and propel the participants towards transformative ideas that have the power to shape the future of biochemistry and its applications.

On behalf of the organizing committee, I extend my heartfelt gratitude to all the speakers, participants, sponsors, and volunteers who have contributed to the success of this conference. My most sincere thanks to Prof. Sainath Malligemadu, Principal of the college, Prof. Bibha Chaudhari, IBAB and Dr. Wethroe Kapfo, Convener for their sincere effort in making this conference a reality. I wish our time together be filled with fruitful discussions, meaningful interactions, and lasting memories.

ABSTRACTS OF TECHNICAL SESSIONS

Dr R. P. Singh

POMEGRANATE SEED OIL (PSO), AN UNDERUTILIZED TREASURE!!!

Chief Scientist, Department of Biochemistry, CFTRI- Central Food Technological

Pomegranate seeds are an inadvertent part of the “waste” emanating from the processing industry. These seeds contain pomegranate seed oil (PSO) which is rich in punicic acid (a conjugated linolenic acid). By virtue of the presence of punicic acid, PSO possesses number of health beneficial properties, including antioxidant, anti-inflammatory, hypolipidemic and anticancer properties. The approaches towards the preparation of PSO rich fractions from pomegranate seeds for their possible incorporation in some of the food products will be discussed

Dr. Upendra Nongthomba**IDENTIFICATION OF PLANT AND PLANT DERIVATIVES FOR THE
TREATMENT OF DISEASES**

Shefali Mishra, Vipin Chauhan and Upendra Nongthomba
Department of Developmental Biology and Genetics
Indian Institute of Science, Bangalore-560 012, India.

Understanding the aetiology of disease and cure them has been main logical discussion among the Indians. We can follow Allopathy or AYUSH. We have been looking at real scientific reasons for looking at treatment of some of the AYUSH medications. Here I report two excellent works done by my two PhD students. Dr. Shefali Mishra worked on Epilepsies, a group of neurological disorders with a prevalence of more than 70 million people worldwide and is characterized by spontaneous, unprovoked, and variably synchronized seizures. Despite being presented with distinct aetiologies, epileptic seizures occur due to imbalances in excitation/inhibition (E/I) activity that disrupts neuronal ensemble activity. A large group of anti-epileptic medications (AEMs) available in the market constitutes a symptomatic approach by targeting the E/I imbalance involved in seizure generation and propagation, mediated by ion channels and neurotransmitter receptors. However, these drugs produce undesirable secondary effects and are ineffective in treating 30% of patients. Therefore, developing new adjuvant drugs is required to act on other novel components of underlying pathogenesis: oxidation, mitochondrial dysfunctions, inflammation, apoptosis, and activity-dependent synaptic modifications. Such novel approaches might provide a homeostatic boost to the neuronal network and restore physiological imbalances. Recently, interest in compounds of natural origin for antiepileptic potential has renewed, owing to less toxicity, safer profiles, and the probability of finding novel targets. Thus, identifying safer and tolerable natural products targeting the novel downstream mediators represents a promising treatment approach against epilepsy. We have discovered that Urolithin-A, a small phenolic metabolite, present in many fruits naturally and as a by-product of Ellagic acid in guts, can ameliorate epilepsy conditions in *Drosophila* and chemical induced kindling mice model. In the second story, Dr Vipin Chauhan discovered the roles of Shankjeera in curing gut defects using *Drosophila* model, which would be discussed briefly.

Dr. SubbaRao V Madhunapantula

**TARGETING OXIDATIVE STRESS SIGNALING CASCADES USING
PHYTOCHEMICALS FOR THE PREVENTION AND TREATMENT OF
CANCERS: RECENT UPDATES**

Professor of Cellular & Molecular Biology, Center of Excellence in Molecular Biology
& Regenerative Medicine Laboratory (CEMR – A DST- FIST Supported Center and
ICMR Collaborating Center of Excellence – ICMR-CCoE), Department of Biochemistry (A
DST-FIST Supported Department), JSS Medical College, JSS Academy of Higher Education
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Oxidative Stress (OS) is one of the key contributors for the transformation of normal cells into malignant ones. While several studies have demonstrated the utility of targeting OS cascade for retarding tumors, the recent investigations have raised concerns pertaining to the use of antioxidant molecules for mitigating OS in cancer cells. Therefore, studies are immediately required to address these queries. In our laboratory we have shown that the expression of the master regulator of OS, i.e., Nrf2 is elevated in the carcinomas of breast and colon and rectum. Genetic ablation of Nrf2 reduced the cancer cells viability by inducing apoptosis as well as cell cycle arrest. Pharmacological targeting of Nrf2 using specific inhibitors such as Brusatol also yielded an about 50% reduction in the viability of cancer cells. Although these studies have suggested inhibition of Nrf2 for retarding / reducing tumor cells viability, few investigations from our laboratory and many other research groups have shown activation of Nrf2 by plant secondary metabolites, in particular, the derivatives of benzoic acid and cinnamic acids. Since activation of Nrf2 is known to protect cells from OS and enhance cell migration and induce drug resistance, it is not clear whether to consider these antioxidants and antioxidant-rich phytochemical fractions for the treatment of cancers. In my presentation, I will be covering recent studies discussing the role of Nrf2 in cancers and the safety and efficacy of plant-derived molecules in mitigating the tumor burden.

Dr. Mamatha.A**MODERN SCIENTIFIC APPROACHES TO TRADITIONAL MEDICINE FOR
BETTER LEADS IN HEALTH CARE: A WAY FORWARD...**

Professor & NSS Programme Officer, Dept. of Pharmacognosy, KLE College of
Pharmacy, Bangalore

The resource talk emphasizes the potential of traditional medicine in healthcare and the need to integrate modern scientific approaches to unlock its benefits. It highlights the significance of traditional medicine systems such as Ayurveda, Unani, Siddha, Homeopathy, and Traditional Chinese Medicine, especially in rural areas where it is often the primary source of healthcare. It also addresses the limitations of traditional medicine, such as limited scientific evidence and potential for harm, emphasizing the need for scientific research to better understand the mechanisms and potential benefits of traditional dosage forms. The integration of modern scientific methods with traditional knowledge can bridge the gap between traditional and modern evidence-based medicine, offering numerous possibilities to enhance and advance traditional medicines. Collaboration with traditional healers, ethno botanical surveys, instrumentation and use of artificial intelligence are some of the modern scientific approaches discussed. These approaches aim to combine empirical knowledge with scientific methodologies, preserve indigenous wisdom, and revolutionize the study and practice of traditional healing systems. The talk also discusses the modernization of traditional practices, including the development of modern dosage forms, technological advancements, and the application of omics technologies, pharmacogenomics, systems biology and network pharmacology. It emphasizes the need for rigorous research, standardization, and safety and toxicity assessment to validate the effectiveness of traditional practices and pave the way for their integration into mainstream healthcare. Furthermore, the document highlights the importance of regulatory compliance, the development of multi-herb prescriptions, and the potential benefits of converting classical medicine to novel drug delivery systems and validate them. In conclusion, the main idea is to integrate modern scientific approaches with traditional medicine to unlock its potential, bridge the gap between traditional and modern evidence-based medicine, and pave the way for a more holistic and evidence-based healthcare system while respecting and preserving traditional healing practices.

Dr. S. Thiyagarajan**PHYTOCHEMICAL ANTIVIRALS: IN SILICO DRUG SCREENING STUDIES
AGAINST SARS-COV-2, DENGUE AND FMDV**

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Phytochemicals have always been perennial resources for discovering new drug like compounds. Exploring ancient literatures and tribal medicinal practices have yielded therapeutic possibilities against various diseases for which no approved drug exists. However, molecular mechanisms behind the therapeutic potential of most of these phytochemical compounds remain unknown. In the past few decades, there has been an extensive catalogue of phytochemicals from ethno botanical species from many research groups across the world. Combining the indigenous treatment protocols using herbal medicines and the phytochemical databases proves to be a good strategy to identify new drug like compounds using computer aided drug discovery techniques. In our lab, we have downloaded and curated more than 50,000 phytochemical structures for virtual screening and docking studies using popular open source or commercial tools. Compounds from this library were used against potential drug targets of i) SARS-CoV-2, ii) DenV, and iii) FMDV. All these studies also included control compounds with known binding affinity against the target proteins. The plant sources of the top hits were scrutinized to ensure their application in therapy in traditional methods. This perfect blend of ancient knowledge of traditional medicines and modern computer aided drug discovery methods has proved fruitful in combating infectious diseases as well as metabolic disorders. The talk will highlight the compilation of phytochemical databases and the identification and validation of top hit molecules against a few diseases.

Dr. Asha Martin

**PHYTOCHEMICALS AS POTENTIAL INHIBITORS OF PCSK9 IN THE
MANAGEMENT OF DYSLIPIDEMIA**

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Proprotein convertase Subtilisin/Kexin type 9 (PCSK9) is an enzyme implicated in post-transcriptional regulation of low density lipoprotein cholesterol level, a risk factor for cardiovascular disease. Amongst the currently employed strategies to reduce low density lipoprotein cholesterol level and management of cardiovascular disease risk, inhibition of PCSK9 looks promising. Monoclonal antibody and siRNA based PCSK9 inhibitors have been recently approved for the management of hypercholesterolemia, the most common form of dyslipidemia. However, affordability is a major concern limiting their applicability. Further, their efficacy and long term safety are not fully understood. In this context, phytochemicals that can modulate PCSK9 have the potential to be developed as safe and cost effective nutraceuticals. The presentation will briefly outline the current knowledge on PCSK9 inhibitors highlighting recent findings on the role of phytochemicals in the management of dyslipidemia.

Dr. Bibha Chaudhary**DECIPHERING MECHANISMS OF CYTOTOXICITY INDUCED BY
CURCUMIN IN BREAST AND OVARIAN CANCER CELL LINES USING
PHARMACO-TRANSCRIPTOMICS**

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Curcumin is well known for its anticancer properties. Its cytotoxic activity has been documented in several cancer cell lines, including breast and ovarian cancer. The pleiotropic activity of curcumin as an antioxidant, an antiangiogenic, antiproliferative, and pro-apoptotic, is due to its diverse targets, such as signaling pathways, protein/enzyme, or noncoding gene. We performed RNA-seq and identify key miRNAs and mRNAs induced by curcumin in breast cancer cells MCF7, T47D (hormone positive), versus MDA-MB231 (hormone negative) and ovarian cancer cell lines PA-1 (teratocarcinoma) vs. A2780 (adenocarcinoma) using comparative analysis of global gene expression profiles.

Integrated analysis of miRNA–mRNA led to the identification of a common NFkB pathway altered by curcumin in breast cancer cell lines. Analysis of uniquely enriched pathway revealed non-integrin membrane–ECM interactions and laminin interactions in MCF7; extracellular matrix organization and degradation in MDA-MB-231 and cell cycle arrest and G2/M transition in T47D. In Ovarian cancer, autophagy was regulated by curcumin in both cell lines by modulating different targets in autophagic pathway. In both cell lines, a tilt in balance was observed in the oncomiR/TSmIR profile, revealing suppression of oncogenic processes by curcumin . Curcumin treatment induced a moderate cisplatin-sensitization effect and impaired epithelial-to-mesenchymal transition (EMT) characteristics in Ovarian cancer cells. Curcumin regulates miRNA and mRNA in a cell type-specific manner. The integrative analysis led to the detection of miRNAs and mRNAs pairs, which can be used as biomarkers associated with carcinogenesis, diagnostic, and treatment response in breast and ovarian cancer. The activity of curcumin is cell-type specific. Distinct miRNA regulatory networks were activated to induce multiple modes of cellular cytotoxicity in breast and ovarian cancer cells. This study further highlights the molecular mechanism of curcumin action in ovarian cancers establishing its candidacy as a promising drug candidate.

Dr. Saptadipa Paul**EXPLORING THE POTENTIAL OF PHEOPHORBIDE A, A CHLOROPHYLL-DERIVED COMPOUND IN MODULATING GLUT FOR MAINTAINING GLUCOSE HOMEOSTASIS**

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Pheophorbide A, a chlorophyll breakdown product is primarily investigated for its anti-oxidant and anti-inflammatory activity. Recent reports on pheophorbide A have shown its potential in lowering blood glucose levels, thus leading to the exploration of its use in diabetes management. Literature has also shown its effect on enhanced insulin secretion whereas its mechanism on GSIS in pancreatic β -cells remains unexplored. Therefore, we used in silico and in vitro investigations to explore the effect of pheophorbide A on class I GLUTs. Molecular docking studies revealed better binding affinity of pheophorbide A with GLUT4 (-11.2 Kcal/mol) and GLUT1 (-10.7 Kcal/mol) when compared with metformin (-5.0 and -4.9 Kcal/mol respectively). Glucose levels are largely regulated by GLUTs where GLUT1 is one of the transporters that is ubiquitously present in human β -cells. Thus, we confirmed the stability of the complex i.e., pheophorbide A-GLUT1 using GROMACS for 100 ns. We further assessed its effect on a pancreatic β -cell line (INS-1) for its viability, using an MTT assay. Pheophorbide A (0.1 μ M to 1 μ M) showed a dose-dependent response on cell viability and was comparable to standard metformin. To assess how pheophorbide A mechanistically acts on GLUT1 in pancreatic β -cell, we transfected INS-1 cells with GLUT1- eGFP and checked how the treatment of pheophorbide A (0.50 μ M) modulates GLUT1 trafficking using live cell imaging. We observed a significant increase in GLUT1 density when treated with pheophorbide A ($0.442 \pm 0.01 \mu\text{m}^{-2}$) at 20 mM glucose concentration when compared to GLUT1 control ($0.234 \pm 0.01 \mu\text{m}^{-2}$) and metformin ($0.296 \pm 0.02 \mu\text{m}^{-2}$). The average speed and distance traveled by GLUT1 puncta were observed to decrease when treated with pheophorbide A. The present study also demonstrated the capacity of pheophorbide A to enhance glucose uptake in β -cells. In conclusion, the current study's findings were validated by in silico and cellular analyses, suggesting that pheophorbide A may regulate GLUT1 and might be regarded as a potential lead for boosting the GSIS pathway thus maintaining glucose homeostasis.

Dr. Dharmendra Kumar Khatri

THE VERSATILITY OF PHYTOCHEMICALS IN THE MODULATION OF MOLECULAR & CELLULAR SIGNALLING PATHWAYS TO COMBAT PARKINSONS'S DISEASE.

Dr. Dharmendra Kumar Khatri, M. Pharm, PhD, Assistant Professor, Department of Pharmacology, Shobhaben Pratapbai Patel School of Pharmacy & Technology Management, SVKM's Narsee Monjee Institute of Management Studies (NMIMS) Deemed-to-University, Mumbai-400056, India

The field of drug discovery, particularly in natural products, is undergoing a significant paradigm shift from a conventional method to a more advanced and comprehensive scientific approach, driven by the evolution and advancement of tools and techniques. Omics-based techniques (Genomes, transcriptomics, proteomics, metabolomics, and bioinformatics) are now acknowledged as powerful tools for developing novel tactics to identify targets for natural products. α -synuclein aggregation is the only well explored and is considered to be the hallmark of PD. In PD, α -synuclein was found to undergo several pathologic post translational modifications via varieties of kinases and favors α -synuclein to its toxic oligomeric form. The neuroprotective effect of Baicalein and Dimethyl fumarate (DMF) was assessed in Rotenone and MPP+ ICV injection in mice. Baicalein was used to explore its potent induction of autophagy via the modulation of the microtubule associated motor proteins. DMF was study on mitophagy via the NRF2/ BNIP3/ PINK1 axis activation in PD disease model significantly increasing the expression of profound microtubule affiliated motor proteins of the anterograde (KIF5B) and retrograde (dynein and dynactin) system, baicalein promotes the chances of autophagy by enabling better movement of the autophagosomes towards the lysosomes and their active recycling for appropriate turnover. DMF confers neuroprotection by activating the BNIP3/PINK1/Parkin pathway, enhancing the autophagosome formation via LC3 and improves mitophagy in PD models and could be a potential therapeutic option in PD.

Dr. Shalini T V

**INTRODUCTION TO APPLICATIONS OF PHYTOCHEMISTRY IN
UNDERSTANDING OF A FEW AYURVEDA BASIC PRINCIPLES**

Clinical Registrar, Ramaiah Indic Specialty Ayurveda Restoration Hospital, Bengaluru

Ayurveda, the ancient Indian system of medicine, offers a holistic approach to health and wellness that emphasizes the balance between mind, body, and spirit. In recent years, there has been a growing interest in integrating Ayurveda principles with modern scientific research, particularly in the field of phytochemicals. Phytochemicals, bioactive compounds found in plants, have garnered attention for their potential health benefits and therapeutic properties. The application of Basic Ayurveda principles in phytochemical research is essential in the better understanding of the concepts of both the domains. Ayurveda emphasizes on importance of properties of herbs, mode of preparation, different dosage forms, time of collection of herbs, dominance of basic elements, based on the primary taste in the herbs etc. Sub processes involved in the preparation of the primary and secondary formulations which are in correlation with the modern methods of phytochemicals are well explained and highlighted regarding the reason for choosing them. Incompatible food combinations (Viruddhahara) are one of the unique concepts explained in Ayurveda which is the root cause for most of the modern day ailments. Understanding of these basic principles of Ayurveda in the light of contemporary phyto chemistry for better understanding and demonstration to the scientific and common man community is the need of the hour.

Dr. Ashwini Godbole**AYURVEDA BIOLOGY OF NERVOUS SYSTEM HEALTH AND DISEASE**

Associate Professor, Ayurveda Biology and Holistic Nutrition, TDU, Bengaluru

Cognition is the finest function of human brain which has a major impact on individual's quality of life. Some of the most common factor which leads to decline in cognitive health is stress, unwholesome life style and age. Maintenance and enhancement of cognition is very vital not only for fulfilling all the required mental and physical tasks at all ages, but also for reducing risk of getting age-related neurodegenerative disease (Blagosklonny et al 2009) Paucity of effective and safe nootropic solutions. Function of nervous system is an important topic of bio-medical research. Scientific research in recent past has come up with detailed understanding of structural details of normal and diseased nervous system; brain in particular (Bossy-Wetzel et al 2004). However, very few well researched solutions are available for enhancement and maintenance of health of the nervous system. In want of increasing cognition, healthy individuals often use drugs prescribed for Alzheimer's disease or other memory disorders. Long-term use of such drugs can often lead to undesirable side effects and physical/psychological dependence. Taken together, currently available mainstream solutions are unfit for positive/preventive use for health of nervous system and cognitive enhancement (Mattson, 2007, Pohanka 2011). Thus, there is a critical need for development of solutions for management and prevention of the neurological disease/disorder as well as for 'PROMOTION of HEALTH'. Ayurveda for nervous system health Ayurveda has concepts and elaborate description cognition and other functions of nervous system (Susruta Sutrasthana 2/3, Charaka Samhita VS 8/8). Ayurveda suggests many practices and Medhya-dravyas or Medhyarasayana (herbs, foods and formulations) for enhanced cognition, sensory and mechanical abilities. According to Ayurveda 'Vata' is a critical physiological factor for nervous function and its derailment leads to 'Vatavyadhi' which can be correlated to declined function of brain and neurological-neurodegenerative diseases. The theoretical knowledge including concepts and principals of Ayurveda are complemented with equally strong practice. However, both the concept and practice are largely not backed up by contemporary scientific evidence (Singh and Rastogi 2012). This has led to limited acceptability and use of potentially very effective health solutions from Ayurveda. We, a team of scientists and doctors from Transdisciplinary University (<http://tdu.edu.in/>), along with collaborating institutes, are conducting community based clinical research in the field of Ayurveda guided memory enhancement. The results from the study are positive and can provide lead to research and development of sustainable and socially relevant solutions for healthy ageing and enhanced cognitive health.

Dr. Girish Chandran

**THINKING BEYOND THE ANTIOXIDANT PROPERTIES OF
PHYTOCHEMICALS: NEUROPROTECTION BY BIFLAVONOIDS THROUGH
SPECIFIC BIOCHEMICAL AND BEHAVIORAL TARGETS.**

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Dietary phytochemicals including plant-derived alkaloids, carotenoids, organosulfur compounds, phenolics, and phytosterols, are health-promoting bioactive compounds that help in the prevention and mitigation of chronic diseases and microbial infections beyond basic nutrition supply. The major biological property identified of these phytochemicals is antioxidant and anti-inflammatory in nature. However, the recent reports strongly indicate specific biological targets in vivo beyond the antioxidant properties. In this presentation, specific therapeutic roles of novel bioflavonoids beyond their antioxidant activity in vivo in mice and *Drosophila* models are discussed. Evidences for neuroprotective and neuroameliorative efficacy of amentoflavone (a natural biflavonoid) are presented. Here, the behavioral data is correlated with the biochemical indices among *Drosophila* and mice. The demand of the hour is to decipher the specific mechanism by which enzymes or receptors related to a disease/disorder function and to identify therapeutic molecules which specifically target those proteins/molecules in turn resulting in the phenotypic relief in the disease/disorders.

ABSTRACTS OF POSTER PRESENTATION

- **BESTPP01**

PHYTO CHEMICAL ANALYSIS
PHYTO NUTRIENTS OF RAW AND STEAMED EXTRACT OF CHINESE
CABBAGE-*BRASSICAPEKINENSIS*: A COMPARATIVE

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Chinese cabbage is a nutritious and versatile vegetable that can be enjoyed in a variety of dishes. It is a good source of vitamins and minerals and has been linked to a number of health benefits. Chinese cabbage is a leafy green vegetable belonging to the *Brassica* family. Chinese cabbage is a good source of potassium, vitamins A, C, and K, as well as fiber. Chinese cabbage can be eaten raw, steamed, or fermented. It is a popular ingredient in stir-fries, soups, salads, kimchi, and steamed dishes. In the present investigation the extract was collected from 500 g of Chinese cabbage. Extract was analyzed for biochemical composition such as copper, Fe (III) and phosphorus by spectrophotometry; calcium, magnesium and zinc determined by complexometric titration. Copper was found to be 0.199 mg/100 g and 0.20 mg in raw and steamed sample respectively. Iron (III) was found to be 0.3mg and 0.5mg respectively. The phosphorus determined by molybdate method was found to be 1.075 mg and 0.80 mg/100g. Calcium and magnesium were found to be 75mg and 12 mg in raw sample and 27.9mg and 7.14 mg in steamed samples. Zinc was found to be 49.4mg and 30.6 mg respectively. Iron content found to be more in steamed sample, copper remains same. But phosphorus, calcium, magnesium and zinc contents have been drastically reduced by 25.58.0%, 62.8%, 40.5% and 30.6 respectively in steamed sample. Hence better to be consumed as salads instead of cooking. Hence the present investigation was undertaken to study its phyto-nutritional composition.

- **BESTPP02**

EVALUATION OF BIOLOGICAL ATTRIBUTES OF *PLECTRANTHUS AMBOINICUS* ESSENTIAL OIL NANO ENCAPSULATES

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Plectranthusamboinicus is an herb with a flavor similar to oregano and contains various volatile and non-volatile compounds. It is well-known for its numerous pharmacological properties. More frequently, researchers have used aqueous infusions of *Plectranthusamboinicus* leaves to evaluate their properties. The essential oil of this plant has been studied for its antifungal, antioxidant, and antibacterial activities. This study is aimed to prepare and characterize the nanocomposition of the essential oil of the plant and evaluate its stability and bio-attributes. The nanocomposition was prepared using a combination of *Plectranthusamboinicus* essential oil and coconut oil with emulsifiers (Tween 80+ lycerol). After ultrasonication for 60 minutes, the composition from the DLS report showed an average size of 200.3 d.nm. Stability and encapsulation efficacy were also evaluated. Further, samples appeared to possess promising antioxidant properties and lipase inhibitory activity. Further anti-inflammatory assays showed that the sample is a potent candidate for the treatment of inflammation.

Key words:*Plectranthusamboinicus*, essential oil, nanoemulsion, antioxidant, anti-inflammatory

- **BESTPP03**

ANTIOXIDANT AND ANTI-INFLAMMATORY ACTIVITY OF PULSES

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In the present study the extracts of pulses, Horse gram, Black gram and Red gram were screened for their antioxidant and anti-inflammatory activity. The free radicals have been linked to a variety of diseases like Arthritis, Parkinson's, and Alzheimer's, ageing process, coronary heart disease, cancers and many more. Antioxidants are substances that protect the cells against free radicals by neutralizing them. Antioxidants may be endogenous or taken exogenously through food. Certain plant based foods are thought to be rich in antioxidants. Free radicals have the role in the inflammatory process that may result in many human diseases. Therefore the molecules with antioxidant and Anti-inflammatory activity can be used to combat various free radical mediated inflammatory diseases. The antioxidant and anti-inflammatory activity of the extracts of various pulses were evaluated using in vitro based assays like Radical scavenging activity by DPPH assay, Reducing power assay, Lipid per oxidation acid assay (TBA assay), hemolysis inhibition, Proteinase inhibition and protein denaturation inhibition. The antioxidant and anti-inflammatory activity of aqueous and methanolic extract of three different varieties of pulses were investigated. Among the various extracts screened the aqueous extract of Horse gram was found to contain large amount of phenolics and flavanoid compounds with significant antioxidant activity.

Key words: Inflammation, Antioxidants, free radicals, Anti-inflammatory, pulses

- **BESTPP04**

ISOLATION AND CHARACTERISATION OF KAEMPFEROL IN *SALAGINELLA TENERA*

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Phytochemicals are non-nutritive chemical compounds that occur in all natural plants and have diverse protective properties. Presence of diverse bioactive compounds and less toxicity profiles, and novel mechanism of action makes the medicinal plants play a vital role for the treatment of various diseases. From ancient period several Pteridophytes are being used in Ayurveda and Unani medicine in India and Western Asia, due to their abundant phytochemicals including polyphenols, alkaloids, and terpenoids and possess numerous medicinal properties. In the present study we have selected a drought resistance medicinal Pteridophyte plant *Selaginella tenera* belonging to the family *Selaginellaceae* to evaluate the antioxidant property by *invitro* method. Methanolic extract was prepared from the whole herb of *S. tenera* using soxlet extraction. The preliminary phytochemical screening was carried out to know the presence of flavinoids, phenols, alkaloids, tannins, steroids, triterpenoids and sugars. Isolation and characterization of bioactive compounds has been carried out through TLC, HPLC, and LC-MS analysis. The result reveals that plant extracts possess highest amount of Kaempferol with the retention time of 6.490 ± 0.2 min [17.832%] which is a 3,4',5,7-tetrahydroxyflavone, a type of flavonoid. The antioxidant activity and scavenging activity of Kaempferol has been proved by DPPH and free radical assay. Due to enhanced antioxidant level and therapeutic values, *S. tenera* will play a major role in the oxidative stress resistance. Hence, further, this can be analyzed through *invivo* studies using *Drosophila* as a model organism.

Keywords: *Selaginellaceae*, Oxidative stress, Antioxidant, Kaempferol

• **BESTPP05**

BIOCHEMICAL VARIATION IN THE WHITE FLY (*PEALIVUS MORI*) INFESTED MULBERRY LEAVES AND ITS IMPACT ON SILKWORM *BOMBYX MORI* REARING PERFORMANCE

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Silkworm, *Bombyx mori* is an economically important insect, plays a vital role in improving the livelihood of many people in India. The phytochemicals present in mulberry have an immense role on the growth, development, and productivity of silkworms. The present investigation focuses on the biochemical variations in mulberry leaves infested with whitefly, *Pealius mori*, and their impact on the biochemical, growth, and economic traits of silkworms. The study was conducted at the Central Sericultural Research and Training Institute in Mysuru during the year 2023, using the mulberry variety MSG2 as healthy and infested leaves were used for rearing bivoltine double hybrid FCxFC2 silkworms. Both healthy and infested mulberry leaves were analyzed biochemically, revealing variations in total protein content (68.92mg and 40.57mg per gram), amino acid content (64.05mg and 33.67mg per gram), and total sugar content (25.67mg and 18.40mg per gram). Additionally, found variations in the growth index of silkworms, with a value of 19.62 for healthy leaves and 11.21 for infested leaves. Furthermore, the biochemical analysis conducted on various silkworm tissues, like the silk gland, gut wall, and haemolymph, revealed significant variations between the test leaves. Additionally, cocoon traits such as a single cocoon weight of 1.57gm and 1.20gm, a single shell weight of 0.340gm and 0.246gm, and a shell ratio of 21.78% and 20.54% also made noteworthy difference between them. The investigation clearly reveals that mulberry phytochemicals are the raw material for silk synthesis and need to protect mulberry against these invading pests to achieve maximum cocoon production.

Key words: Mulberry, phytochemicals, silkworm, rearing, cocoon

- **BESTPP06**

**ANTIMICROBIAL ACTIVITY OF CURCUMIN - A POLYPHENOL
DERIVED FROM TURMERIC
(*CURCUMA LONGA L.*)**

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Turmeric (*Curcuma longa L.*) is a medicinal plant extensively used in Ayurveda, Unani and Siddha medicine as home remedy for various diseases. The phytochemical curcumin, commonly called diferuloyl methane, is a hydrophobic polyphenol derived from the rhizome (turmeric) of the herb *C. longa*. Curcumin has been shown to exhibit antioxidant, anti-inflammatory, antimicrobial, and anticarcinogenic activities. It also has hepatoprotective and nephroprotective activities, suppresses thrombosis, protects against myocardial infarction, and has hypoglycemic and antirheumatic properties. Moreover, curcumin has been shown in various animal models and human studies to be extremely safe even at very high doses. Development of bacterial resistance to the available antibiotics and increasing popularity of traditional medicine has led researchers to investigate the antibacterial compounds in plants. In the present study, curcumin was screened for its antibacterial and antifungal activity. *Bacillus subtilis*, *Staphylococcus aureus* (Gram positive bacteria), *Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella typhi*, *Shigella flexneri*, *Proteus vulgaris* (Gram negative bacteria) were the bacteria tested. *Alternaria sp.*, *Aspergillus flavus*, *Aspergillus niger*, *Cladosporium sp.* and *Fusarium sp.*, were the fungi tested. Solutions of different concentrations (500, 1000, 1500, 2000, 2500, 3000, 4000, 5000 ppm) of curcumin were screened by agar well diffusion method. Good antibacterial activity was observed with curcumin wherein it significantly inhibited all the bacteria studied at 4 and 5 mg / ml concentrations. Curcumin was effective in inhibiting some of the fungal species (*Alternaria sp.* and *Cladosporium sp.*). In conclusion, curcumin showed good antibacterial potential and requires further *in vivo* investigations. The antifungal activity of curcumin cannot be ruled out against other fungi and requires further research.

Key words: Curcumin, antibacterial activity, antifungal activity, agar well diffusion

• **BESTPP07**

CURCUMIN MODULATES CELL TYPE-SPECIFIC miRNA NETWORKS TO INDUCE CYTOTOXICITY IN OVARIAN CANCER CELLS

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Curcumin, a natural polyphenolic compound extracted from the spice *Curcuma longa* has long been recognized for its anti-cancer properties. In this study, we elucidated the epigenetic role of curcumin in two molecularly distinct ovarian cancer cell lines: PA1 and A2780. Integrated mRNA-miRNA sequence analysis was performed to deduce curcumin-induced miRNA-mRNA regulatory networks. OncomiRdb database was utilized to profile curcumin-induced oncogenic/tumor-suppressor miRNAs. Oncogenes/tumor suppressor genes were profiled and correlated using the TCGA ovarian cancer dataset. Experimental validations were performed using cell-cycle analysis, Annexin V-FITC/PI apoptosis assay, q-PCR, western blot, migration, CFU assay, and dual luciferase assay. Curcumin displayed a cell-type specific activity. It resulted in the reversal of the distinct oncomiR/TSmIR profiles revealing suppression of oncogenic processes in each cell line. Curcumin treatment led to activation of DNA damage repair pathways, apoptosis, and autophagy and inhibited EMT characteristics, migration, stemness and pro-survival signalling cascades in both cell lines. But the miRNAs regulating these processes were distinct and demonstrated an inverse correlation with their respective direct targets. Curcumin regulated miR-199a-5p/DDR1 axis in both cell lines with a decrease in collagen deposition. This study delves into the epigenetic mechanisms underlying curcumin's cytotoxic effects on ovarian cancer, illuminating its differential impact on PA1 and A2780 cells. This comprehensive mRNA-miRNA analysis, uncovers the distinct miRNA regulatory networks, shedding light on curcumin's ability to modulate key pathways associated with cell proliferation, apoptosis, and stemness. Furthermore, the study elucidates curcumin's potential to sensitize ovarian cancer cells to conventional treatments like cisplatin offering a promising avenue for combination therapies. With the escalating burden of ovarian cancer, this understanding of the intricate molecular pathways of curcumin action in ovarian malignancies solidifies its status as a promising drug candidate.

Keywords: Curcumin, Micro-RNA, Transcriptomics, Cisplatin, EMT, DDR

- **BESTPP08**

**ANTIOXIDANT AND ANTITYROSINASE ACTIVITY OF
PHYTOCHEMICALS ASSOCIATED WITH SERICIN PROTEIN OF
SILKWORM *BOMBYX MORI* COCOON SHELL**

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The cocoon shell of silkworm *Bombyx mori* mainly contains sericin and fibroin proteins and some other non-protein compounds. Approximately 50,000 tones of sericin are typically wasted as sewage waste. The sericin protein is widely employed as a coating material, pharmaceutical, nutraceutical, cosmetic, and therapeutic applications due to its antioxidant, antibacterial, biocompatible, and biodegradable nature. The presence of amino acids, fatty acids and phytochemicals components in the cocoon shell has not been well explained. In the present study, methods based on liquid chromatography (LCMS), and UV-Visible spectrophotometric were used to identify the metabolites in the sericin extract. The different chemicals viz. KCl, KOH, MgCl, ZnCl, NaCO₃ were used for extraction of sericin from cocoon shell. In the extract identified, total protein, carbohydrates, phenol, flavonoids and alkaloids content in all the different extract. Among the chemical used, KOH and NaCO₃ extract shows higher metabolites in the sericin extract. It indicates that alkali solution was suitable for extraction of sericin. In total few metabolites were identified which are associated with sericin protein, including carbohydrates, amino acids, phenols, flavonoids and alkaloids. With the use of ethanol, the phytochemicals linked to sericin were isolated and utilized for their anti-tyrosinase and antioxidant properties. The findings indicate that ethanol extracts exhibited anti-tyrosinase and antioxidant properties. The sericin extract contains flavonoids and phenolic compounds that can accumulate from the leaf, haemolymph, silk gland, and sericin. Important information regarding the potential applications of cocoon shell extract in medicinal, cosmetic, and dietary supplement products is provided by this study.

Key words: Silkworm, cocoon shell, sericin, phytochemicals, LC-MS, antioxidant

• **BESTPP09**

INVESTIGATION OF ANTI-CANCER PROPERTIES OF NOVEL CURCUMIN DERIVATIVES IN LEUKEMIA CELLS, MULTIPLE MYELOMA AND DLA MODELS

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Curcumin, a phytochemical derived from the rhizomes of *Curcuma longa* is well-known for its anticancer and tumor-suppressing properties in a variety of malignancies, including leukemia. Curcumin derivatives were developed to overcome curcumin's drawbacks like chemical instability, poor aqueous solubility, and low bioavailability. Curcumin derivatives 143A and 151A were synthesized and assessed for cytotoxic activity across multiple leukemia and lymphoma cell lines using MTT and Resazurin assays. In vivo tumor models: Dalton's Lymphoma Ascites (DLA) and Multiple Myeloma were established to evaluate the cytotoxic effects of these derivatives on tumor reduction and the tumors were stained for H&E. experimental validations for in-vitro studies were performed by western blotting, and Annexin V-FITC/PI apoptosis assay. Screening multiple curcumin derivatives in the leukemic cell line MOLT-4, the drugs 143A and 151A exhibited higher efficacy compared to their parent molecule, curcumin. In vivo, treatment with 143A and 151A led to reduced tumor volume in Dalton's Lymphoma and Multiple Myeloma mouse models with no significant drug-related side effects. These findings highlight the potent antiproliferative and cytotoxic effects of both drugs in the induction of apoptosis. Ranked 11th globally for cancer-related fatalities, leukemia stands as a prominent cause of cancer death. Current leukemia treatment with Doxorubicin and other drugs face challenges due to multiple side effects. These curcumin derivatives operating at nanomolar doses surpass curcumin in cytotoxicity and display robust anti-cancer properties. These novel curcumin derivatives, 151A and 143A are promising drug candidates for leukemia treatment.

Keywords: Curcumin, Derivatives, Leukemia, Cytotoxicity, Apoptosis

- **BESTPP10**

**PHARMACOGNOSTIC AND PRELIMINARY PHYTOCHEMICAL
ASSESSMENT OF THE PETALS OF *BIXA ORELLANA***

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The captivating beauty of *Bixa orellana* flowers has long been recognized, and traditional medicinal practices have underscored the therapeutic significance of its petals. This study aimed to conduct a comprehensive pharmacognostic and preliminary phytochemical analysis of *B. orellana* petals. Pharmacognostic assessments encompassed organoleptic, microscopic, and physical parameters. The dried petals underwent successive Soxhlet extraction using chloroform, methanol, and water. Subsequently, the extracts were subjected to preliminary phytochemical screening to identify various chemical constituents including carbohydrates, proteins, amino acids, steroids, glycosides, alkaloids, tannins, and phenolic compounds. The phytochemical evaluation unveiled a rich array of bioactive compounds within the petals, including carbohydrates, steroids, alkaloids, proteins, flavonoids, terpenoids, phenolics, tannins, and glycosides. This comprehensive analysis sheds light on the potential medicinal value inherent in *B. orellana* petals, offering insights into its diverse chemical composition and pharmacological properties. These findings provide a scientific basis for further exploration and utilization of *B. orellana* in traditional and modern medicinal practices, emphasizing its role as a valuable resource in natural medicine.

Key words: *Bixa*, Preliminary phytochemicals, Pharmacognosy

- **BESTPP11**

PRELIMINARY PHYTOCHEMICAL STUDIES OF THE FRUITS OF *JATROPHA GOSSYPIFOLIA*.

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The utilization of plants for medicinal purposes has been a longstanding tradition, rooted in the presence of chemical compounds that elicit physiological effects on the human body. In various health domains across rural, urban, and tribal regions of India, medicinal plants have held significant importance. Among the prominent members of the *Euphorbiaceae* family, one of the largest families of flowering plants is *Jatropha gossypifolia*, commonly known as the “bellyache bush” predominantly found in Africa and America. The leaves of this plant are primarily utilized for their therapeutic properties including antihypertensive, anti-inflammatory, antimicrobial, antianemic, antidiabetic, and antihemorrhagic effects. Recent research has focused on the extraction of compounds from the leaves of *J. gossypifolia* L. using various solvents such as Petroleum ether, Chloroform, Acetone, Alcohol, and Water. The findings of this study confirmed the presence of several bioactive compounds including saponin, tannin, flavonoid, organic acid, glycosides, diterpene, alkaloids, steroids, xanthoprotein, and starch. This overview highlights the diverse array of secondary metabolites present in the leaves of *J. gossypifolia*, each possessing medicinal properties. The identification of these compounds underscores the potential therapeutic value of *J. gossypifolia* in addressing various health conditions. Keywords associated with this research include Phytochemical, *Euphorbiaceae*, *Jatropha gossypifolia*, Saponin, and Flavonoid. This research contributes to the ongoing exploration of natural remedies derived from plants, providing valuable insights into the pharmacological properties of *J. gossypifolia* and paving the way for further investigation into its potential medicinal applications.

Key words: Jatropha, Glycosides, Alkaloids, Phytochemicals

- **BESTPP12**

**PRELIMINARY PHYTOCHEMICAL STUDIES ON UNOPENED
FLOWER BUDS OF *CEIBA PENTANDRA* LINN**

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The unopened flower buds of *Ceiba pentandra* Linn. have long been recognized in Indian medicinal literature for their therapeutic potential due to their rich composition of phytochemicals and secondary metabolites. This study focuses on the development and standardization of phytochemical analysis methods for quantifying these compounds in extracts of unopened flower buds of *Ceiba pentandra* Linn. The establishment of scientific parameters is essential for accurate identification, quality assessment, and purity determination of the plant material. In this research, Methanol, Ethanol, and water extracts were subjected to various preliminary phytochemical analyses, including qualitative chemical analysis. The presence of key phytoconstituents such as tannins, saponins, alkaloids, and flavonoids was determined. These analyses provided crucial insights into the chemical composition of the unopened flower buds, offering valuable information for their correct identification and standardization. The findings of this study contribute to the broader understanding of the pharmacological and biological properties of *Ceiba pentandra* Linn. by elucidating the composition of its unopened flower buds. Furthermore, the developed phytochemical analysis methods serve as important tools for ensuring the quality and consistency of plant material used in traditional medicine and pharmaceutical applications. This research underscores the significance of *Ceiba pentandra* Linn. as a valuable source of phytochemicals with potential medicinal benefits, while also emphasizing the importance of robust standardization techniques for ensuring the efficacy and safety of herbal remedies derived from this plant species.

Key words: *Ceiba*, Saponin, Alkaloids, Phytochemicals

- **BESTPP13**

EXPLORING THE MEDICINAL POTENTIAL OF LEAVES OF *GMELINA ARBOREA*: PHARMACOGNOSTICAL AND PHYSICOCHEMICAL INSIGHTS

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Gmelina arborea holds a significant place in traditional Indian medicine for its medicinal properties. As the most extensively cultivated species within the *Verbenaceae* family, it exhibits promising medicinal benefits. Historically, *G. arborea* has been utilized to alleviate conditions such as abdominal pain, burning sensations, and as both an antihelmintic and laxative agent. Recognizing the importance of rigorous investigation prior to its medicinal application, a comprehensive study was conducted to establish pharmacognostical and physicochemical standards for leaves of *Gmelina arborea*. Microscopic examination revealed distinct structures including phellogen, cork, cortex, and phelloderm, shedding light on its anatomical characteristics. Physicochemical analyses showed important findings, indicating that the acid insoluble ash content was approximately five times lower and water soluble ash about three times lower than the total ash content, providing insights into its chemical composition. Furthermore, phytochemical screening showed the presence of various bioactive compounds including alkaloids, carbohydrates, anthocyanins, tannins, and flavonoids, underlining its potential therapeutic value. Such findings underscore the importance of understanding the chemical composition and pharmacological properties of medicinal plants like *Gmelina arborea*.

Keywords: *Gmelina arborea*, macro-microscopic analysis, physicochemical standards

• **BESTPP14**

**DIOSMIN, AN ANGIOTENSIN CONVERTING ENZYME-1 (ACE1)
INHIBITOR FROM *ARTOCARPUS ALTILIS***

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Hypertension is a global health concern with increased mortality. Angiotensin- converting enzyme (ACE1) plays a crucial role in the regulation of blood pressure, and hence being the target for the treatment of hypertension and hypertensive diseases. This study focuses on screening for the potential ACE1 inhibitors from *Artocarpus altilis*. The HRLCMS analysis revealed the presence of diosmin and hesperidin in the leaf extract of *A. altilis*. Further, diosmin and hesperidin were analyzed for their binding affinities for the active site of human ACE1 (PDB1086). *In silico* molecular docking study revealed that diosmin and hesperidin have greater binding affinities as per affinity scores -13.8 and -13.1 kcal/mol respectively. Diosmin showed interactions with amino acid residues such as His353, Gln281, Val379, His383, Tyr523, Zn701, His410, and His513. Similarly, hesperidin interacted particularly with Gln281, His353, His513, Tyr523, Zn701, His383, His410, Val379, and Glu376. These results suggest the binding of diosmin and hesperidin to the ACE1, revealing their therapeutic potential. Further, diosmin showed the greater inhibitory potency against ACE1 with an IC₅₀ of 0.1083 μM whereas hesperidin showed the inhibition with IC₅₀ of 0.2165 μM. Furthermore, the diosmin exhibited inhibitory constant K_i = 2.729 mM, and K_m value of 9.8 mM with a V_{max} value of 2.563. Altogether, this study validated diosmin as a promising ACE1 inhibitor, suggesting its potential as lead molecule in the management of hypertension. Further investigations are necessary to understand their therapeutic benefits in the management of hypertensive diseases.

Keywords: diosmin, hesperidin, hypertension, ACE1, breadfruit

• **BESTPP15**

**EFFECT OF METAL IONS ON THE ECONOMIC AND COCOON
PARAMETERS OF MULBERRY SILKWORM *BOMBYX MORI*
(LEPIDOPTERA: *BOMBYCIDAE*)**

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Metal ions (essential nutrients) are major constituents of the silkworms' diets, playing a crucial role in osmotic pressure regulation of the intra and extra-cellular liquids and participating as co-factors in different enzyme systems. The production parameters of silkworms depend on the larval nutrition and health status. To improve these production parameters, two metal ions i.e., Copper as Copper chloride and Iron as Ferric chloride have been used to study the effect of these minerals on silkworms. The mulberry leaves biofortified with these metal ions at varied concentrations viz., 0.2, 0.3 and 0.5% fed to silkworm FC 1 × FC 2 (100 larvae/ replication) during the fifth instar (1st day up to spinning stage). The silkworm reared on mulberry leaf without treatment serves as a control. Iron and copper fortified mulberry leaves improved the larval weight (9.08 & 7.33%), single cocoon weight (4.76 & 1.05%), shell ratio percentage (3.52 & 10.7%) filament length (5.97 & 2.52%), denier (6.87 & 11.6%) compared to control respectively. In the present study, it is observed that FeCl₃ and CuCl₂ fortified leaves exhibit higher performance over the control. Thus, feeding of mulberry leaves fortified with Fe & Cu to silkworms can be recommended to improve the cocoon quality.

Keywords: Metal ions, silkworm, shell ratio percentage, renditta, denier.

- **BESTPP16**

ISOLATION AND EVALUATION OF TAXIFOLIN IN *PUTRANJIVA ROXBURGHII* WALL.

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Putranjiva roxburghii Wall. is a well-known tree of family *Euphorbiaceae* with unique therapeutic qualities. It is commonly known as Child-life tree, Indian Amulet Plant. It is recognized in Ayurveda due to its anti-inflammatory, antipyretic, analgesic, and anti-rheumatic properties, hence it has a wide range of health benefits. It is an efficient protective medicine against various diseases including cancer. It is believed for its positive impact on female reproductive system and male fertility. The seeds have anti sterility and hypoglycemic potential. The present study is aim to evaluate the bioactive compound from the seed of *P. roxburghii* through *invitro* analysis. Soxhlet extraction was carried out using methanol as solvent. Phytochemical analyses were made to screening the presence of secondary metabolites, such as phenolics, glycosides, saponins, triterpenes, and flavonoids. Further, extract was subjected to TLC, GC-MS and HPLC. The presence of various components in the extract of *P. roxburghii* was confirmed by GC-MS spectrum analysis with different retention times. A unique bioactive compound was isolated from the seed extract of *P. roxburghii* through HPLC. It was characterized as Taxifolin, a potent flavonoid. The extracts possess highest amount of (11.05%) this compound with the retention time of 10.42 min. It is a pentahydroxyflavanon a member of dihydroflavonol. The antioxidant activity of Taxifolin has been evaluated by DPPH assay. The effect of Taxofolin on reproduction and fertility will be carried out in future through *invivo* studies. It is a powerful antioxidant with a well-documented effect in the prevention of several malignancies in humans.

Keywords: *Putranjiva roxburghii* Wall., fertility, Antioxidant, *Euphorbiaceae*, Taxifolin

- **BESTPP17**

"EXPLORING THE ANTIOXIDANT POTENTIAL OF *ARGYREIA IMBRICATA*: A BIOCHEMICAL ANALYSIS"

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Reactive oxygen species (ROS) play a substantial role in the pathophysiology of a variety of diseases. An excess of the ROS produced by metabolic activities, such as superoxide radical anion (SOR), hydrogen peroxide (H₂O₂), hydroxyl radical (OH), and nitric oxide (NO), causes inflammatory responses. Antioxidants protect cells from cellular damage caused by reactive oxygen species. The most popular "antioxidants" are vitamins A (retinol), C (L-ascorbic acid), β-carotene, minerals like selenium, and naturally occurring polyphenols. Antioxidants are present in the diet, and some people additionally take antioxidant supplements. The ingestion of natural antioxidants will reduce the risk of cardiovascular disease, diabetes and other diseases of cancer associated with ageing. Nature has abundant source of antioxidant availability present in this study we have investigated *Argyreia imbricata* leaves aqueous extract (AIAE) for antioxidant activity and lipid peroxidation assay. The aqueous extract showed the maximum antioxidant activity, as measured by total antioxidant activity (TAA) of 1.32μg/ml and ferric reducing antioxidant power of 16.36μg/ml. Furthermore, aqueous extract has shown the greatest DPPH radical scavenging activity with an IC₅₀ value of 33.16μg/ml, ABTS radical cation decolourisation assay with a value of 20.85μg/ml, nitric oxide scavenging assay with a value of 26.89μg/ml and maximum inhibition of lipid peroxidation. In conclusion, the AIAE leaves was analysed for antioxidant activities, in which the extract exhibited significant activity. In conclusion, this biochemical study highlights the antioxidant and lipid peroxidation properties of *A.imbricata* leaves extract, suggesting its potential as a natural therapeutic agent in combating oxidative stress-related disorders.

Key words: Reactive oxygen species, antioxidants, *Argyreia imbricata*, lipid peroxidation

- **BESTPP18**

SERIMORE: AN EFFECTIVE GROWTH PROMOTER FOR SILKWORM

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Silkworm (*Bombyx mori* L) growth and development is controlled by endocrine system, which is mainly ecdysone and juvenile hormone. The ecdysone stimulates metamorphosis and regulates moulting. In silkworm, the juvenile hormone postpones the metamorphosis thus leading to longer larval period. Silkworm growth regulators (SGRs) - juvenile and moulting hormones and their analogs (juvenoids and ecdysoids) when it is used judiciously have been found to be useful in the sericulture industry. In silkworm, *Bombyx mori* L, an exogenous dose of a minute quantity of Juvenile hormone analogue or mimics shows a positive response in terms of the growth and increased silk production. Serimore is a plant extract based silkworm growth promoter formulation based on bakuchoil extracted from *Psoralea corylifolia*, acts as a juvenile hormone mimic that has significant effect on the biochemical aspect of the silkworm as well as the economic aspects of the cocoon. In the present investigation, study has been undertaken to perceive the effect of serimore on FC1 x FC2 double hybrid of mulberry silkworm (*Bombyx mori* L) at different time interval. 0.2 micro liter of serimore has been topically administered per silkworm larvae and changes in the biochemical as well as the qualitative and quantitative character of the silkworm and cocoons were assessed. The study illustrated the enhancement of larval weight (5.6g), haemolymph protein during fifth instar. Subsequently, various economic traits show significant increase as cocoon weight (26.4%), shell weight (18.4%), shell ratio (9.9%) and filament length (19.57%) than control. In the present study, the results obtained are discussed in relation to administration of serimore for the positive improvement of qualitative and quantitative traits of silkworm.

Keywords: Growth regulators, growth promoter, juvenile hormone mimic, plant extract

• **BESTPP19**

**BIOCHEMICAL ANALYSIS OF DEFENSIVE ENZYMES IN RESPONSE
TO METAL ION SUPPLEMENTATION IN MULBERRY SILKWORM
*BOMBYX MORI***

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Silkworm *Bombyx mori* L. serves as a key model organism with a lot of promise in silk production. The haemolymph of *B. mori* is the chief circulating fluid and transport medium for >300 proteins involved in larval growth, ecdysis, metamorphosis, silk production, apoptosis, chitin and haemocyte formation, growth of salivary glands and reproduction. The mulberry leaves treated with CuCl₂ at varied concentrations viz., 1000 ppm, 2000 ppm and 3000 ppm provided to FC 1 × FC 2 silkworm during fifth instar (1st day up to spinning stage once in a day). The silkworm reared on mulberry leaf without treatment serves as control. Each treatment replicated thrice, each with 100 larvae. The relative impact of Copper chloride (CuCl₂) on haemolymph proteins, protease and amylase activity were studied in *B. mori* by feeding its larvae with copper- enriched mulberry leaves. The haemolymph of the silkworm treated with 1000 ppm of CuCl₂ has higher protein content (19.89 mg ml⁻¹) compared to the control batch (16.52 mg ml⁻¹). In case of enzyme activity, the protease activity is observed slightly more in 1000 ppm treated larvae (0.25 µg ml⁻¹ min⁻¹) and 3000 ppm CuCl₂ treated (0.26 µg ml⁻¹ min⁻¹) with comparison to control (0.236 µg ml⁻¹ min⁻¹) and in case of amylase activity, all the treatment shows positive results i.e., 0.578 µg ml⁻¹ min⁻¹, 0.623 µg ml⁻¹ min⁻¹ and 0.620 µg ml⁻¹ min⁻¹ activities in 1000 ppm, 2000 ppm and 3000 ppm CuCl₂ treated batches respectively. Based on the results, it can be envisaged that metal ion i.e., CuCl₂ has positive impact on the protein content and enzyme activity on the haemolymph of silkworm.

Keywords: Silkworm, *Bombyx mori* L., defense enzymes, metal ion, haemolymph

- **BESTPP20**

ENHANCED ACTIVITY OF PEROXIDASE UNDER HEAVY METAL STRESS IN MAIZE (*ZEA MAYS* L.)

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Agricultural crops are exposed to various biotic and abiotic stress factors continually which leads to many biochemical changes, limits the growth and yield of the crops. Heavy metals are known to cause abiotic stress affecting the metabolic pathway of plants. Plants respond to these environmental stress by producing antioxidant enzymes. The effect of Cd on the peroxidase activity in maize seedlings and also the effect of metabolic inhibitor sodium meta bisulphite, Ca and EGTA on the enhanced peroxidase activity are studied. The seeds were treated with different concentrations (0-250ppm) of Cd for 24hrs and control was maintained. The peroxidase activity was determined spectrophotometrically on 7 days old seedlings using guaiacol as the substrate. Our study showed increased activity of peroxidase and was highest in 250ppm treated seedlings (63.8 $\mu\text{moles/mg/min.}$) A gradual decrease in the activity was observed with the increased concentration of metabolic inhibitor sodium meta bisulphite (250 μM to 1000 μM). The peroxidase activity in all the treatments could be effectively inhibited with the addition of EGTA. This decline in the activity could be restored by the inclusion of additional CaCl_2 . Since calcium at higher conc. (1mM) used for the study could increase the activity, a more direct effect of calcium was confirmed by the findings. Increased peroxidase activity is a common response to abiotic stresses suggesting the role of peroxidase in detoxification of H_2O_2 produced during plant growth and in Cd stress. This work suggests the significant role of Peroxidase and Ca^{2+} signalling pathway in alleviating the oxidative stress.

Key words: Toxicity, abiotic stress, antioxidant enzymes, peroxidase

- **BESTPP21**

ASSESSING THE THERAPEUTIC EFFECTS OF ALLOPATHIC AND AYURVEDIC

MEDICATIONS IN PARKINSON'S DISEASE: A STUDY OF THE MURINE GUTMICROBIOME AND CLINICAL PARAMETERS

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Parkinson's Disease (PD) pathology has been associated with gut dysbiosis suggesting a gut-brain-microbiota axis influencing disease progression. Ayurvedic formulations for PD have no documentation of possible toxic effects on clinical parameters and gut microbiome. This study aims to test two widely prescribed Ayurvedic preparations, Suvarna Sameerapannaga Rasa (SSR) and Maha Kalyanaka Ghrita (MKG), against standard anti-Parkinson's allopathic treatment, Levodopa-Carbidopa. Ayurvedic preparations SSR and MKG, and allopathic medicine Syndopa-Plus, were administered in different dosages and assessed for in-vivo activity on the blood parameters and gut microbiome in normal female Swiss-albino mice. This was done using ALT/AST assay (for liver function), post-mortem examination (for morphological changes in organs), biochemical tests (for culturable bacteriological analysis), and 16s rDNA metagenomic sequencing (for taxonomic characterization, diversity and differential abundance studies). Mice administered with 2X dosage SSR showed abnormal deviations in liver function, whereas those given 1X dosage showed abnormal morphological changes in organs. Biochemical characterization showed that Ayurveda-treated mice showed a different microbial diversity and abundance, as compared to levodopa-treated mice. 16s rDNA sequencing furthered showed that levodopa-treated mice had lower species richness as compared to the control and Ayurveda-treated mice. MKG-treated mice showed a higher abundance of beneficial short chain fatty acid-producing bacteria. PD is the second-most common multi-systemic neurodegenerative disease in the world. Ayurveda has been targeting multiple disease indications, without literature evidence of its effects on the body. This study aims to compare the effect of Ayurvedic and allopathic treatments for PD, to assess their toxicological/beneficial effects on normal mice and their microbiome.

Both Ayurvedic preparations showed a positive shift in the gut microbiome as compared to the allopathic drug, with one of them showing signs of liver toxicity. They emerge as promising candidates for gut microbiome-targeted therapy for PD.

Keywords: Parkinson's Disease, Ayurveda-allopathic treatment impact, Gut-brain-microbiota axis, metagenomic profiling

- **BESTPP22**

**PRELIMINARY PHYTOCHEMICAL ANALYSIS AND STUDIES
OF ANTIBACTERIAL ACTIVITIES OF *A. INDICA* LEAVES EXTRACTS
OF MYSURU REGION.**

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Neem (*Azadirachta indica*), an ancient medicinal tree is cultivated in various parts of the Indian subcontinent and belongs to the botanic family *Meliaceae*. The major phytochemicals present in Neem are glycoproteins, triterpenes, limonoids, Phenols, tannins, nimbins, saponins, catechins, azadirachtin and gallic acid which have properties like antibacterial, antifungal, antioxidants etc. Nanotechnology is blooming technique to enhance the effect of phytochemicals found in plant extracts. The fresh matured leaves of *Azadirachta indica* (Neem) were collected from MMK and SDM MMV campus, air dried and powdered. The solvent extraction of the obtained powder was carried out using aqueous and other solvents. The tests for Alkaloids, Saponins, Flavonoids, Tannins, Glycosides, and Steroids were conducted with different solvents extracts. The synthesis of Ag-NPs was done by adding 10 mL of *A. indica* (Neem) leaf extract to 50 mL of 1 mM aqueous AgNO₃ solution at room temperature. The antibacterial activity was carried out using disc diffusion method against *E. coli*. The phytochemical screening of the plant extracts showed the presence of phytochemicals in all the solvents; especially the positive results were obtained at higher version in the ethanolic extract. The disc diffusion tests showed higher inhibition zones at 5 µg/ml of Ag-NPs Neem extract. The effect of Silver nanoparticles with Neem extract was proven more effective, eco-friendly and cost effective against *E. coli* bacteria. The overall results suggested presence of phytochemicals in aqueous extract. The extracts of aqueous *A. indica* displayed antibacterial activity against *E. coli* in a dose dependent manner.

- **BESTPP23**

MITOCHONDRIA- A POTENTIAL ROLE OF L- CARNITINE IN KIDNEY DISEASE MANAGEMENT: A REVIEW

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The powerhouses of the cell, mitochondria are essential to human physiological activities and are also involved in homeostasis, detoxification, and cell survival/death. A variety of metabolic and non-metabolic disorders, including abnormalities in fatty acid metabolism, imbalances in fuel and energy homeostasis can result from their dysfunction. Many chronic diseases occur as a result of mitochondrial malfunction brought on by a relative deficiency of micronutrients and substrates. There is growing evidence that treatments targeting the mitochondria may be beneficial for various illnesses. L-carnitine is one of the key nutrients for proper mitochondrial function and is notable for its role in fatty acid oxidation. L-carnitine also plays a major part in protecting cellular membranes, preventing fatty acid accumulation, modulating ketogenesis and gluconeogenesis and in the elimination of toxic metabolites. The kidney maintains plasma free L-carnitine levels in the homeostatic range by selective saturable tubular reabsorption. L-carnitine deficiency is observed in many diseases including liver and kidney disease. In dialysis patients, carnitine depletion is due to diminished endogenous renal synthesis and from loss through the dialytic membranes. Carnitine deficiency and insufficiency can cause energy metabolic disorders and symptoms; intradialytic symptoms commonly occur during routine HD treatments along with other more chronic complications of kidney failure. The protective effects of L- carnitine targeting mitochondria hold considerable promise for the management of age and metabolic related diseases. The studies suggested that L-carnitine supplementation is beneficial for dialysis-related symptoms. However, its benefits remain controversial and needs more attention.

Keywords: Mitochondria, Carnitine, Dialysis, metabolic disorder, micronutrients

- **BESTPP24**

UNRAVELING THE THERAPEUTIC IMPACT OF PHYTOCHEMICALS IN CANCER THROUGH COMPREHENSIVE TRANSCRIPTOME META-ANALYSIS

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Cancer is one of the leading causes of death worldwide. According to WHO, cancer accounted for nearly 20 million deaths in 2022. Naturally occurring phytochemicals are being used in cancer therapy and in mediating the regression of resistant tumors. We performed meta-analysis of the transcriptome of multiple cancer cell lines treated with phytochemicals belonging to classes such as flavonoids (Quercetin), taxanes (Paclitaxel, Docetaxel), glucosinolates (Sulforaphane), lactones (Withaferin-A), phenols (Reservatol) against cancers including breast, prostate, glioblastoma and skin. We also performed a comparative analysis of the effect of different phytochemicals on the cell lines. Network analysis revealed the major pathways affected by phytochemicals. Most of them were involved in cancer signaling, progression and metastasis. These pathways are involved in cell proliferation such as apoptosis, OXPHOS, glycolysis, cell proliferation and EMT pathway. Further, we found pathways affected due to antioxidant effects of phytochemicals impacting the tumor microenvironment. While there are some common pathways affected by these classes of phytochemicals, some cell-type-specific pathways are also impacted. Standard of care cancer drugs are causing irreversible toxicity and resistance. Comprehensive comparison of phytochemical activity may help identify drugs that can work synergistically with compounds existing in cancer treatment. Our meta-analysis of phytochemical treatments on various cancers revealed impacts on common and cell-specific pathways, offering insights for combination therapies to mitigate drug resistance and toxicity.

Keywords: Cancer, Meta-analysis, Transcriptome, Phytochemicals, Pathway analysis

- **BESTPP25**

**MILLET BRAN OIL AND ITS NUTRACEUTICAL POTENTIAL AS A
SOURCE FOR THE MANAGEMENT OF OBESITY-RELATED
COMPLICATIONS IN AN ANIMAL MODEL**

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To investigate the influence of millet oil phytonutrients on weight reduction and serum parameters related to obesity in obese animals. Lipid and nutraceutical profiling were conducted using chromatographic techniques and detailed lipidomics analysis before assessing the efficacy of the oils in an animal model. Serum biochemical analysis, body weight measurement, feed consumption pattern, and histopathological analysis were also performed. Millets are known as nutritive cereals because they contain high-quality protein and carbohydrates. However, the importance of the lipids in millets are always undervalued due to shortening the shelf life of products. The present study explores the nutritional and nutraceutical potentials of millet bran oil and its nutraceuticals. Millet bran oil was extracted from kodo millet and detailed physicochemical characterization was performed. The fatty acid composition of millet bran oil exhibited a higher concentration of linoleic acid (LA, 18:2), ranging from 30% to 50%, followed by oleic acid (18:1) and palmitic acid (C16:0). Nutraceutical profiling of the oil revealed the presence of γ and δ tocotrienol, ergosterol, fucosterol, β -sitosterol, and squalene, along with other esters. Nutraceutical-rich millet oil was supplemented to obese rats, resulting in a significant reduction in body weight, although there was no change in food intake. Furthermore, the serum parameters improved significantly in the treatment group, with results positively correlated, including histopathological analysis. In conclusion, this study provides comprehensive details on millet oil's nutraceuticals and its effect on enhancing weight reduction in obese animals.

- **BESTPP26**

PHYTONUTRIENTS

Author: Shreedevi Amruth Srinivasa

Corresponding Author: Dr. Wethroe Kapfo and Dr. Chaitanya Pandit

This is an abstract about the poster that is based on the topic- Phytonutrients, also known as Phytochemicals, which are compounds produced by plants for their protection from viruses, bacteria and other pathogenic organisms. These nutrients can be used by Humans for many antioxidation and detoxification purposes. Phytonutrients are compounds which help strengthen the immune system of plants and therefore, work the same way in humans. On consumption, phytonutrients can help modulate immune system by altering the biochemical reactions in the human body. By eating foods rich in phytonutrients, our gut-microbiota and gut-flora is regulated, and digestion is enhanced. Phytonutrients can be helpful in many diseases like, inflammatory bowel diseases, autoimmune diseases and leaky gut syndrome. The health benefits by the consumption of phytochemicals such as carotenoids, polyphenols, isoprenoids, phytosterols, etc., are prevention of diabetes, obesity, cancer, cardiovascular diseases, etc. Phytonutrients being such beneficial compound to both plants and humans plays a vital role in healthy lifestyle of everyone's life. Consumption of phytonutrients is as essential as drinking water every day, as it is important for easy and smooth digestion in Humans. Phytonutrients are also safe as they are plant-based nutrients and have negligible side effects. Phytonutrients are compounds present in plant-based foods that have the capacity to alter biochemical reactions and help reduce the number of diseases and problems in Humans.

Keywords: Plant, Human, Food, Immunity, Antioxidants.

- **BESTPP27**

EXPLORATION OF VALUE-ADDED PHYTO BIOACTIVE COMPOUNDS IN MULBERRY SILKWORM REARING WASTE AND THEIR BIOMEDICAL APPLICATIONS

E. Bhuvaneswari*, Y. Thirupathaiah, G. Mallikarjuna, D.S. Keerthana, U.G. Chaithra,

H. R. Chandana, Amina noorin, K. B. Chandrashekar and S. Gandhi doss
Central Sericultural Research and Training Institute, Mysuru-570008, Karnataka

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Silkworm *Bombyx mori* is a domesticated insect which produces luxurious silk thread by consuming mulberry as its sole food during the larval period. Apart from silk production, there is potential for developing value-added products from the silkworm rearing wastes, such as leftover leaves and silkworm excrement. An investigation was carried out during the year 2022-23 to find out the bioactive compounds such as Chlorophyllin, Pheophorbide-a, Phytol, Quercetin, and Rutin present in the silkworm rearing wastes. Chlorophyll and its associated compounds were extracted using solvent extraction followed by saponification, while flavonoids were obtained through acid hydrolysis followed by crystallization. Biochemical analysis indicated Chlorophyll (0.35 µmg/ml, 0.55 µmg/ml), Pheophorbide-a (0.23 µmg/ml, 3.6 µmg/ml), Phytol (0.9mg/ml, 2.17mg/ml), Quercetin (0.24 µmg/ml, 0.20µmg/ml), and Rutin (0.27 µmg/ml, 2.73 µmg/ml). Thin Layer Chromatography (TLC) was used for further analysis, showing Retention factor (R_f) values of 0.80, 0.81, 0.23, 0.68, and 0.40, which closely matched the R_f values of the standard compounds. Biophysical studies, such as XRD and FTIR, confirmed the presence of respective functional groups in the bioactive compounds. These phyto bioactive components possess properties like anti-oxidants, anti-inflammatory, antimicrobial, metabolic regulators and anticancer effects, making them useful in food, medical, cosmetics industries, etc. Mulberry, enriched with numerous bioactive compounds, plays a crucial role in cocoon production. It is confirmed that, the present study is confirmed the presence of phyto-bioactive compounds in the silkworm rearing wastes and it can be further explored for utilization in the area of biomedical/pharmaceutical field.

Key words-Bioactive, mulberry, rearing, silkworm, value-added

LIST OF JUDGES FOR POSTER PRESENTATION

JUDGES FOR POSTERS-STUDENT CATEGORY

Sl No	Name	Affiliation
1	Dr. M. S Manjunath	Assistant Professor, Department of Biochemistry, JSS College, Ooty road, Mysore
2	Ms. Durgashree A. J	Assistant Professor, Department of Biochemistry, MMK & SDM College, Mysore

JUDGES FOR POSTERS-FACULTY/RESEARCH SCHOLAR CATEGORY

Sl No	Name	Affiliation
1	Dr. Mahadesh Prasad A. J	Professor, Department of Biochemistry, Mahajana PG Centre, Mysore
2	Dr. M. S Kumar	Associate Professor, Department of Biochemistry, Maharanis science college (PG), Mysore

ABSTRACTS OF ORAL PRESENTATION

- **BESTOP01**

**RUTIN-CAFFEIC ACID FLAVONOID BLEND NASAL SPRAY,
A HOPE FOR MIGRAINE RELIEF.**

Mohd Sharique, Dr Mamatha A, Divyashree S
KLE College of Pharmacy, Bengaluru

Migraines worldwide, with debilitating headaches, encounter treatment limitations. Flavonoids, recognized for anti-oxidant and anti-inflammatory properties, offer promise. This research explores a potential migraine solution with a novel nasal spray blending banana and coffee flavonoids. This study outlines a methodology for rutin and caffeic acid extraction via maceration and confirmed using Lead Acetate and Alkaline Reagent Test, followed by preliminary examination. Antioxidant properties were assessed using Potassium Permanganate, stable physiological pH verification. The extracted rutin and caffeic acid showed promising anti-migraine potential, as indicated by their antioxidant properties. The Potassium Permanganate calorimetry and stable physiological pH verification underscored their efficacy, supported by anti-inflammatory activity findings from literature review, suggesting a potential therapeutic role against migraines. Rutin and caffeic acid, extracted via meticulous maceration, exhibited robust antioxidant attributes substantiated using Potassium Permanganate. Preliminary examination, pH stability assessment, and anti-inflammatory literature elucidate their promising pharmacological potential against migraines, warranting further investigation for therapeutic applications. We are exploring a novel migraine treatment using a nasal spray that blends banana and coffee flavonoids. These flavonoids, exhibit promising antioxidant properties. They were also found to be stable at physiological pH, and literature review suggests potential anti-inflammatory effects, which could be beneficial for migraine sufferers. While further investigation is needed, this study indicates that a nasal spray containing these flavonoids might offer a new approach to migraine treatment.

Keywords: Rutin, Caffeic Acid, Nasal, Migraine

• **BESTOP02**

SONICATION: AS A PRETREATMENT APPROACH IN IMPROVING THE YIELD OF *MURRAYA KOENIGII* VOLATILE OIL AND BIO-ATTRIBUTES OF ITS NANO EMULSION.

Shruthi G ¹ , Meghana M ¹ , Madhusudan Kadam ² , Prashant M. Vishwanath ³ ,
Cletus J MD'Souza ⁴ and K. Nandini ^{2*}

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4. Dept. of Biochemistry, Mangalore university, Mangalore

The essential oils found in the *Murraya koenigii* (curry leaves) of the plant not only gives it a pleasant odor but also possess medicinal values. The purpose of this research is to extract the essential oil from the pre-processed curry leaves using hydro-distillation technique and to evaluate its quality and yield. Sonication as a pre-treatment aids in cell wall rupture and the easier release of essential oil. Sonication for 40 minutes followed by hydro-distillation seems to be the optimum condition for the extraction of curry leaf essential oil. The essential oil is then entrapped in a Nano emulsion and tested for its bioefficacy.

Keywords: Sonication, Curry leaf essential oil, Nano emulsion, Antioxidant property, Lipase inhibition.

- **BESTOP03**

AMPLIFYING CURCUMINOID EFFICACY WITH FUNGAL NANOPARTICLES: EX-VITRO APPLICATIONS

Aishwarya Praveen¹, Kiran S. Mawale ², Giridhar Parvatam ^{2*}, Sachin R. Chaudhari ^{1*}

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2 Department of Plant Cell Biotechnology, CSIR-Central Food Technological Research Institute, Mysuru-570020, India.

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The aim of this study is to gain a comprehensive understanding of how turmeric plants respond to fungal-based nanoparticles and to explore their potential for enhancing biochemical and curcuminoid production. Turmeric plants were exposed to elicitors, including S-based zinc oxide nanoparticles (ZnO NPs), *Rhizopus oryzae*-based silver nanoparticles (Ag NPs), and fungal solutions. The elicitors were applied through foliar spraying of the leaves and rhizome dipping, with different concentrations used for each treatment. One month after treatment, the leaves of the plants were collected for biochemical analysis. After a period of 210 days, the turmeric rhizomes were harvested, and the extracted curcuminoids were analyzed using UV-Visible spectrometry and high-performance liquid chromatography. The results of the study revealed that turmeric plants exposed to elicitor treatments exhibited increased levels of photosynthetic pigments, antioxidants, phenolics and flavonoids in the leaves when compared to control plants. Notably, the curcuminoid content in plants subjected to foliar spraying and rhizome dipping treatments showed positive effects compared to control plants. In case of control turmeric rhizomes, the curcuminoid content was 2%, while treated plants exhibited curcuminoid contents in the range of 3-4%. These treatments induced a stress response in the plants, leading to an increase in the production of secondary metabolites, which have practical applications in agriculture and industry. Elicitor-treated turmeric plants exhibited heightened levels of chlorophyll, antioxidants, phenolics, flavonoids, and curcuminoids. In foliar spray treatment, curcuminoid content in treated rhizomes increased significantly, ranging from 2.5% to 4.3%, compared to the control range of 1.5% to 2%.

Keywords: Curcuminoids, elicitors, NPs, fungal culture, antioxidants

• **BESTOP04**

TARGETING NUCLEAR FACTOR ERYTHROID 2-RELATED FACTOR-2 (NRF2) REDUCES THE VIABILITY OF CANCER CELLS BY PROMOTING THE EXPRESSION OF HYDROXYPROSTAGLANDIN DEHYDROGENASE (HPGD)

Zonunsiami Leihang ¹, Prathima C ², Harshitha ¹, SubbaRao V. Tulimilli ¹, Medha Karnik ¹, Preethi G. Anantharaju ¹, SubbaRao V. Madhunapantula ^{1,3*}.

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Nuclear factor erythroid 2-related factor 2 (Nrf2) is one of the key transcription factors known to regulate many hall-mark features of cancer cells, in particular, the cellular defense mechanisms against oxidative stress and inflammation. Nrf2 is controlled by its negative modulator Keap1 in cells. Dysregulation of Nrf2-Keap1 pathway results in high expression of Nrf2 in cancer cells, which further leads to uncontrolled proliferation of cells and chemoresistance. Therefore, there is a need to regulate the expression and activity of Nrf2. One such strategy is to either restore the deregulated Nrf2 for preventing the transformation of normal cells into cancer cells and/or to inhibit unusually active Nrf2 and its target genes in cancer cells. Since Nrf2 is known to control inflammation, and the chronic inflammation is one of the etiological factors for the pathogenesis and aggressive behavior of cancer cells, we have hypothesized that targeted inhibition of Nrf2 in cancer cells reduce viability by promoting the expression of anti-inflammatory proteins. But, to date, the anti-inflammatory proteins, whose expression is regulated by Nrf2 is not identified. Recently, we have observed that the anti-inflammatory and apoptosis inducing HPGD was found to be downregulated in many cancers. Connecting these observations lead to the hypothesis that Nrf2 in cancer cells downregulate HPGD expression through hitherto unidentified mechanisms thereby enhance cancer cells survival and aggressive behavior. Hence, inhibition of Nrf2 is a viable strategy to mitigate cancer cells viability and metastatic spread. In this study we have measured the expression of Nrf2 and HPGD in cancer cell lines representing carcinomas of colon and rectum, and cervix, and tested whether inhibition of Nrf2 using siRNA or pharmacological agents (natural as well as synthetic) retard their growth in vitro. Results of this study showed that transient knockdown of Nrf2 by nucleofection or by Brusatol treatment inhibited Nrf2 and enhanced HPGD and thereby reduced the viability of cells. In conclusion, we report (for the first time) that HPGD is one of the key targets in Nrf2 pathway. Future studies evaluating this signaling mechanism in other cancers are warranted.

Keywords: Nrf2, Keap-1, Brusatol, siRNA, Tetrahydrocarbazoles (THCs)

- **BESTOP05**

**PHYTOCHEMICAL SCREENING AND STUDY OF ANTI-
INFLAMMATORY ACTIVITY OF *LEUCAS ASPERA* USING
COMPUTATIONAL METHODS**

Sandhya^{*1}, Asma Saqib², Ramesh kumar kushwaha³

^{*1}Research Scholar, Department of Biochemistry, Reva University, Bangalore

²Associate Professor, Department of Biochemistry, Maharani Cluster University, Bangalore

³Head of Department, Associate professor, Department of Biochemistry, Reva University, Bangalore

Medicinal Herbs have been discovered and used in traditional medicine practices since prehistoric times. Plants produce hundreds of secondary metabolites. In India, herbs are always acted as a primary source of traditional medicine for the treatment of physiological disorders. *Leucas aspera* commonly known as “THUMBAI” is distributed throughout India from the Himalayas to Ceylon. Medicinally it has been proven that plant possess various pharmacological, phytochemical, and pharmacognostic activities like antifungal, antioxidant, antimicrobial, antinoceptive, antidiabetic, anti-inflammatory and cytotoxic activity. Further studies reveals the presence of various phytochemical constituents such as phenolics, alkaloids, flavonoids, glycosides, steroids, lignins, terpenoids, fatty acids, ursolic acid, beta- sitosterol, diterpene, olenolic acid, tannins, saponins and carbohydrates. These are some of the active major phytochemicals present in these plants. The current study has been taken to isolate and characterize the antidiabetic and anti-inflammatory component of *Leucas aspera* by *in vivo* and *in silico* studies.

Key Words: *Leucas aspera*, anti-inflammatory, steroids, *insilico*, flavonoida

- **BESTOP06**

SCREENING OF BIOACTIVE PHYTOCHEMICALS FROM THE EXTRACTS OF “*TARAXACUM OFFICINALE*” (DANDELION).

AUTHORS: 1. Sukanya. P 2. Tarunisha. K

GUIDE: Dr. Nagesh Babu, Department of Biochemistry Maharani Cluster University, Bangalore.

Plants represent a major source of biologically active molecules and have been explored with medicinal activity in a small fraction of plants. Natural bioactive molecules may cure or prevent many diseases due to phytochemicals such as polyphenols and flavonoids leading to the discovery of natural drugs. Therefore, the present research study aims to investigate the bioactive molecule present in the *Taraxacum officinale* plant. Extraction of bioactive molecules using different solvents like methanol, ethanol, water, acidified methanol, ethyl acetate and chloroform by reflux method. Identification of phytochemicals by qualitative analysis. Results: the phytochemical analysis results revealed in the leaves extract detected the presence of phytochemical such as flavonoids, steroids, saponins, glycosides, phenols, tannins, polyphenols and polysterols. The extracts also showed the presence of anti bacterial activity. The information may be useful for investigating natural drugs due to bioactive molecules present in the *Taraxacum officinale* plant.

- **BESTOP07**

**STUDY OF DRUG LIKELINESS AND PHYTOCHEMICAL
CHEMICAL SCREENING OF *PASSIFLORA* PLANT**

Chandini.S ¹, Anagha Niranjana ¹, Nagesh Babu ², Asma Saqib ²

PG students ¹, Head of the department ², Associate Professor ²,

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The therapeutic properties of plants have been recognized since time immemorial. Natural bioactive molecules may cure or prevent many diseases due to phytochemicals such as polyphenols and flavonoids leading to the discovery of natural drugs. Therefore, the present research study aims to investigate the bioactive molecules present in the *Passiflora subpeltata* plant. Extraction of bioactive molecules by using different solvents like hexane, chloroform, ethyl acetate, acetone and methanol by Thin layer chromatography method. The mobile phase using the solvents hexane and ethyl acetate was used in ratios 70:30 and 40:60. Identification of phytochemicals by qualitative methods and the druggability of the derived phytochemicals. The phytochemical analysis results revealed in the leaves extract detected the presence of phytochemicals such as flavonoids, alkaloids, phenolic compounds, tannins, saponins, terpenoids, cardiac glycosides and carotenoids and also anthocyanins in flower. The extracts also showed the presence of anti-microbial activity. These phytochemicals contribute to nutrition and also make them valuable in traditional medicine. The information may be useful for investigating natural drugs due to bioactive molecules present in the *Passiflora subpeltata* plant. Drug likeliness is studied using Swiss ADMED software.

Keywords: *Passiflora*, antimicrobial, phytochemicals in *passiflora*, qualitative analysis

- **BESTOP08**

**COMPARISON OF ANTI-DIABETIC ACTIVITY OF SYNTHETIC AND
PLANT BASED ARYLTETRALIN DERIVATIVES**

Dr.Chaitramallu* ¹, Dr.Devaraju Kesagodu ², Dr Parvath G R ³

1. Assistant professor, department of chemistry, SDM and MMK Mahila Maha vidyalaya, Mysuru,
2. Department of chemistry, Yuvaraja's college, Mysuru, 3.Department of Botany, Bangalore south university, Bangalore

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Tel.: +91.8050648362. E-mail address:malluchaithra88@gmail.com

The aryltetralin derivatives were extracted from plant and also synthesized using tetralone as a starting material. They were synthesized by replacing 1, 3-methylene dioxy ring with dimethoxy, hydroxy, methyl, chlorine, and hydrogen and methoxy group. The structure of the final compounds was confirmed by ¹ H NMR, ¹³ C NMR, mass spectra and elemental analysis data and the analogues were screened for anti-diabetic activity. It is noteworthy all the synthesized derivatives exhibits good anti-diabetic activity with respect to extracted aryltetralin compound.

LIST OF JUDGES FOR ORAL PRESENTATION

Sl No	Name	Affiliation
1	Dr. P. Vijayaraj	Principal Scientist, Department of Biochemistry CSIR-CFTRI, Mysore
2	Dr. J. R. Kumar	Assistant Professor, Department of Biochemistry, JSSAHER, Mysore

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Inauguration of the event by our inaugurators



Insightful words from our Chief Guest, Prof. T. Tippeswamy



Principal throwing light on the importance of biochemistry



Address by keynote speaker



Keynote address presented by Dr. RP Singh



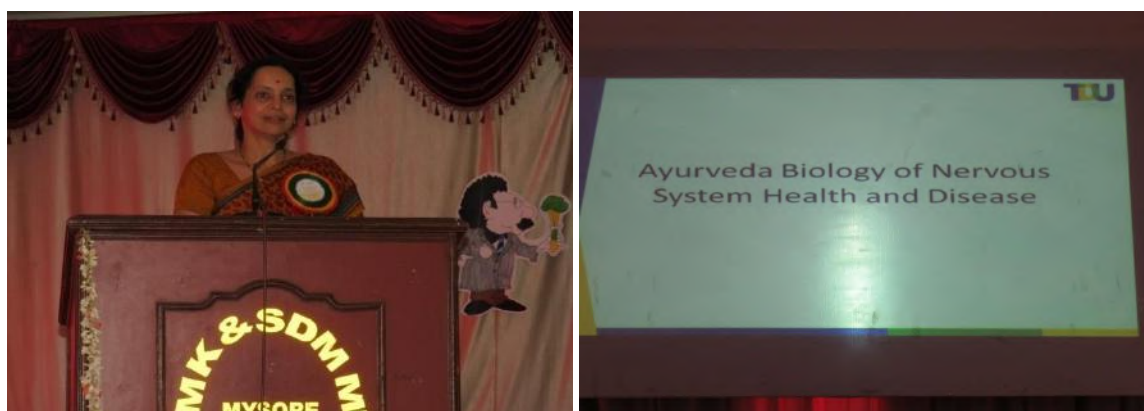
Technical session by Dr. S Thiagarajan



Technical session conducted by Dr.SubbaRao V Madhunapantula



Technical session by Dr. Mamatha A



Technical session presented by Dr. Ashwini Godbole



Technical session by Dr. Saptadipa Paul



Technical session conducted by Dr. Asha Martin



Technical session by Dr. Dharmendra Kumar Khatri



Technical session taken up by Dr. Upendra Nongthomba



Technical session conducted by Dr. Shalini TV



Technical session taken up by Dr. Bibha Choudhary



Technical session by Dr. Girish Chandran



Chairpersons Dr. Raghuram Achar and Dr. Shwetha being felicitated



Dr. Sachin Chaudhari receiving a token of gratitude



Smt. Rajarajeshwari and Smt. Atiya Sameen being felicitated



Chairpersons, Dr. Arunakumar GS and Dr. Mahadesh Rasad AJ given a token of gratitude



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About The Department

The Department of Biochemistry was established in 2005, along with the Departments of Microbiology and Biotechnology. It envisions to provide an excellent and comprehensive education in the field of Biochemistry. Along with skill enhancement programs the students experience the flavor of research and present their work in various scientific forums, and publish their findings. Gene sequences characterized by the students have been uploaded in GenBank, NCBI.

About The Conference

The Two Days National Conference on "Biochemistry- Emerging Science and Technology" with theme on "Present Phytochemical Research and Applications" and aims to expose the latest developments in phytochemistry for the benefit of students, research scholars, faculties, and industrial personnel through the talks and interactions of eminent researchers from prominent institutions in India, through oral / poster presentations. On the whole, phytochemical research and applications have provided interdisciplinary and multidisciplinary facets, becoming relevant to all domains of science and technology. The topics under the theme, therefore, include phytochemical analysis, drug discovery, drug delivery system, chemical synthesis, nanotechnology, phytotherapy, phytochemical- protein interactions, nutraceuticals, molecular biology, bioinformatics, traditional medicine, plant biotechnology, agricultural science, and allied areas. This conference, which is organized through a collaboration between the Department of Biochemistry and IQAC of MMK and SDM MMV, Mysuru, and IBAB, Bengaluru will therefore be a unique experience for all those registered.

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Mysuru, the cultural capital of Karnataka, is a city to create a long lasting memory for every traveler due to its richness of heritage and splendid amalgamation of historical sites and scenic nature. Places recommended to visit include Mysore Palace/ Amba Vilas palace, Chamundeshwari Temple atop Chamundi hill, Krishna Raja Sagar Dam amidst the beautiful Brindavan Garden, Sri Chamarajendra Botanical Zoological Garden, Karanji Lake, among others; not to mention shopping for souvenirs from Government establishments. The city has an efficient transport network to reach these places.

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Registration

Early bird Registration (till 15 th February 2024)	
Participant	Amount (Rupees)
Student (UG/PG)	500
Research scholar	750
Post doctoral fellow/Faculty/Industry	1000
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The abstract should have a maximum of 250 words excluding title, author names, and affiliations.

font : Times New Roman Size 12. The abstract should have the following details

1. Title
2. Authors and affiliations.
3. Underline the presenting author for poster and paper presentations.
4. Indicate the corresponding author and provide contact details of the same
5. Abstract including introduction, methodology, results, discussion, and summary (maximum 250 words only)
6. Keywords- Up to 5 keywords only
7. Last date for submission- March 1st 2024
8. Prior registration is mandatory for abstract submission
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10. Email for sending the abstracts: sdmbestibab@gmail.com
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Abstracts on any theme of phytochemistry will be entertained.

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- No abstracts will be accepted 2nd March, 2024 onwards

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Ms. Durgashree A J

Asst. Professor, Dept of Biotechnology

Students :I, II and III B.Sc BMBt students

Contact: 9738411302, 9986781441

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CHIEF PATRON



Padma Vibhushan

Poojya Dr. D. Veerendra Heggade

President, SDME Society, Ujire

PATRONS



Dr. Satheeshchandra S
Secretary SDME Society ®, Ujire



Director
Prof. HS Subramanya
IBAB, Bangalore

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Prof. Sainath Malligemadu
Principal



Coordinator
Prof. Bibha Choudhary
Professor, Disease Genomics, IBAB



Convenor
Dr. Wethroe Kapfo
Assistant Professor and Head
Dept. of Biochemistry



Co-Convenor
Dr. Chaitanya Pandit
Assistant Professor,
Dept of Biochemistry

STUDENT COORDINATORS

KM. Nishka, Nandini C, Sahana P

REGISTRATION PAYMENT DETAILS

Registration fee may be paid through
NEFT/GPAY/PhonePe/Paytm A/C No.: 73820200000298
A/Cholder : MMK&SDM Mahila Maha Vidyalaya
IFSC Code: BARB0VJLBR ("0" is Zero)
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Link for Registration

<https://forms.gle/eZDJ9JBEGYCYK4RD7>

NOTE:

- Accepted abstract will be published in conference proceedings with ISBN Number
- Certificates will be provided to registered candidates
- Accommodation on prior request up to 29th February 2024 and chargeable
- OOD facility will be provided
- NO TA/DA Provided



MMK & SDM MAHILA MAHA VIDYALAYA

Krishnamurthypuram, Mysuru. 570004

Managed By: SDME Society, Ujire - President: Padma Vibushana Poojya Dr. D.Veerendra Heggade

Vision: Empowerment of women to face the Global Challenges.

(Affiliated to University of Mysore, Mysuru -NAAC Accredited with "B" Grade)



Department of Biochemistry & IQAC and

INSTITUTE OF BIOINFORMATICS AND APPLIED BIOTECHNOLOGY

Biotech Park, Electronics City Phase I, Bengaluru

Cordially invites you to the Inaugural function of

TWO DAYS NATIONAL CONFERENCE

On

Biochemistry- Emerging Science and Technology (BEST)

**Theme: Current Developments in Phytochemical Research and its Transdisciplinary Applications
(14th and 15th March 2024)**

INAUGURATION

Dr Thippeswamy T

Rtd Joint Director

CSRTI, Mysore

Will be the Chief Guest

Dr R P Singh

Chief Scientist

CSIR - CFTRI, Mysore

Will be the Guest of Honor and

Will deliver the key note address

Prof. Sainath Malligemadu

Principal

Will Preside

Venue : College Auditorium

Date: 14.03.2024

Time: 9.30am

In the presence of

Smt Sukrutha K S

IQAC Coordinator

Head & Associate Professor
Dept of Computer Science

Prof. Bibha Choudhary

Coordinator

Professor, Disease Genomics,
IBAB

Smt Bharathi N

Vice Principal

Head & Associate Professor
Dept of Physics

Dr Chaitanya Pandit

Co-Convener

Assistant Professor
Dept of Biochemistry

Dr Wethroe Kapfo

Convener

Head & Assistant Professor
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INSTITUTE OF BIOINFORMATICS AND APPLIED BIOTECHNOLOGY

Biotech Park, Electronics City Phase I, Bengaluru

VALEDICTORY

We cordially invite you to the valedictory function

Chief Guest

Prof. K M Mahadevan

Registrar (Evaluation)

University of Mysore

Will deliver the valedictory address

Prof. Sainath Malligemadu

Principal

Will preside

Venue: College Auditorium

Date: 15.03.2024

Time: 04.30 pm

In the presence of

Smt. Sukrutha K S

IQAC Coordinator

Head & Associate Professor

Dept of Computer Science

Prof. Bibha Choudhary

Coordinator

Professor, Disease Genomics,

IBAB

Smt Bharathi N

Vice Principal

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Dr Wethroe Kapfo

Convener

Head & Assistant Professor

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Ms Durgashree A J

Assistant Professor

Dept of Biotechnology