MOHAMED SATHAK COLLEGE OF ARTS AND SCIENCE
(Affiliated to the University of Madras, Accredited with NAAC)
PG AND RESEARCH DEPARTMENT OF BIOTECHNOLOGY
SHOLINGANALLUR, CHENNAI- 600 119

SOUVENIR OF ABSTRACTS

NATIONAL CONFERENCE ON EMERGING TRENDS IN
MANAGEMENT OF INFECTIOUS DISEASES AND
PUBLIC HEALTH (ETMIDPH 2016)

Organised by
PG AND RESEARCH DEPARTMENT OF BIOTECHNOLOGY

DATE: 4 - 5 FEBRUARY 2016
DEDICATION:
TO
BELOVED Dr. A.P.J. ABDUL KALAM
SOUVENIR OF ABSTRACTS
OF
NATIONAL CONFERENCE ON EMERGING
TRENDS IN MANAGEMENT OF INFECTIOUS
DISEASES AND PUBLIC HEALTH
(ETMIDPH - 2016)

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BIOTECHNOLOGY
Foreword

My hearty congratulations for this souvenir published about “Emerging Trends in Management of Infectious Diseases and Public Health” – ETMIDPH 2016 on the occasion of Silver Jubilee celebrations of Mohamed Sathak College of Arts and Science. This will certainly kindle and illuminate the young sparkling minds. Research abstracts on many areas of Biotechnology have been scrutinized and reviewed with utmost care.

This souvenir covers the current concepts of Biotechnology like nanomedicine, which is the medical application of nanotechnology, Medical Bioinformatics, Diagnosis and various other fields to improve the quality of research in Biotechnology. The information contained in this souvenir will provide a medium for dissemination of knowledge among scientists.

I wish the conference all success.

Chairman
Foreword

I am very happy to release this souvenir on the Silver Jubilee celebrations of Mohamed Sathak College of Arts and Science. The National Conference “Emerging Trends in Management of Infectious Diseases and Public Health” – ETMIDPH 2016, on 4th and 5th February 2016, is a dedicated compilation of many scientists, research scholars and faculty members.

This conference integrates many disciplines of Biotechnology to a central theme of Infectious diseases, which is now a major area of concern in today’s world. Modern and recent techniques like Medical Bioinformatics, Diagnosis, Herbal Biotechnology and Vector control have been included. The Souvenir will definitely have an impact on young scientists for future research.

I wish Department of Biotechnology for their great and successful work.

S.M.H. Sharmila
Secretary
Mohamed Sathak Trust

January 28, 2016
Foreword

I take great pleasure to wish the Department of Biotechnology for the excellent souvenir published on the occasion of National conference on “Emerging Trends in Management of Infectious Diseases and Public Health” – ETMIDPH 2016 in this Silver Jubilee year. This souvenir is packed with a lot of research abstracts which are very useful to scientists, research scholars, faculty members and students. The topics covered in this souvenir reflect the current scenario about management of infectious diseases which are helpful to the society at large.

Professionals from different areas of biological sciences have come together to discuss valuable, useful and informative ideas in the single platform, to arrive and solve many issues related to Biotechnology.

I wish everyone who have accomplished this task a great future.

Director
Foreword

The souvenir published about “Emerging Trends in Management of Infectious Diseases and Public Health” – ETMIDPH 2016 on the occasion of Silver Jubilee celebrations of Mohamed Sathak College of Arts and Science is a tremendous work of the Department of Biotechnology. It contains a lot of research articles which are very useful to the scientific community.

The content deserves great appreciation as it contains articles on Herbal Biotechnology, a thrust area for research, Marine Biotechnology for the development of Marine natural products, and various novel areas with many contributions. This conference will provide an opportunity of intensive learning on many areas of Biotechnology to develop useful products and applications.

I wish everyone who have contributed to this souvenir a grand success.

Dr. Major M. JAILANI
DEAN
MESSAGE

28-01-2016

In commemoration of silver jubilee celebrations of our college, I am delighted to associate with ETIMPDH-2016 conference which brings together academics and industrial experts, researchers and students from around the country.

The conference features 8 sessions of special invited lectures on emerging trends in management of infectious disease and public health.

The conference arrangements were handled with diligence and creativity by the Post Graduate and Research Department of Biotechnology, deserves sincere appreciation for organising this conference in a fantastic manner.

I hope that you will find the conference informative and enjoyable, that you will take the opportunity to share and enrich your knowledge and that will have a great day & stay in our college.

Dr. M. Abul Hasan Sathali
MESSAGE

It is my sincere pleasure to write foreword for this souvenir published on the occasion of Silver Jubilee celebrations of Mohamed Sathak College of Arts and Science which coincides with the Department of Biotechnology conducting National Conference on “Emerging Trends in Management of Infectious Diseases and Public Health” – ETMIDPH 2016.

It contains a concordant view about the infectious diseases and their management, written by scientists, research scholars and faculty members. The deliberations of this conference will help the young scientists to understand the various areas of Biotechnology like Environmental Biotechnology, Herbal Biotechnology, Marine Biotechnology and Medical Bioinformatics, which will help the young scientist to understand and make a more focused effort in undertaking research which will result in alleviating many problems plaguing the world.

My wishes to the staff and students of Biotechnology for their exemplary work.

Dr. R. Meganathan

28-01-2016
I am happy to know that PG & Research Department of Biotechnology is going to organize a national conference on “Emerging trends in management of Infectious diseases and public health ETMIDPH 2016” to be held during February 4 & 5, 2016 in Mohamed Sathak College of Arts and Science at Chennai.

Infectious diseases are disorders caused by bacteria, viruses, fungi or parasites. Many organisms live in and on our bodies. They are normally harmless or even helpful, but under certain conditions, some organisms may cause disease. Some infectious diseases can be passed from person to person.

Infectious diseases are ever growing threat to the well-being of organisms including human. The infectious diseases are likely to increase many-fold by climate change impacts. Due to global warming, human disease, such as malaria, dengue, influenza, diarhoeae, cancer, cholera, bacterial and viral diseases besides malnutrition are increasing. In this regard, the biotechnological and microbiological tools are increasingly helpful in identification and diagnosis of the diseases and in discovery of novel drugs from natural sources to treat the diseases efficiently. It is of importance to manage the infectious diseases most efficiently and to tackle the problem of antibiotic resistance among pathogens through advanced research efforts.

My hearty congratulations are due to the sincere effort of Dr. M. Syed Ali, Head of the Department and his team, in organizing the national conference of current importance to India.

I wish the conference all success

Prof. Dr. K. Kathiresan
Dean & Director
MESSAGE

In the past sixty years, antibiotics have been critical to fight against infectious disease caused by bacteria and other microbes. Antimicrobial chemotherapy has been a leading cause for the dramatic rise of average life expectancy in the 21st century. However, disease causing microbes that have become resistant to antibiotic drug therapy are an increasing public health problem. The main problem is that bacteria and other microbes have developed several ways to resist antibiotics and other antimicrobial drugs. Nowadays, about 70% of the bacteria that cause infections in hospitals are resistant to at least one of the drugs most commonly used for treatments and some organisms are resistant to all approved antibiotics. An alarming increase in resistance of bacteria forced us to find out new antibacterial agents. I understood from the conference title that the Department of Biotechnology, Mohamed Sathak College of Arts and Science, Sholinganallur, Chennai has a long vision to explore novel and drug wonders from natural resources. Before step in to the new venture it is very good effort to organize the National conference by inviting several experts in this research to have a better arena to discuss about the future prosperity of human being by taking effort to explore novel drugs. I congratulate the Organising secretary for choosing this title to hold a conference for saving the excellent creature of human being. I wish the conference for very fruitful deliberations and bring out with novel recommendations and success.

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PG AND RESEARCH DEPARTMENT OF BIOTECHNOLOGY
MOHAMED SATHAK COLLEGE OF ARTS AND SCIENCE
ABOUT THE INSTITUTION

Mohamed Sathak College of Arts and Science (MSCAS) is a Self-financing college affiliated to the University of Madras. It was started in the year 1991 by Mohamed Sathak Trust, a public, charitable and educational body established in 1973 by the Philanthropic Mohamed Sathak family of Kilakarai, Ramanathapuram district. The College has been recognized by UGC and accredited by NAAC with B+ Grade in 2004. At present the college offers 17 Under Graduate programmes, 16 Post graduate programmes, 3 Post Graduate Diploma programmes and 3 Ph.D., programmes. This year MSCAS is celebrating Silver Jubilee.

The College is situated in pleasant surroundings in the midst of inspiring green fields of Rajiv Gandhi Salai (OMR). The enchanting campus has large playgrounds with international standards, separate hostels for Men and women, a branch of IOB, centralized library with all modern facilities and a collection more than 20,710 volumes of books, 71 journals, 181 online journals and periodicals.

ABOUT THE BIOTECHNOLOGY DEPARTMENT

The Department of Biotechnology, established in the year 2001 with M.Sc programme and B.Sc from the year 2005 and upgraded to Research Department (M.Phil) in the year of 2009 and Ph.D from the academic year 2011. An innovative PG Diploma in Gene manipulation technology is also offered by the Department. The Department is actively engaged in research on Bioremediation, Bioprospecting, Nanotechnology, Micropropagation, Enzyme technology, Secondary metabolite production from plant and microbial sources etc., Faculty members have been regularly presenting papers in International conferences and publishing papers in International and National journals with high impact factor. The students of the department are securing University ranks every year.

The Department has signed an Memorandum of Understanding (MoU) with the prestigious premier research and development organisation of our country Indian Institute of Crop Processing Technology (IICPT), Thanjavur under the ministry of Food Processing Industries, Government of India to facilitate the research activities of the Department.

ABOUT THE CONFERENCE

The main objective of the National Seminar on Emerging Trends in Management of Infectious Diseases and Public Health (ETMIDPH 2016) is to explore advances in Biotechnological and Microbiological research in disease management across the Globe. There is an alarm over emerging and re-emerging diseases which has resulted in a number of national and international initiatives to restore and improve surveillance and control of communicable diseases. In response to this, WHO urged all its Member States to strengthen surveillance on infectious diseases in order to promptly identify emerging diseases and also to discover new molecules from marine sources. There is a need of bringing scientists, experts and academicians together on a common platform to share their knowledge, innovative ideas and approach towards tackling the challenges that creep every now and then in a biotechnology-based society. Keeping this in view, the proposed seminar is highlighted with various plenary lectures and poster presentations sessions on thematic areas and it will cover a wide array of topics from the field of current status, prospects and challenges in management of infectious diseases.
PREFACE

Infectious diseases are disorders caused by microorganisms—such as bacteria, viruses, fungi or parasites. Many organisms live in and on our bodies. They are normally harmless or even helpful, but under certain conditions, some organisms may cause disease. Some infectious diseases can be passed from person to person. Infectious diseases, including HIV/AIDS, tuberculosis, malaria, polio, and several neglected tropical diseases (NTDs) are easily spread through personal contact, water, and air, (many NTDs are vector borne transmitted by mosquitoes, flies, etc) and are a particularly significant problem in developing countries. In the past, infectious diseases have been widespread in developing countries and chronic diseases were found primarily in high income countries. However, the global pattern of disease burden is shifting.

Viral Hepatitis, Influenza, and Tuberculosis (TB) remain among the leading causes of illness and death in the United States and account for substantial spending on the related consequences of infection. The infectious disease public health infrastructure, which carries out disease surveillance at the Federal, State, and local levels, is an essential tool in the fight against newly emerging and re-emerging infectious diseases. Other important defenses against infectious diseases include: Proper use of vaccines, Antibiotics, Screening and testing guidelines, scientific improvements in the diagnosis of infectious disease-related health concerns.

Today’s infectious disease challenges are broader and more complex than they were in 1998, when CDC last issued a comprehensive plan to guide national efforts to prevent and control emerging infectious threats. Since then, new microbes or new forms of old ones have been discovered nearly every year, and infectious disease outbreaks triggering international responses have been reported on nearly every continent. While our changing, globalized world has provided increased opportunities for emergence and spread of infectious diseases, it has also brought significant advances toward their control. The ID Framework takes into account many of the scientific, demographic, technological, and economic developments currently modifying efforts to protect public health, challenging us to rethink our processes and strategies and take advantage of new ways to prevent disease and improve health. Emerging infectious diseases may be considered of public health importance based on a variety of criteria, including their designation as a emerging disease. It may be considered of public health importance based on a variety of criteria, including their designation as an emerging disease by international, federal, and/or provincial health authorities; their potential for preventability or public health action; and the seriousness of their impact on the health of the population and potential spread.

With this background, the present conference will definitely help to come to know the advances and various strategies used to tackle the challenge of infectious diseases.
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BIO-PROSPECTING OF MARINE MICROORGANISMS FOR FOOD AND MEDICINE FOR FUTURE PROSPERITY

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Diverse group of marine microorganisms are yet to be explored due to lack of isolation and identification efforts by the marine biologists. The photosynthetic and non photosynthetic microorganism particularly, the associated microorganism from seaweeds, seagrass and sponges have recently been identified as a potential source of organisms for the exploitation of bioactive principles. Technologies available for the extraction of bioactive compounds from marine microorganisms are not the same for marine microorganism as they are all the pure marine forms. Standardisation of methodologies for the isolation and identification of microorganism from marine resources, extraction of bioactive compounds, hurdles for the mass production of bioactive compounds by continuous and batch fermentation process will be discussed. Standardisation of drugs from marine microorganisms for drug development will be discussed. Besides that, a modified method of extraction of herbal salt from the marine salt intruders (mangrove plants) over traditional Indian methods will also be highlighted and their bioactive potential for the drug development will also be discussed. Moreover the bio potential of extremophilic microorganisms such as Halobacteria and solar saltern Cyanobacteria for the treatment of wastes from coconut retting waste water and water discharge from the industries with cyanide and metal contamination and the methods standardized for the mathematical kinetic modeling will be discussed. Moreover recent effort on the “Impact of ocean acidification on the marine Drug Loss”, the current research on the identification of potential drugs for the treatment of Malaria and further the enhancement of some beneficial microorganisms in the open ocean through bio inoculation with the mangrove root associated microorganism will also be discussed in detail at that time of conference.
VECTOR BORNE DISEASES: DEVELOPMENT OF RISK PREDICTION MODELS, USING RS - GIS TECHNOLOGIES

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While on the one side our country is proud of major achievements in science and technology including space and our march towards a knowledge society, it is true on the other side that a large proportion of our population has no access to even safe drinking water, to cite one of the major problems facing the country. The continued practice of open drainage system, indiscriminate disposal of water and industrial effluents into water bodies, and added to this, the increased migration of people from rural areas have resulted in large slums in our urban centres creating an environment unsuitable for healthy living, thus aggravating the spread of water borne diseases. Yet another area of concern to the country is the spread of vector-borne diseases (VBDs) such as malaria, filariasis, Japanese encephalitis and dengue to new areas with mosquitoes, the vectors carrying these diseases breeding in water bodies.

The World Health Organization (WHO) and other international bodies highlight the threat posed by these VBDs to the world’s population in general and to India in particular. It is said that in India alone, over two million cases of VBDs are reported every year. VBDs are spreading to newer areas due to increased risk of transmission fuelled by changing climatic conditions, developmental activities, more specifically the urbanization and industrialization along with demographic changes to name a few possible causes. With advanced knowledge on the principles underlying the disease transmission dynamics, the prediction of areas of health risk is possible based on geo-environmental factors.

Modern tools like Remote Sensing (RS) and Geographical Information Systems (GIS) have now come in handy to address the issues on health risk, and predicting the trend in disease prevalence for undertaking intervention measures. Mosquito vectors thrive on water, vegetation and dwellings (with the availability of vertebrate host). Study of mosquito population dynamics with the change of environmental variables helps in understanding the criticality of those variables. Satellite remote sensing technique along with GIS enable surveillance of environmental conditions for vector development and disease transmission providing information on epidemiology of a region, viz. favourable ecological conditions, habitat types providing breeding sites and their characterization, prevailing disease, past history of epidemics and environment and social and economic factors associated with the epidemics.

Major factors such as climate, landscape and developmental activities responsible for risky conditions are being studied with the help of remotely sensed data analysis. The satellite imagery is being used to explain these variables on a desired spatial and temporal scale, and GIS facilitates acceptance of satellite information, fit it to a vector mosquito model and produce imagery, indicating the areas of risk of transmission of VBDs. Our responsibility in the immediate future should be to provide technical information on these, facilitate formulation of policy statement, preparation of strategic plan, ease advocacy steps at different stages and foster effective linkages with all partners.
INSECTS AND MICROBES: FRIENDS OR FOES?

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Insects (Phylum Arthropoda; Class Insecta) are one of the most diverse groups of living creatures on Earth. First appeared in the late Carboniferous period about 300 million years ago, they have subsequently radiated into a group that now includes about 850,000 to several million species. Some 80–95% of insect species have yet to be collected, named and described, most of them living in the tropics. Even for the 850,000- plus species that have been named, we know little about how they are distributed or what they feed on. Equally diverse are the feeding habits and behaviors exhibited by the group as a whole, and there is virtually no terrestrial food source that escapes exploitation by one or more species. However one property shared by all insects is their common association with microorganisms. The associations range from loose and nonspecific ones, in which the insect merely serves as an inadvertent carrier and distributor of microbes, to much tighter, highly interdependent and remarkably regulated symbiotic interactions, and they include literally all gradations in between these extremes.

Microbes on the other hand still more diversified than insects and the only group on the earth which can surpass the insects in diversity. Microorganisms include prokaryotes (a cell characterized by the lack of a distinct membrane-bound nucleus) such as bacteria and archea and eukaryotes (cells whose chromosomes are contained within a membrane-bound nucleus) such as fungi and protozoa. For over 3.8 billion years, these organisms have formed the foundation of the biosphere, surviving in extremes of heat, cold, radiation, pressure, salt, acidity, and darkness. For 2 billion years microbes were the only forms of life on Earth. During this long history, all of the basic biochemistries of life evolved, and all life forms have developed from these microbial ancestors. With their ability to harvest energy in almost any form, and thrive with or without oxygen, microbes have spent over a billion years making nitrogen available to plants while transforming the atmosphere with oxygen. Microbes are found throughout the entire planetary ecosystem including niches where higher animal species are rare or absent (e.g. the ocean depths, the planet’s subsurface, thermal and polar environments, and oxygen-free environments). This wide ecological range reflects their vast metabolic capabilities that allow different microbial species to inhabit different environments.

Current evidence suggests that perhaps 1.5 million species of fungi exist yet only 5 % are described. For bacteria there may be 300,000 to 1 million species on earth yet only 5000 bacteria are described. A gram of typical soil contains about 1 billion bacteria, but only 1 % of those can be cultured. Hence, most microbes remain to be discovered. Estimates suggest that up to 99% of microbes could not be cultured in a laboratory using conventional methods. Detection and characterization could be achieved only by Culture-independent techniques, including sequencing of the 16S rRNA gene, a relatively recent methodology adopted by microbial taxonomists. Microbes provide the fundamental underpinning of all ecosystems. Without microorganisms, all life on earth would cease to exist.
Insects have a delicate and intricate set of relationships with a microbial world of astonishing diversity. All insect species are known to harbour a rich and complex community of microorganisms in their guts and other body regions. This microbiota participates in many types of interactions ranging from prey & predator and pathogenesis to obligate mutualism. One reason for the microbial diversity is that different groups of insects have different feeding habits; this results in different gut structures and functions and promotes the establishment of different phylotypes. In recent years there has been renewed interest in the understanding of insect gut microorganisms for two reasons. First, this diverse microbiota is a potential source of novel bioactive compounds such as antimalarial, antiviral and antitumour peptides, enzymes and novel metabolites. Second, manipulating these microbial symbionts is thought to be an effective strategy for controlling the spread of pathogens that use insects as hosts.

Early studies revealed the often striking anatomical and behavioral adaptations of insects to harbor the microbial partners in, on, or around them and to ensure transmission of microbial symbionts to their offspring. The distinct microbial symbionts or communities of symbionts were common and often essential in insects that feed on restricted and or relatively refractory food resources. Such diets are often deficient in nutrients such as amino acids (e.g. Plant sap) or vitamins (e.g. Animal blood), and lignocellulosic plant material is not only poor in nitrogenous compounds, vitamins, and sterols, but it is also difficult to digest. Symbiotic microbes are providing such missing nutrients or digestive enzymes to the insect host. However, microbial symbionts are also involved in numerous other aspects of insect biology e.g. Detoxification of plant defensive secretions; production of insect behavior modifying compounds; protection against microbial pathogens and pest; and alteration of host reproductive patterns. Moreover, the microbial biomass itself is consumed by a large group of insects as well as its larval forms as their main source of food. On the other hand, natural population of insects is kept under check by the activities of parasites and predators. Several species of viruses, bacteria, fungi, protozoa and nematodes are known to cause infection in insects. The positive and negative association of insect and microbes will be discussed in detail.
LEPROSY - A NEGLECTED TROPICAL DISEASE

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Leprosy or Hansen’s disease is a Neglected Tropical Disease (NTD) caused by Mycobacterium leprae and is the leading infectious cause of permanent physical disability. A chronic disease, Leprosy continues to be a major challenge to public health in several countries of the world including India. WHO recommended multi drug therapy is an effective intervention strategy against leprosy and its implementation in India through the National Leprosy Eradication Programme (NLEP) has immensely contributed to significant decline in trend of leprosy prevalence and annual new case detection rates (ANCDR). The presentation will encompass important aspects of historical and current research on leprosy in India.
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EBOP1

Biosurfactant production from oil degrading *Pseudomonas aeruginosa* isolated from marine sediment samples

R. Sumathi1*, N.Yogananth2

1Research and Development Centre, Bharathiar University, Coimbatore-641 046,
2PG & Research Department of Biotechnology, Mohamed Sathak College of Arts & Science, Chennai

Oil contaminated marine sediment sample was collected from harbour, Chennai, Tamilnadu and transported to laboratory in sterile polythene bag. The diesel, petrol, kerosene and vegetable oils such as coconut oil, gingly oil, groundnut oil and sunflower oil used in this study were collected from local petrol bunk and oil shop and stored separately in bottles before being added aseptically to the growth medium. Bushnell Haas (BH) liquid medium was used as the enrichment medium with 1 %( v/v) diesel as the sole carbon source to isolate diesel degrading bacteria. Serial dilutions (1/10) from the third enrichment process were plated out into BH agar plates, which were covered with 100 μl of diesel oil and incubated at 30°C for approximately one week. The single colonies were streaked into nutrient agar plates incubated at 30°C overnight and stored at 4°C until further use. The organism was identified morphologically by Gram’s staining, motility test and biochemical tests such as catalase, oxidase, indole, methyl red, voges-proskauer, citrate utilization, Triple Sugar Iron fermentation and Urease test. Drop Collapsing technique were performed by Hemolytic activity, Oil displacement test, Emulsification stability test, CTAB Agar Plate method, Penetration assay, Microtitre plate method. Biosurfactant production in MS medium with diesel, kerosene, petrol and vegetable oil such as coconut oil, ginglyl oil, groundnut oil and sunflower oil as carbon source. Extraction of biosurfactant by acid precipitation. Preliminary characterization by TLC and estimation of rhamnose. Screening of antimicrobial activity of biosurfactant against clinical isolates from diabetic foot ulcer was carried out.

EBOP2

Biodecaffeination by *Brevibacterium helvolum* from caffeine rich soils

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Development of an environmental friendly and cost-effective process for microbial degradation of caffeine to non-toxic compounds are promising and advantageous over conventional decaffeination techniques. The intrinsic tolerance of the isolated strains to the caffeine substrate was measured in a defined and complex medium by using the agar dilution method. Based on the tolerance efficiency, isolate CT11 which showed maximum tolerance to caffeine was selected and identified as *Brevibacterium helvolum* strain according to the cultural and physiochemical characteristics and also 16S rDNA gene sequencing. Growing cells of *Brevibacterium helvolum* were used for the biodecaffeination experiments. The maximum removal of caffeine (89.2%) was reached after a 72 h incubation using 8 g/l of caffeine substrate without further optimization. Our results show that growing cells of *P. Brevibacterium helvolum* can thus be efficiently used as a simple and cheap process for decaffeination. The present survey is the first report on biodecaffeination using *Brevibacterium helvolum*. 
EBOP3

Efficient management strategies of combating fungal infections in copra
(Cocos nucifera)

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Coconut oil or copra oil is used in the country as a cooking fat, hair oil, body oil and industrial oil. It is extracted from the kernel or meat of mature coconuts harvested from the coconut palm (Cocos nucifera) having maximum moisture content of six per cent. Refined coconut oil is mainly used in the manufacture of biscuits, chocolates and other confectionery items, ice cream, pharmaceutical products and costly paints. Coconut copra is susceptible to fungal and insect attacks during storage. Aspergillus and Penicillium sp. infections are commonly reported in copra deterioration. Most farmers who cultivate coconut palms stand at loss during harvest as fungi and insect infect the copra. Hence management strategies are indispensible to eliminate fungal infections and ensure high quality yield of coconut oil. This study was conducted to identify microbial infection in copra during drying and the effect of different treatments on eliminating fungal infection in copra and estimating the free fat content and acid number after those treatments.

EBOP4

Effect of Vermi-compost on the productivity of organic vegetables and role of biopesticides in pest control

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Vermi composting is a cost-effective and eco-friendly process used to treat organic waste. Vermi compost is nutrient rich, with microbiologically-active organic amendment which results from the interactions between earthworms and micro organisms by the breakdown of organic matter. Earthworms convert the waste material into small particles by breaking in the gut and obtain the nutrients from the microbes that harbour upon them. This process increases the rate of degradation of the organic waste matter, modifies the physico-chemical properties of the matter and leads to formation of humus in which unstable waste matter is completely oxidized. Various physico-chemical and biological characteristics of soil are enhanced by amendment with vermin compost as well as it aggregates stability of soil, growth of plants, increases microbial activity and enzyme production. Research have shown that vermin compost has an effective role in improving growth and yield of different field crops, including vegetables, ornamentals, cereals and fruit crops.
Past, Present and Future aspects on potentiality of Earthworm in Curing Diseases

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Earthworms known as friends of farmer, environmental engineers now may also know to be lifesaver in future. In Japan, Korea, China, the traditional way of eating earthworm is practiced. Hence most of them have low risk of heart attack, brain tumor and cancer. Even pregnant women are suggested to take dried earthworms to reduce the developing of eczema to their infants. Since it is inexpensive, non-vectors of disease, it is used in curing diseases. The immune system of earthworm, replete with leukocytes and humoral products that exert credible health benefits. Lumbrijinase is an enzyme produced by their digestive system (Lumbricus rubellas and Eisenia fetida) is known to dissolve fibrin and activates plasminogen. Fibrin allows the blood to clot. If it is produced more than the normal level, it travels to heart, brain causing heart attacks and tumors. Boluke is an oral lumbrijinase enzyme used for anticoagulation. Even earthworm have ability to kill cancer cells by the process of devouring, pulling and chewing leading to death of cancer cells (humoral immunity). Earthworms are also known to treat asthma, lower cholesterol, rheumatic pains, and lowers blood sugar level in diabetes.

Analysis of soil physico-chemical characteristics of organic farming and conventional farming

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With an increasing awareness about the harmful effects of agrochemicals, the demand for technologies and product based on biological processes such as organic farming has been increasing steadily worldwide. The objective of our research was to evaluate the impact of organic and conventional management strategies on grower fields in Chennai on soil physico-chemical characteristics. Physico-chemical properties such as temperature, pH, moisture content, organic matter, macronutrients (Nitrogen, Phosphorous and Potassium), micronutrients (Zinc, Manganese, Iron and Copper), respiration and heavy metals were determined. There wasn’t much difference in the temperature measurement. Soil pH was slightly higher in organic field than control and conventional field. Moisture content was higher in organic field than conventional and control field. The results showed that organic farming practices showed higher organic matter, respiration, micronutrients, macronutrients except potassium which was followed by conventional field and control field. Heavy metals content was higher in conventional fields than the organic fields. Hence organically managed soils establish ecological systems that are able to sustain biological productivity as well as agricultural productivity in the long-term.
Herbal Biotechnology (HB)
Oral Presentation (hbOP)
### Abstracts

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HBOP01

**Cytotoxic effect of *Semecarpus anacardium* nut extract in B16F10 melanoma cell lines**

D. Kishore Ram Kumar, J. Arockia John Paul, B. Karunai Selvi

*Department of Biotechnology, Sri Kaliaswari College, Sivakasi-626 130, Tamil Nadu, India.*

This study was focused on the activity of methanolic extract and the fractions of *S. anacardium* nut against B16F10 melanoma cell lines. Caspase 3 and caspase 9 activities of B16F10 melanoma cell lines were determined. Cell viability assay was performed for B16F10 melanoma cells to determine the effect of crude extract and n-hexane fraction. Hexane fraction treated B16F10 melanoma cell line showed a higher activity for caspase-3 (145 ± 11.5 pg/µg) and caspase-9 (154 ± 5.5 pg/µg) than crude extract. The hexane fraction and the crude methanolic extract showed a comparatively higher cytotoxic effect in the B16F10 melanoma cell lines. B16F10 melanoma cell line DNA treated with *S. anacardium* crude extract and n-hexane fraction showed a marked DNA fragmentation. From this study it is concluded that the *S. anacardium* methanolic extract has a potential anticancer activity against B16F10 melanoma cell lines. Yet further investigation is necessary for identifying its mode of action for the cytotoxic effect.

HBOP02

**In vitro antihelmintic activity of *Butea monosperma* seed extract on *Moneizia expansa* (Rudolphi 1810)**


*PG and Research Department of Zoology, Presidency College, Chennai-05*

*Moneizia expansa* is the causative agent for monieziiasis, parasitic infestation in sheep and other livestock animals. Monieziiasis cause a clinical disease in livestock and produce symptoms of watery diarrhea, dehydration, and decreases of plasma and total blood volume. The control of helminth parasites using synthetic drug products resulted in environment pollution and economy loss to farmers. In the present study to overcome the resistance and advisable effect on the host, plant extract are employed to observe the anthelmintic activity. 20g of pulverized *Butea monosperma* seed was extracted using Soxhlet extraction method. The anthelmintic activity of MeOH extract was studied against *Moneizia expansa* in vitro. GC-MS studies were carried out to find the bioactive compounds responsible for anthelmintic activity. Light and electron microscopic studies were performed to identify the nature of damage caused due to the administration of the extract. Anthelmintic activity of the MeOH extract of *Butea monosperma* was analysed using standard protocol. The results suggest the potential anthelmintic activity of the MeOH extract against *Moneizia expansa*. The GC-MS analysis reveals the presence of milbemycin B, a potent anthelmintic compound. Ultrastructural changes observed in the treated group suggesting the cestodical efficacy of the compound. *Butea monosperma* seeds possess a potential compound with anthelmintic activity, separation and characterization of the compound will pave the way for the new source of drug to treat the parasitic infections.
Screening of *Cleome burmannii* for its secondary metabolites and their antibacterial activity

P.G and Research Department of Zoology, Presidency College, Chennai -05

The genus *Cleome* (Cleomaceae) is represented by 12 species in India and seven species in South India. The plant possesses anthelmintic properties paucity of information is available on this plant. Present study intended to explore the antibacterial efficacy of the leaf extract of this plant. The phytochemical evaluation and antibacterial potency of aqueous, methanol, chloroform, hexane and ethyl acetate extracts of *Cleome burmannii* has been investigated against selected gram positive (*Bacillus subtilis, Enterococcus faecalis* and *Staphylococcus aureus*) and gram negative (*Escherichia coli, Proteus vulgaris, Klebsiella pneumonia*) bacterial strains. The antibacterial activity was determined by disc diffusion method (Kirby-Baur, 1966) The qualitative analysis of phytochemical constituents were carried out using standard procedures to identify the various constituents as described by Edeoga et al., (2005). The preliminary phytochemical screening of the leaves of the *Cleome burmannii* reveals the presence of different secondary metabolites. The methanol extract reveals the presence of more amounts of alkaloids, flavonoids as well as steroids, phenols, cardiacglycosides, tannin, terpenoids, protein and carbohydrate than the other extracts. *Cleome burmannii* methanol extract exhibited good antibacterial activity with the zone of inhibition ranged from 18- 24 mm for *Klebsiella pneumonia*, 16-22 mm for *Proteus vulgaris* and 15- 21 mm for *Escherichia coli* and 12-15 mm for *Bacillus subtilis*, 10-13 mm for *Enterococcus faecalis* and 11-16 mm for *Staphylococcus aureus*. These results were compared with the standard drug chloramphenicol. The results obtained with methanol extract were particularly significant when compared to other extracts as it strongly inhibited the growth of *Klebsiella pneumonia, Proteus vulgaris* and *Escherichia coli*. The overall results of this study provided informative data for the use of *Cleome burmannii* for the treatment of infections associated with microorganisms.
Antimicrobial activity of *Bougainvillea spectabilis* and identification of its active compounds by GC-MS

Valli. S.¹, Jaganathan. S²

*PG & Research Department of Microbiology, Mohamed Sathak College of Arts and science, Sholinganallur, Chennai-119*

Increasing incidence of antibiotic resistance in microorganisms has made scientists and researchers to search for alternative therapy from natural sources. Flowers have a wide range of secondary metabolites of medicinal value offering anti-oxidant, anti-fungal, antibacterial activities. However there had been a limited screening of phytochemicals, antioxidant and antimicrobial from flowers of ornamental plants. Therefore the present work aimed at screening for the presence of secondary metabolites, antioxidant and antimicrobial profiles in ornamental flowers validate and establish their potential as nutraceuticals and pharmaceuticals Samples of blood, urine and wound swab were collected and processed for the isolation of bacterial pathogens Skin scrapings were collected and processed for the isolation of dermatophytes. The sensitivity pattern of the bacterial isolates was assessed by Kirby-Bauer disc diffusion method. *Bougainvillea spectabilis* flowers were collected dried and three different solvent extracts chloroform, ethanol and ethyl acetate were prepared. The antibacterial potency of the three solvent extracts was assayed by the presence or absence of inhibition zones and zone diameters. Phytochemical analysis of the extracts were carried out and the bioactive components were identified by GC MS. It was found that the ethyl acetate extract was active in inhibiting *P. aeruginosa* followed by *S. aureus*, *S. typhi*, *E. coli* and *E. faecalis*. *Trichophyton rubrum* was highly susceptible to chloroform extract followed by *Epidermophyton floccosum* at a concentration of 20mg of the extract. The major phytochemicals in the flowers were saponins, carbohydrates, phlobotannins, flavanoids, terpenoids, and alkaloids. 4 major components were identified from GC-MS study of *Bougainvillea spectabilis* “Ergoline-B-carboxylic 10-methyl-methyl ester, Ascorbic acid 2,6- dihexadecanote, Dasycarpidan-1-methanol acetate(ester), Furanone, dihydro-5-tetradecyl which contributes to the medicinal activity of the plant. Edible flowers from ornamental, cultivated, as well as wild plants have high potential to be explored as natural resources of antimicrobial agent As flower extracts and their essential oils have been proven to possess antimicrobial activities, these can be incorporated into developing new and novel biopolymer-based edible films, especially for fighting against infectious diseases.
HBOP05

Antimicrobial activity of *Oxalis corymbosa* against various microorganisms

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This study has shown that many plants used in traditional medicine are very potent antibacterial activity but bioactive components of the plant may vary. The characterization of the active components of these plants may lead to full utilization by the local folks particularly. Collection was based upon the assortment of fresh and healthy leaves to avoid contamination and for obtaining acceptable results in the antimicrobial assay. Plant extracts was extracted by using a Soxhlet assembly YA for various solvents as mentioned before. Assembly was run for maximum 3 days for each sample at a particular temperature. From the above table it was found that the plant extracts with Ethyl acetate yielded (40%), more followed by Benzene extract (35%), Chloroform extracts (34%), Petroleum extracts (32%), Acetone extracts (30%) yielded least. Appearances of all the plant extracts were observed same i.e., dark green. The degree of activity of acetone extract was determined by measuring the zone of inhibition of growth around the disc. The MIC was determined for acetone extract concentration, which showed the maximum inhibition at minimum concentration against maximum number of bacteria. Highest zone of inhibition at minimum concentration gave the measure of MIC value. The use of plant extracts and phytochemicals, both with known antimicrobial properties, can be of great significance in therapeutic treatments.

HBOP06

Protective role of *Murrya koenigii* extract on clastogenicity induced by X-rays

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The present study involves *M. koenigii* (curry leaf) as antioxidant molecule to check whether *M. koenigii* can be used to prevent oxidation damage caused by X-rays in dose dependent manner. The microscopic preparation of *Allium cepa* root tips grown in water and curry leaf crude extract (aqueous) will be analysed in 40X objective lens to calculate mitotic index (MI= Number of dividing cells *100/total number of cells). Chromosomal aberrations will be scored at prophase, metaphase, anaphase and telophase as fragments, distributed chromosomes, sticky chromatin, anaphase bridge, unequal distribution of chromosomes. Finally statistical analysis is done by calculating the mean values for each group of concentrations and controls for the determination of the significance among the means, Independent samples t-Test was applied (p<0.05). So, this study may be useful to protect humans from varieties of damage caused by X-rays.
HBOP07

Phytochemical Screening and Anti-inflammatory activity of Citrus Limetta peel oil extract

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Medicinal plants offer alternative remedies with incredible opportunities. It can be used to prevent and cure several diseases & disorders. Citrus limetta (Rutaceae) fruit is commonly called as sweet lime a medium sized shrubs or tree which is distributed in all over the world. It has vast medicinal properties. The objective of this study is to analysis the phytoconstituents and to evaluate the anti inflammatory activity of essential oil extracted from citrus limetta peel. The medicinal plant has more chemical components which gives definite physiological actions to human bodies. Significantly high amount of secondary metabolites like steroids, cardio glycoside, phenol, terpenoids and saponins are present in peel oil extract. Inflammation is the trait of several human diseases and disorders like Atherosclerosis and Rheumatoid arthritis. Inhibitions of protein denaturation of extracted oil showed a better ability compared to standard Aspirin. The oil extract exhibited a significant activity of human RBC membrane stabilization. Thus the current studies expose that peel oil extract of citrus limetta fruit has better anti-inflammatory activity.

HBOP08

Phytochemical screening and anticancerous activity of rhizome extract Coleus forskhlii on HEP G2 cell line

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²Research Scholar, Departments of Biotechnology, Sastra University, Thanjavur.

To evaluate, the presence of Photochemicals and anticancerous activities of Coleus forskohlii. The plant material was extracted by using acetone and aqueous solvents. The phytochemical analysis of Coleus forskohlii reveals the presence of tannin, flavonoids, terpenoids, alkaloids, cardiac glycosides, coumarin and steroids. The different acetone extract of Coleus forskohlii were prepared 40mg/ml, 80mg/ml, 120mg/ml, 160mg/ml, and Cyclophosphamide (Positive control) 180 µg/ml and their activity were determined by MTT Assay using Hep G2 Cell line (liver). Among these concentration the maximum anticancerous activity were observed at 120 mg/ml and it determined by using MTT Assay.
Cancer is one of the deadliest diseases in the world. Researchers all over the world are in constant search for new drugs to cure cancer. Traditional medicinal practices have utilized various plant sources for the treatment of cancer. Medicinal scientists all over the world have started exploring the traditional medicinal practices to prepare new formulations to treat cancer. The present study is one such approach. The cytotoxicity of the methanolic and ethanolic extracts of the leaf and stem powder of *Symplocos cochinchinensis* against brine shrimp larvae is done for the first time. The phytopharmacological profile of the two extracts of the leaf and bark extracts of *S.cochinchinensis* is also analysed. This study proves that the methanolic and ethanolic extracts of the leaf of *S.cochinchinensis* are potential candidates for further research.
POSTER PRESENTATION (hbpp)
Anticancer efficacy of Aegle marmilos leaves and leaf callus on Benzo(a)pyrene induced lung cancer in Rattus norvigicus

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Aegle marmilos is an important plant studied for anti-lung cancer activity. Callus was raised from the leaf explants with the help of different growth regulators. Maximum callus biomass was observed from 2mg/L of 2,4-D. Shade dried leaves and in vitro cultured leaf callus were extracted with 8:1 ratio of chloroform and methanol. Then the partially purified compounds were tested for anti-lung cancer activity. Pulmonary cancer was induced by benzo(a)pyrene. After 16 sixteen weeks of treatment the rats were dissected and biochemical parameters, were done. Results revealed that the animals treated with leaf callus extract recovered better from lung cancer than the leaf extract. The significant results were observed from both lung and liver tissues. The plant Aegle marmilos not showed any toxic effect. This study reveals Aegle marmilos is an important and very good natural source for lung cancer preventive medicine.

A medicinal compound against infectious disease - Solasodine production in Solanum surattense burm f. with special reference to fungal elicitors

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The present study was carried out to know the effect of different fungi like Aspergillus niger and Fusarium oxysporum on solasodine production in S.surattense Burm f. Whole plant parts of S.surattense Burm f. were collected and separated into leaf, stem, root, pericarp and seed and shade dried. Plant materials were ground into powder. Solasodine content in different parts like leaf, stem, root pericarp and seed was estimated by using High performance liquid chromatography (HPLC). To evaluate the effect of fungal elicitors on solasodine production, the fungi were added individually and combined into each plant parts. After 240 hrs of incubation period, samples were extracted in methanol and solasodine was estimated by using HPLC. Fungi elicitors may be used to production of solasodine in S.surattense Burm f. has the medicinal value and contain solasodine used to production of steroidal drugs.
HBPP03

Evaluation of phytochemical screening and in vitro bioactivity of leaf and stem extracts of Solanum xanthocarpum Schrad and Wendl. (Solanaceae)

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The present study was carried out for phytochemical screening of principle bioactive compounds and antibacterial activity in Solanum xanthocarpum Schrad and Wendl. Phytochemical analysis revealed the presence of Alkaloids, Flavonoids, Phenols, Phlobatannins, Saponins, Steroid, Tannins and Triterpenoides. The ethanol and acetone extracts were subjected for antibacterial activity against nine bacterial strains using agar well diffusion method. Ethanol extracts of Leaf inhibited Bacillus sp, E. faecalis, K. pneumoniae, Micrococcus sp, P. mirabilis and S. epidermidis. Acetone extracts of stem possessed antimicrobial activity against Bacillus sp, K. pneumonia, Micrococcus sp, P. mirabilis, P.aeruginosa, S. aureus and S. epidermidis. In stem extracts, the ethanol extracts exhibit anti bacterial activity against Bacillus sp, E. coli, K. pneumonia, Micrococcus sp and P. mirabilis. The acetone extracts of stem gave antibacterial activity against Bacillus sp, E. faecalis, E. coli, K. pneumonia, Micrococcus sp, P. mirabilis and S. epidermidis. K. pneumoniae showed significant sensitivity to both leaf and stem extracts. The results suggested that ethanol and acetone extracts of leaf and stem extracts were highly potent against K. pneumoniae and P. mirabilis can be used in treatment of nosocomial infections such as pneumonia, urinary tract infections (UTIs) and bacteremia. Extensive animal studies may be required before investigating the role of Solanum xanthocarpum for treating RTI and UTI.

HBPP04

In vitro studies on effects of plant growth regulators on callus induction from Oxystelma esculentum

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Oxystelma esculentum is a common shrub plant belonging to the family Asclepiadaceae. The juice is used in gleet, gonorrhea, pain in the muscles, cough and given to children as an astringent and jaundice. The present work is based on developing a protocol for the callus induction in Oxystelma esculentum from leaf explants. The sterilized explants were inoculated in MS media containing various concentrations and combination of auxins such as Indole acetic acid (IAA), naphthalene acetic acid (NAA) and 2,4- dichlorophenoxy acetic acid (2, 4-D) and cytokinins such as kinetin and 6 benzyl amino purine (BAP). The highest efficiency of callus formation was observed in the medium containing different concentration of NAA and BAP. In vitro generated callus can be used as a source for the isolation of secondary metabolites and antimicrobials from O. esculentum.
HBPP05

Isolation and Identification of endophytic bacteria from *Phyllanthus amarus* L: Growth optimization and Growth promotion evaluation under *in-vitro* conditions

Shalini.D, Priyanka Deb Barma, Kathireshan.A.K
*Department of Microbiology, VELS University, Chennai-117*

In the present study, 80 morphologically and biochemically distinct bacterial isolates were taken from root of *Phyllanthus amarus* plants (10 nos). Eleven bacterial isolates were found to be positive for phosphate solubilization. Among the eleven strains, two bacterial strains viz., ACMS25 and PUMX4 were found to exhibit higher zone of clearance, solubilization index and higher P solubilization. These two strains were identified as *Acinetobacter sp.* and *Bacillus sp.* based on 16s rDNA sequencing and submitted to Gen bank & obtained Accession numbers (KJ921622.1) and (KJ921623.1) for respective isolates. Higher IAA production (1472.7), Siderophore production (4.64), ACC deaminase activity (3.92) was recorded by PUMX4 and also positive for hydrolitic enzymes. Medium optimization was carried out for both the strains using Response Surface Methodology (RSM). In optimized media at the end of experimental period cultural pH of 3.8, Gluconic acid production of 2.5 mg l⁻¹, and P solubilization of 37.4 was recorded by the strain PUMX4, while the other strain recorded, Cultural pH of 4.2, Gluconic acid production of 32 mg l⁻¹. Under Invitro conditions both the endophytic bacterial isolates showed higher vigor index, germination (%), plant biomass and P content, when compared to the standard strain *Bacillus megaterium* 446.

HBPP06

Review of Medicinal plants from the Holy “Al- Quran”

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The importance of this review is that the details were collected from Holy Quran (the way of life in Islam). The present details were all about medicinal uses of plants and fruits in the scientific way. The curious aim of this study is to bring the essentials of medicinal plants and fruits. Science references said that fruits and vegetables can cure many genetic and metabolic diseases even the modern medicines can do since it has many side effects. The Holy Quran is the central religious text of Islam. Its study contains many aromatic plants, edible plants, valuable fruits and their effects, herbal plants, dry fruits etc with their scientific names. Their importance were said in many Surahs as many lines repeatedly. The information about these varieties of plants and fruits were said by the last messenger of Allah Prophet Mohammed (Sal) to his people in many centuries back. The miraculous information about this fruits and plants mentioned in Holy Quran completely helps to modern technologies. These information should be deeply searched by muslim people and have to be taught to everyone to enlighten the living things life from disease in a smoother manner as said in “Holy Quran”.

HBPP07

*Achyranthes aspera* - A powerful Ayurvedic herb

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*Department of Microbiology, Chennai National Arts and Science College, Avadi, Chennai*

*Achyranthes aspera* is a medicinal herb, commonly called as prickly chaff flower, belongs to Amaranthaceae family. It is a type of weed found in wasteland throughout the world. The whole plant contains a number of alkaloids some of which are ecdysterone, pentatriaontane, 6-Pentatriacontanone, hexatriaontane, achyranthine and betaine. It shows pharmacological activities like anti-inflammatory, antiseptic, spermicidal activity in rats, antipyretic, hypoglycemic, analgesic, anti-allergic, cardiovascular, antiparasitic etc. This plant is highly effective to treat dreadful diseases like kidney disorders, cholera, piles, heavy menstrual flow etc, naturally without side effects in low cost. During scarcity and famine periods in the dry regions of India, *Achyranthes aspera* seeds are used as a food. In this present study, each and every part of *Achyranthes aspera* is dealt about. The target of this presentation is to showcase the importance of *Achyranthes aspera* and make the Indian people to realize the value of Indian herbs and tradition.

HBPP08

Role of lycopene on lipid peroxidation in Erythromycin induced hepatotoxicity

N. Vasugi

*Chennai National College of Arts and Science, Avadi, Chennai*

Liver is a vital organ that has numerous anabolic, catabolic and storage functions. It is located between the absorptive surface of the gastrointestinal tract and drug targets throughout the body and it is central to the metabolism of virtually every foreign substances. Biotransformation is one of the major hepatic functions that detoxify potentially toxic products. Erythromycin, a macrolide antibiotic produced by the *Actinomycetes of Streptomyces erythreus*, has been used extensively in clinical medicine. Erythromycin has been reported to interact with many other drugs, usually by interfering with their hepatic metabolism through the cytochrome P450 enzyme system. Erythromycin estolate is the most hepatotoxic agent accounting for over 90% of reported cases of erythromycin induced liver injury than other erythromycin derivatives. Hepatic injury may be cytotoxic, cholestatic or a mixed type. Lycopene is a carotenoid that is present in tomatoes, inhibited the increase in the activities of marker enzymes in serum thereby offering protection against erythromycin estolate. *Lycopersicon esculentum* commonly known as Tomato, an important constituents of the human diet. Tomato juice is rich in beta –carotene and lycopene are responsible for the protective effect against emphysema of cigarette smoke, a known cause of the lung-destroying disease. The activities of serum AST, ALT, ALP and bilirubin on hepatic injury, was increased in the erythromycin estolate. Tomato juice administration along with erythromycin estolate shows reduction in the activities of serum AST, ALT, ALP and bilirubin. Significant decrease in the marker enzymes could be due to the hepatoprotective action of tomato juice. Administration of tomato juice significantly decreased the levels of TBARS and hydroperoxides, when compared with erythromycin estolate alone treated group. This may be due to the capacity of tomato juice to inhibit lipid peroxidation by scavenging free radicals. SOD, CAT and GPx constitute a mutually supportive team of defense against ROS. SOD is a metalloprotein and is the first enzyme involved in the antioxidant defense by lowering the steady-state levels of O₂⁻. SOD converts superoxide to hydrogen peroxide. Catalase is a heme protein, localised in the peroxysomes or the microperoxysomes. This enzyme prevents the generation of hydroxy radicals and protect the cellular constituents from oxidative damage. Lycopene has been shown to have remarkable effect on increasing tissue thiol status, by interacting with intracellular GSH, and through clearing the free radicals in the presence of GPx.
HBPP09

**Green chemistry- An alternative to incineration**

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*Department of Microbiology, Chennai National Arts and Science College, Avadi, Chennai*

Green chemistry is an area of chemistry and chemical engineering focused on the design of products and processes that minimize the use and generation of hazardous substance. This concept was introduced in 1995. It is otherwise called as sustainable chemistry. In recent years, the management of waste has become a major problem to overcome it. Wastes are of different types obtained from clinical, industrial, commercial, agricultural, domestic, municipal etc. In this present study, the clinical waste management is dealt about. In earlier days, the clinical wastes were disposed by incineration or landfill methods which led to the release of obnoxious gases and contamination of land respectively. The clinical waste causes wide range of infection and disease (Diarrhea, Tuberculosis, Hepatitis, AIDS) and lead to outbreaks in the society which needs immediate attention to manage it. To manage these clinical waste, green chemistry technique is safer to use. In recent years, some of the non-incineration technologies have not only been approved or adopted by regulatory authorities in overseas places, but also made significant advances in their application e.g. steam sterilization, pyrolysis, plasma based system, microwave disinfection etc. The intention of these techniques is to avoid use of chemicals while treating the wastes in a fruitful manner, to save human race and make our planet greener forever.

HBPP10

**Withania somnifera - A boon to mankind**

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Ashwagandha is an important commercial crop, which is considered as an alternative to ginseng. It is a superior class herb with multiple benefits. Fruit, leaves and seeds of the plant have been used for ages in ayurveda. The root has been most frequently used as therapeutic agent and is a constituent of over 200 formulations in ayurveda, siddha and unani medicines. It acts as anti-inflammatory agent for rheumatic arthritis. Therefore, efforts were made for systematic collections and evolution of germplasm from diverse geographical location in India. It also appears to exert the positive influence on the endocrine, cardiopulmonary and central nervous system. It is mainly grown in Madhya Pradesh and Uttar Pradesh in India. The medicinal plant is widely used by the traditional medical practitioners for curing various diseases in their day to day practice. In traditional system of medicine, they use different parts (leaves, stem, flower, root, seeds, bark and even whole plant) of *Withania somnifera*. The chemistry of *Withania somnifera* has been extensively studied and over 35 chemicals are found to act as a anti-inflammatory, anti-tumor, anti-oxidant etc. *Withania somnifera* is also found to prevent the Alzheimer’s disease. In the present study, a light on the importance of *Withania somnifera* is focused.
HBPP11

In Vitro Antihelminthic Activity of Butea monosperma seed extract on Moneizia expansa (Rudolphi 1810)

PG and Research Department of Zoology, Presidency College, Chennai-05

Moneizia expansa is the causative agent for monieziasis, parasitic infestation in sheep and other livestock animals. Moneiziasis cause a clinical disease in livestock and produce symptoms of watery diarrhea, dehydration, and decreases of plasma and total blood volume. The control of helminth parasites using synthetic drug products resulted in environment pollution and economy loss to farmers. In the present study to overcome the resistance and advisable effect on the host, plant extract are employed to observe the antihelmintic activity. 20g of pulverized Butea monosperma seed was extracted using Soxhlet extraction method. The antihelmintic activity of MeOH extract was studied against Moneizia expansa in vitro. GC-MS studies were carried out to find the bioactive compounds responsible for antihelmintic activity. Light and electron microscopic studies were performed to identify the nature of damage caused due to the administration of the extract. Antihelmintic activity of the MeOH extract of Butea monosperma was analysed using standard protocol. The results suggest the potential antihelmintic activity of the MeOH extract against Moneizia expansa. The GC-MS analysis reveals the presence of milbemycin B, a potent antihelmintic compound. Ultrastructural changes observed in the treated group suggesting the cestodicidal efficacy of the compound. Butea monosperma seeds possess a potential compound with antihelmintic activity, separation and characterization of the compound will pave the way for the new source of drug to treat the parasitic infections.

HBPP12

In vitro studies on chlorophyll from Phyllanthus amarus against MCF-7 cell line and Vero cell line

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1Assistant Professor, PG and Research Department of Biotechnology, MSCAS, Sholinganallur, Chennai
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Chlorophyll is the pigment that gives plants and algae their green color. Chlorophyll was first isolated by Joseph and Pierre Joseph in 1817. Chlorophylls are the most abundant pigments in plants. Chlorophyll is a chlorin pigment, which is structurally similar to and produced through the same metabolic pathway as other porphyrin pigments such as heme. Medicinal plants are sources of important therapeutic aids for alleviating human ailments. Phyllanthus amarus is a small, erect annual herb that grows 30 - 40 cm high and are highly distributed in most tropical and subtropical countries. P. amarus primarily contains active constituents including phyllantine and hypophyllantine alkaloids and bioflavonoids like quercetin, reported that their functions are diverse which include provision of strength to plants, Phytochemicals such as tannins and phenol from P. amarus have been associated with some antimicrobial importance (Okolo et al, 2012). Phyllanthus amarus medicinal were collected from the regions of Chennai and chlorophyll were extracted and estimated and characterized by Thin layer chromatography and IR. Further it was determined the Anti-oxidant, Anti-bacterial and Anti-cancer activity on MCF-7 and Vero cell line.
The study was designed to investigate the antihyperglycemic effect of polydatin on streptozotocin-diabetic rats. Diabetes was induced in adult male albino rats of the wistar strain, weighing 170-210g, by administration of streptozotocin (40mg/kg of body weight) intraperitoneally. Diabetic rats showed increase in plasma glucose and glycosylated hemoglobin and a decrease in plasma insulin and hemoglobin. Activities of gluconeogenic enzymes such as glucose 6-phosphatase, fructose 1, 6-bisphosphatase increased and glucokinase, glucose 6-phosphatase dehydrogenase decreased in the liver of diabetic rats along with liver glycogen. Oral administration of Polydatin (150mg/kg of body weight) or glibenclamide (600 mg/kg of body weight) in saline, for 45 days, prevented the above changes and improved towards normal. In against body weight loss of diabetic rats by polydatin was also observed. No significant effect was observed in normal rats treated with polydatin (150mg/kg of body weight). These results showed that polydatin has potential antihyperglycemic activity at a dose of 150mg/kg of body weight in streptozotocin induced diabetic rats.
Marine Biotechnology (mb)
Oral Presentation
(mbop)
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Determination of probiotic bacteria from intestine of Parrot fishes and its Bio-encapsulation efficacy in *Artidea salina* | MBPP2       |
MBOP1

16s rRNA sequence studies of Marine Vibrio alginolyticus

K. Arunagiri 1* and T. Sivakumar 2

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2 Department of Microbiology, Kanchi Shri Krishna College of Arts and Science, Kilambadi, Krishnapuram, Kancheepuram -631 551

Vibrio is a genus of bacteria indigenous to the aquatic environment also contaminant of raw or under cooked seafood. Some bacterial species of this genus are now considered as emerging pathogens, involved in food-borne infections in humans. The chromosomal DNA was isolated from the fresh liquid cultures of Vibrio sp (V.alginolyticus) by the method. In this study, the Vibrio species were isolated from fishes and crustaceans procured from local market in Kanchipuram District. Cultural, biochemical and other phenotypic characteristics of Vibrio species studied in previous studies. Among the Vibrio species, V.alginolyticus was found as most prevalence pathogens in all collected sea foods. In this present study, the identified V.alginolyticus strains were confirmed by molecular studies. The PCR amplification of 16S ribosomal RNA gene of the bacterial strains were carried out in Thermal cycler (Gene AMP 2720 – Applied Biosystem). 16s rRNA gene sequencing was carried out using Beckman Coulter CEQ 8000 auto analyzer from the 16S rRNA products. The 16s rRNA sequences of the strains were computationally analysed by BLAST – Basic Local Alignment Search Tool (http://www.ncbi.nlm.nih.gov/blast/).

MBOP2

Diversity of Endophytic fungi from halophytes of East coast of Bay of Bengal, Tamil Nadu

K. Gopi 1, R. Muthezhilan 2, M. Jayaprakashvel 1*

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Fungi shown peculiar characteristics compared to other group of organisms. Considering this position fungi are classified as a separate kingdom which contains a diverse group of organisms. Due to their microscopic size, fungi are often ignored and their role in nature and human life underestimated. Fungi have adapted to diverse environments that have enabled these organisms to succeed in almost every habitat on the globe. Endophytic fungi are defined as microbes capable of living with the host plant tissue without causing any symptoms. Halophytes can tolerate high salinity levels, in some cases even higher than those in seawater. In this study, halophytic plant samples were collected bimonthly throughout the year (January 2013 to December 2013) from the Chennai Coastal area, Kelambakkam and Parandipettai saltmarsh area. Totally twelve halophytic plants were collected such as Canavalia rosea, Ipomoea pescaprae, Spinifex littoreus, Pedaliomum murex, Suueda maritima, Suueda monoica, Sesuvium portulacastrum L, Salicornia brachiata, Lauansea sarmentosa, Sesuvium portulacastrum L, Avicennia marina, Solicornia europaea and Heliotropium curassavicum. From the collected plant's leaves, stems, root segments were surface sterilized and they were used for isolation of endophytic fungi in PDA. Totally 540 segments were plated per collection and they were incubated for 5 days at room temperature after the incubation period, the fungus is identified up to the species level using the standard manual. From twenty four sample collection, altogether 121 species belonging to 61 genera of endophytic fungi were obtained. Among these, five genera from Zycomycota, eleven genera were from ascomycota, 40 genera from hypomycetes and 6 genera from coelomycetes were obtained and recorded.
MBOP3

ISOLATION AND SCREENING OF Vibrio spp. FROM CULTURED AND WILD Penaeus monodon (Fab) ALONG THE SOUTH EAST COAST OF INDIA

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The Vibrio infected Penaeus monodon showing necrosis and black spots on the carapace and tergum were collected along the South East Coast of Bay of Bengal. The study revealed that Nagoore coastal area showed the highest percentage of infected sample (58.33%). Lowest percentage was recorded at Tharangampadi. The survey showed the presence of 477 isolates of Vibrio belonging to 9 species which include V. alginolyticus, V. cholerae, V. diazotrophicus, V. fluvialis, V. furnissi, V. harveyi (NL&L) V. mimicus, and V. parahaemolyticus. Among the isolates V.parahaemolyticus was found to be the predominant flora, constituted about 23.1%. Among the pond survey, Mallipattinum region showed highest percentage. The pond survey revealed the presence of 110 isolates of Vibrio belonging to 19 species. Among the isolates V. harveyi was found to be the predominant flora. The survey revealed that in the coastal system V. parahaemolyticus was found to be the predominant flora but in the culture system V. harveyi was found to be the predominant flora.

MBOP4

Potential of plant growth promoting Rhizobacteria isolated from halophytes in Tomato plants

P. Nirmala, P. Deepthy
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Worldwide, salinity is one of the most severe abiotic stresses that limit crop growth and productivity. Selection of microbial isolates from naturally stressed environments or rhizosphere are considered as possible measures of counteracting the adverse effects of salinity. Totally fifteen bacterial isolates were collected from the rhizosphere soils of halophytes collected from the Thiruvanmiyur beach. Based on the in vitro analysis of Plant growth promoting traits, the six potential bacterial isolates were selected for pot assay and were found to be Bacillus sp 1, Bacillus sp 4, Vibrio sp 2, Vibrio sp 4, Staphylococcus sp and Pseudomonas sp 2. In the pot assay, Tomato plants were selected to determine the ability of salt tolerant PGPR to promote plant growth under salt stress at different NaCl (50mM, 100mM, 200mM) concentration added on 3rd day, 15th day and 30th day of germination respectively. Plants without PGPR and NaCl and plants with PGPR and without NaCl could survive until 45 days of study. All the plants inoculated with potential salt tolerant PGPR isolates could tolerate 50mM salt stress except those subjected to salt stress in the without PGPR. Only two plants are able to survive after 45 days of study. Bacillus sp 1 and Vibrio sp 2 are efficient for the tested salt tolerant traits under saline conditions.
Herbo-mineral salts from Marine halophytes against human bacterial pathogens

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***School of Marine Sciences, Department of Marine Biology, Alagappa University, Thondi Campus, Thondi-623409

Marine halophytes are also proven to have rich source of structurally diverse bioactive compounds with valuable pharmaceutical potential. In the present study antibacterial activity was carried out with herbo mineral salts of marine halophyte (Sesuvium portulacastrum, Salicornia brachiata, Suaeda maritima and Suaeda monoica) against antibiotic resistant (ABR) bacterial pathogens, Urinary tract infectious pathogens and human eye pathogens. Antibiotic sensitivity test was performed by agar well diffusion method. Of the selected salt extracts, the Sesuvium portulacastrum has potential antibacterial property. The results of the present study will open a new way for the development of alternative therapeutic sources for several infectious diseases.

Novel therapeutic perspective from Pichavaram Mangroves for drug discovery

Gunasundari P, Janani GK, Subitha D, Barathkumar TR, Sunitha P

Prof. Dhanapalan College of Arts and Science, Kelambakkam

Marine floras, such as mangroves are extremely important oceanic resources. Extracts and chemicals from Rhizophora mucormata, R. apiculata and R. annamalaiiana were utilized on a traditional basis in folkloric medicine as preventive and therapeutic agents for mankind. Salinity stress in mangroves under natural selection has provided secondary metabolites as self-defensive agent. Solvent extraction of novel natural chemical compounds from mangroves, in addition to those already known to the pharmacopoeia of the people is in its infancy. An evolutionary background knowledge of the biological activities and/or chemical constituents of plants is desirable, not only for the discovery of new therapeutic agents, but because such information may be of value in disclosing practical procedures of already known biologically active compounds. Supercritical fluid extraction (SFE) is an alternative to solvent extraction has gained wide acceptance in recent years as an alternative to conventional solvent extraction for separation of bioactive compounds. Contribution of Zebra fishes (Danio rerio) as an experimental model for therapeutic testing of secondary metabolites is booming for many widespread diseases. Hence, this paper reviews the works so far conducted on this aspect with a view to provide a baseline information for promoting the novel preventive and therapeutic strategies in the present context to challenge the dreadful human disease.
Poster Presentation (mbpp)
Conservation of Marine Aquatic Fauna- Coastal Impact and Threats

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Shri Nehru Maha Vidyalaya college of Arts and Science, Coimbatore 641 050
Email: rubanbiotechz@gmail.com

Over 70% of the Earth’s surface is glazed with glistening ocean. India has 8,118 kilometers of marine coastline, 3,827 fishing villages and 1,914 traditional fish landing centers were present. We depend on the seas for our survival. They are also essential for our economic prosperity, social well-being and quality of life. Fishing in India is a major industry in its coastal states, employing over 14 million people. The intensity of human pressure on marine system has led to a push for stronger marine conservation efforts. Marine reserves have become one highly advocated form of marine conservation. Overfishing from overexploitation of fisheries by subsistence, artisanal, recreational and commercial fishing results in the mortality of target and non-target species. We need to find better ways of managing it. We outline conditions under which reserves are likely to be effective, provide some guidelines for increasing their conservation potential and suggest some research priorities to fill critical information gaps.

Determination of probiotic bacteria from intestine of Parrot fishes and its Bio-encapsulation efficacy in Artemia salina

M. Akila, N. Yogananth
PG and Research Department of Biotechnology, Mohamed Sathak college of Arts and science, Sholinganallur, Chennai

Shrimp and fish culture is grown as a million dollar industry and rearing of shrimps and fish in culture system becomes popularized throughout the world especially in Southeast Asia. The current trend in aquaculture is towards increased intensification whereby, provision of feeds becomes necessary and success depends significantly on the availability of well balanced nutritionally complete and cost effective compounded feeds. Probiotics are used to improve water quality and control of bacterial infections. The need for increased disease resistance, growth of aquatic organisms, and feed efficiency has brought about the use of probiotics in aquaculture practices. The objectives of the present study were to isolate the probiotic from marine fish gut. Study reveals the antagonistic effect against to the pathogen Aeromonas hydrophila and Vibrio harvey. The result revealed that the gut loading and evacuation time of Artemia Salina varied according to the oils and probiotics used for the experiments. The main criteria of being probiotic strains were determined and tested its encapsulation efficacy with Artemia. The result revealed that the gut loading and evacuation time of Artemia Salina varied according to the oils and probiotics used for the experiments.
Medical Bioinformatics (bi)
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<td>2.</td>
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<td>Kalidoss A, Jagatheeswari R, Govindarajan M, Selvakumar D A computational exploration of Green Tea Polyphenol (-)-Epigallocatechin-3-Gallate targeting intercellular antioxidant Glutathione</td>
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Oral Presentation (biop)
Computational Analysis and Designing of Potential Inhibitors against Alpha-Bungarotoxin N3 Using QSAR based Virtual Screening Approach

Annie Absala Trace, Mahendran Radha*, Urja Haresh Shah, Jeyabaskar Suganya, Agnal Vincent Paul

Department of Bioinformatics, School of Life Science, Vels University, Chennai-600 117

*E-mail: mahenradha@gmail.com

Alpha-bungarotoxin N3 is an effective neurotoxin isolated from *Bungarus candidus* which belongs to venomous snake species. Alpha-bungarotoxin N3 usually leads to peripheral paralysis by blocking nicotinic acetylcholine receptor (nAChRs) at the postsynaptic site in the brain. In the current study three dimensional structure of Alpha-bungarotoxin N3 (P85140) was predicted using modeler 9v 12. The antitoxic compounds from plants which possess potential activity against Alpha-bungarotoxin N3 were selected by performing a thorough literature Search. After the identification of antivenomic plant compounds, QSAR studies were performed with them by using software BUILD QSAR. Finally the compounds which strictly adhere to QSAR studies were selected and Molecular docking was performed against Alpha-bungarotoxin N3 (P85140) using Autodock 4.0. Finally, from this study three natural plant compounds which possess complete level of inhibition against the Alpha-bungarotoxin N3 were identified. Thus this study can serve as a potential insight to identify new antitoxic drugs against Alpha-bungarotoxin N3.

Molecular approaches to screen Extended Spectrum Beta Lactamase (ESBL) Production in Urinary Isolates of Enterobacteriaceae

Saroj Kumar Sah, S. Hemalatha

School of Life Sciences, B.S. Abdur Rahman University, Chennai – 600048

In 19th and 20th century the antibiotics were a powerful antimicrobial agent to control pathogenic microbes including bacterial infectious disease such as Urinary tract infection (UTI), Bacteremia, pneumonia, Septicemia, diarrhea etc. They also cause genital tract infections particularly vaginitis, therefore that detection of their antibiotic resistance is a significant approach to control these infections. One essential mechanism of resistance is ESBL production by Enterobacteriaceae particularly *E.coli* and *Klebsiella* spp. The aim of this study was to investigate the prevalence of ESBL and MBL encoding genes among Enterobacteriaceae isolates. In this cross sectional study, 58 strains of *E.coli*, *Klebsiella* sp., *Pseudomonas aeruginosa*, *Citrobacter* were isolated from renal samples. The production of ESBLs and MBLs are detected by double disc synergy test (DDST) and confirmed by molecular analysis of expression of genes encoding ESBL and MBL production. Based on the resistance and susceptibility of bacterial species towards antibiotics they are classified according to CLSI guidelines.
BIOP3

Molecular Modeling and Designing of Inhibitors against SNCG gene of Breast Cancer

Urja Haresh Shah, Annie Absala Trace, Mahendran Radha*, Jeyabaskar Suganya, Agnal Vincent Paul

Department of Bioinformatics, School of Life Science, Vels University, Chennai-600 117

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Gamma-synuclein protein is a neuronal protein involvement in the development of Cancer and neurodegenerative diseases. The protein Gamma-synuclein (Breast cancer-specific gene 1 protein) (Uniprot ID: O76070) codes for a gene called SNCG, mutations in this gene have involved in breast tumor development. Hence in the current study we have made an attempt to model and design inhibitors against the target protein Gamma-synuclein. The three dimensional structure of target protein was predicted using Modeler 9v12. Few anticancer compounds from various plants were selected by performing a thorough literature Search. These compounds were analyzed for drug likeliness based on the Lipinski’s rule of five. Finally the compounds which strictly adhere to Lipinski’s rule were selected and Molecular docking was performed against target protein using Argus lab Software. Further Invitro studies of the target protein could lead to the development of new drug against Breast Cancer.

BIOP4

Molecular docking studies on the essential oil of Mentha piperita L. against ESBL producing E.coli

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Essential oils have been used medically in history for various therapeutic purposes. Escherichia coli, a member of the Enterobacteriaceae family of bacteria, is a frequent cause of life-threatening bloodstream infections and other common infections, such as urinary tract infections, cholecystitis, bacteremia, cholangitis, traveler's diarrhoea, and other clinical infections such as neonatal meningitis and pneumonia. The emergence of multidrug resistance in E. coli is also becoming a global concern. In Eastern and Western traditional medicine, Mentha piperita essential oil has been used as an antiseptic and has found to have antibacterial activity. In the present study, the essential oil of Mentha piperita was examined against ESBL producing E.coli. Mentha piperita showed maximum inhibition at a concentration of 20µl/ml with a MIC as low as 0.03µl/ml. Bioinformatics studies using molecular docking on mint oil was done. The software which was used to construct this molecular study was GOLD where the most bioactive component of mint oil was studied against beta lactamase producing TEM gene of E.coli. The study confirms that the active component of Mentha piperita L.can be used as an effective drug candidate especially against multidrug resistant ESBL producing E.coli.
Poster Presentation (bipp)
Abstracts

BIPP1

A computational exploration of Green Tea Polyphenol (-) - Epigallocatechin -3 - Gallate targeting intercellular antioxidant Glutathione

Kalidoss A1*, Jagatheeswari R2, Govindarajan M2, Selvakumar D1

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2Department of Zoology, Annamalai University, Annamalainagar - 608002, Tamil Nadu
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Epigallocatechin 3-Gallate (EGCG) is the ester of Epigallocatechin and Gallic acid which were the main components of Green tea, Camellia sinensis (L.) Kuntze. EGCG possesses much stronger anti-oxidant activities and plays an important role in preventing cancer and cardiovascular diseases. In the present study an in-silico reverse pharmacore approach of Epigallocatechin 3-Gallate on protein targets for drug metabolism was carried out using Pharmmapper, DAVID functional analysis and STRING protein interaction. The results indicate that Epigallocatechin 3-Gallate targets Glutathione metabolism. Glutathione metabolism is primarily regulated by gamma-glutamylcysteine synthetase activity, cysteine availability, and GSH feedback inhibition. The ligand clearly binds and affects the metabolic pathway of GSH which were main causative agents of many cancers. By studying about the drug targets, Epigallocatechin 3-Gallate controls the Glutathione synthesis. The natural compound helps in control of many disease causing agents. The study proved that reverse pharmacophore based predication of pharmacological efficacy of natural molecules is one of the powerful way in computational pharmacology.
MICROBIAL/MOLECULAR/IMMUNOLOGICAL DIAGNOSIS (MMI)
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<td>2</td>
<td>Sandya Yadav, Jayalakshmi, Shruthi Deshpande and Sekar K V Screening of <em>Candida</em> from Urine and Tracheal samples</td>
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Production of Polyhydroxyalkanoates from microorganism

Sahiti K, Sheryl Ann Philip and Antony V Samrot
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Polyhydroxyalkanoates (PHA) are intracellular degradable biopolymers that are accumulated in the cytoplasm of a microorganism in the presence of an unfavourable environment. They form granular substances that are polymeric in nature. Their chemical structure is similar to synthetic polymeric compounds thus it can replace petroleum derived plastics. In this study Pseudomonas aruginosa and Enterobacter sp were isolated from the diary waste. These organisms were used in the production of PHA. They were further optimized using different carbon sources, temperature and pH conditions. These polymers were analysed for their monomer units using different analytical techniques like FTIR and GC-MS. Then PHA associated proteins (Phasins) control the formation of PHA and they were isolated and analysed.

Screening of Candida from Urine and Tracheal samples

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The study focused on determining the spectrum of candida isolates in urine and tracheal specimens among the out patients and in patients. The study was conducted over a period of 2 months from 16th January to 15th March 2015. A total 355 samples were processed of which 58 samples shown growth of candida. Gram staining was convenient to identify the organisms by differentiating as gram positive or gram negative. The specimens was processed using standard microbiological techniques. Candida isolates were identified with SDA, SDB, germ tube test, chlamydospore test, sugar fermentation test. Samples were subjected for candida species identification. Among them 11 C.tropicalis, 5 C.albicans, 3 C.krusei, 2 C.pseudotropicalis are found. C.tropicalis is predominant species separated in them. Females are more affected than males and age group between 21-40 years was affected more. Candidiasis should be treated by using antifungal drugs to reduce opportunistic infection with candida species among immunosuppressed patient. Our study demonstrated that the fungal infection were associated with increased morbidity and mortality in patients. Hence active surveillance should be there to control and diagnose fungal infection early. So efforts should be made to develop a framework for early detection and appropriate management of life threatening fungal infection in patients. Identification of yeasts isolated from clinical specimens up to species level has become increasingly important for the diagnostic laboratory as the changing epidemiology of species distribution and susceptibility of candida in order to optimize therapy.
Differential expression profile analysis of antifungal gene in *Beauvaria bassiana* infected silkworm *Bombyx mori*

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White muscardine caused by *Beauvaria bassiana*, an entomopathogenic fungus is common and widely prevalent in *Bombyx mori* especially during the rainy and winter seasons. Reports indicate that several antifungal genes are induced during early response against *B. bassiana* infection in *B. mori*. In this backdrop, a study was carried out to analyze variations in expression of antifungal genes in the integument of *B. bassiana* infected and uninfected diverse *B. mori* breeds viz. the multivoltine breed Nistari and bivoltine breed CSR2 as well as fungal multiplication trend through semi-quantitative polymerase chain reaction (PCR) and real time PCR (qPCR). The PCR based expression profile analysis of antifungal genes viz., Neutral Lipase, Chemosensory protein 11 and Sex specific storage protein SP1 precursor in multivoltine and bivoltine *B. mori* breeds indicated overall higher expression of the genes in multivoltine breeds compared to bivoltine. This result provided insight into the inherent variations in antifungal gene expressions in these breeds which are in tandem with their traits of resistance and susceptibility, respectively to diseases. A comparison of the expression of antifungal genes viz. Glucose transporter, Troponin C, Ecdysone-induced protein 63F1, Amidase and Bm8 interacting protein 2d-4 precursor between Nistari and CSR2 through qPCR analysis revealed higher expression levels of all the genes in Nistari compared to CSR2. The higher gene expression levels indicates higher activation of immune cells in Nistari. The qPCR based analysis of *B. bassiana* multiplication trend in CSR2 and Nistari revealed higher trend in CSR2 compared to Nistari. Since multivoltine breeds are reported to be resistant to pathogens and bivoltine susceptible, the higher trend of fungal multiplication observed in CSR2 is in concurrence with the same. Thus the resistant nature has enabled Nistari breed to restrict the formation of fungal appressorium and in turn entry of fungal spores at the initial stage itself. The outcome of the study has revealed definite variations in the expression profiles of antifungal genes in *B. bassiana* infected diverse *B. mori* silkworm breeds viz. CSR2 and Nistari. These expression profile variations were correlated to the inherent trait of disease resistance in Nistari and susceptibility in CSR2 breeds. Based on the information generated from the study, future studies can aim to find out the feasibility of expanding the gene expression variations as markers for resistance/susceptibility to *B. bassiana*.
New Delhi Metallo beta lactamase producing *Klebsiella* isolates and its *in-vitro* susceptibility to combination antibiotics

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Beta lactam antibiotic are those contain beta-lactam nucleus in their molecular structure. Bacteria often develop beta lactam antibiotics in order to synthesis beta lactamase, an enzyme which attack the beta lactam ring. To overcome this, resistant beta lactam antibiotics were given with beta lactamase inhibitors such as clavulanic acid. Carbapenem, is a broad class of beta lactam antibiotic. The structure renders them highly resistant to most beta lactamases. Carbapenem are antibiotics which developed from theinamycin, a derived product of *Streptomyces cattleya*. Recently has been raised over the spread of drug resistance to carbapenem antibiotics among those coliforms due to production of NDM-1. NDM-1 is a newly described metallo beta lactamase, which comes under class B metallo beta lactamase. NDM-1 first detected in 2008 in a single isolates of klebsiella pneumonia and Eschericha coli, both received from a patient departed to Sweden after treatment in New Delhi hospital. NDM-1 producers were mainly described in enterobacterichia, were *Klebsiella pneumoniae* and *Escherichia coli* are the most often descibed species. From the study, NDM producing *Klebsiella* were isolated from various human clinical samples like blood, pus, tissue, sputum, bronchial wash etc. Modified Hodge test was then performed among the isolated strains for the conformation of carbapenemase production. And also Imipenem-EDTA disc synergy test for the detection of NDM producers. Further study was conducted with positive NDM producers. To check the in-vitro susceptibility towards combination antibiotics for NDM producing species, Disc synergy test was performed. In this test three different antibiotic combination of Fosfomycin with Amikacin, Rifampicin and Cotrimaxol were used to check its synergistic effect. The combination of fosfomycin and Amikacin shows a viable option for the treatment of NDM producing *klebsiella* isolates while other two combination shows least synergistic effect; also disc synergy test seems to be capable of detecting the synergistic effect between antibiotics at *in-vitro* level.
**MMIOP5**

**Diversity of endophytic fungi from halophyles of east coast of Bay of Bengal, Tamil Nadu**

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Fungi shown peculiar characteristics compared to other group of organisms. Considering this position fungi are classified as a separate kingdom which contains a diverse group of organisms. Due to their microscopic size, fungi are often ignored and their role in nature and human life underestimated. Fungi have adapted to diverse environments that have enabled these organisms to succeed in almost every habitat on the globe. Endophytic fungi are defined as microbes capable of living with the host plant tissue without causing any symptoms. Halophytes can tolerate high salinity levels, in some cases even higher than those in seawater. In this study, halophytic plant samples were collected bimonthly throughout the year (January 2013 to December 2013) from the Chennai Coastal area, Kelambakkam and Parandipettai saltmarsh area. Totally twelve halophytic plants were collected such as *Canavalia rosea, Ipomoea pescaprae, Spinifex littoreus, Pedalium murex, Suaeda maritima, Suaeda monoica, Sesuviun portulacastrum L, Salicornia brachiata, Launaea sarmentosa, Sesuvium portulacastrum L, Avicennia marina, Solicornia europaea* and *Heliotropium curassavicium*. From the collected plant's leaves, stems, root segments were surface sterilized and they were used for isolation of endophytic fungi in PDA. Totally 540 segments were plated per collection and they were incubated for 5 days at room temperature after the incubation period, the fungus is identified up to the species level using the standard manual. From twenty four sample collection, altogether 121 species belonging to 61 genera of endophytic fungi were obtained. Among these, five genera from Zycomycota, eleven genera were from ascomycota, 40 genera from hypomyces and 6 genera from coelomycetes were obtained and recorded.
Determination of Fungal quality of marketed Honey Samples

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Honey is widely used as medicine and as a nutritional source. The anti-oxidant nature of honey favours its utility in nutraceuticals. Honey is also widely used as a medicine in Indian Medical System such as Siddha and Ayurveda. However, the quality of honey is a concern, as microorganisms are found to affect the health of the consumers as well as the quality and shelf life. Thus, the knowledge on the presence of microbes and their diversity is necessary. Though, the bacteria and the presence of yeasts are widely studied, the same related to the presence of fungi is scarce. Hence the present study is conducted. Altogether, 33 honey samples were procured from the markets of Chennai. The samples were serially diluted to $10^{-2}$ and 1 ml of the diluted sample was plated with Potato Dextrose Agar and the plates were maintained in triplicates. A total of 813 colonies belonging to 20 species were isolated. Aspergillus flavus was the most dominant species isolated, followed by Aspergillus niger and Penicillium oxalicum. The results showed that few of the samples were highly contaminated and failed to comply with the industrial standards.
Isolation and identification of L-Glutaminase producing Fungi from Marine sediments

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\textsuperscript{2}Department of Oceanography and CAS, Division of Marine Microbiology & Medicine, Alagappa University, Thondi 623 409 Ramnad District, Tamil Nadu, India
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L- Glutaminase producing fungi were collected from rhizosphere region of the Karankadumangrove coastal area (Lat. 9.0.29’ N; Long. 78°0.83’ E), Tamil Nadu. The pre-treated sample was used for the isolation of fungi, maximum eight fungi culture was isolated and screened the Aspergilluswentii showed promising L-Glutaminase activity was observed in the fermentation medium. The enzyme production was found associated with the growth of the fungal culture. Aspergilluswentii produced high levels of glutaminase (481.2 U/gds) under optimized culture conditions on the 3rd day of incubation at an optimum pH 8.0, temperature 30°C and moisture content 60% ,in a medium supplemented with maltose (3.0%), ammonium sulphate (2%), and Sodium chloride (0.1%) using 2ml of 3 day old culture under Solid state fermentation. The yield of L-glutaminase showed an increase of nearly 2 fold after the optimization process using a mixture of substrates when compared to the yield of the enzyme with single substrates. Hence present study was initiated to optimize the media composition for L- Glutaminase production.
Molecular diagnosis of Isoniazid Drug Resistant *Mycobacterium tuberculosis* in HIV patients

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Tuberculosis is an infectious disease caused by the bacillus *Mycobacterium tuberculosis* affecting nearly one-third of the global population. Transmission of multidrug – resistant strains of *Mycobacterium tuberculosis* (MDR-TB) presents a serious problem for TB control, particularly in the context of co-infection with the human immunodeficiency virus (HIV). MDR-TB has been well studied in outbreaks in settings of low endemicity in developed countries. However, the characteristics of MDR-TB in the community with high endemicity such as India have not been well investigated. This study was designed to isolate and characterize *inhA* and *katG* gene from a clinical isolate of isoniazid drug resistant TB patients co-infected with HIV. The blood sample obtained was first subjected to CD4 analysis using Partec Flow Cytometry instrument, RT-PCR analysis to confirm HIV positive. The serum albumin was separated by 10% SDS – PAGE and then the suspected protein spot was sequenced using Nano LC/MS. The DNA was isolated from the isoniazid resistant *Mycobacterium tuberculosis* culture, which was used for the amplification of the *kat G* and *inhA* genes using primers by PCR technique. The PCR product was subjected to electrophoresis on 2% agarose gel and desired gene product was eluted by the gel cleanup kit. The *kat G* and *inhA* gene PCR purified products were analysed in the bioanalyser electropherogram to detect the molecular weight and was directly sequenced at Bioserve at Bangalore. The BLASTn and BLASTx search tool was used to compare the suspected DNA sequence for detecting the mutation to confirm the drug resistance. Then the pure culture of *Mycobacterium tuberculosis* were then subjected to phylogenetic analysis using 16s rRNA primer by PCR technique. The 16s rRNA PCR purified products was sequenced in the automated DNA sequencer. The MEGA search tool was used to compare and differentiate the 16s rRNA sequence from H37Rv wild strain and other *Mycobacterium* sp.

Poster presentation (MIPP)
The antimicrobial activity of *Pleiospermium alatum* leaves were extracted successively with different solvents *viz.*, Petroleum ether, chloroform, ethyl acetate and methanol. Screened for their antimicrobial activity against *Staphylococcus aureus*, *Streptococcus pyogenes*, *Enterococcus faecalis*, *Escherichia coli*, *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Vibrio cholerae*, *Candida albicans*, *Candida parapsilosis* and *Candida tropicalis* by using disc diffusion method, the extent of the inhibitory zones, Minimum Inhibitory Concentration (MIC) Minimum Bactericidal Concentration (MBC) and Minimum Fungicidal Concentration (MFC) were also determined. The methanol extract of *P. alatum* showed the highest antimicrobial activity against all the bacterial and fungal strains tested than the other extracts. The mean zones of inhibition produced by the extracts in agar diffusion assays against the tested bacterial strains ranged from 7.0 to 19.8 mm. The MIC values were between 125 and 250 g/ml, MBC values 250 and 1000 g/ml and MFC 250 and 1000 μg/ml values were recorded. Phytochemical analyses of different extracts of leaves *P. alatum* was analysed. The methanol extract of *P. alatum* leaves are showed the presence of strong phytochemicals *viz.*, steroids, flavonoids, tannins, phenolic compounds and terpenoids than the other extracts. The highest mean of zone inhibition (19.8 mm) was observed in the methanol the extract of *P. alatum* against *Staphylococcus aureus* These finding suggest that the methanol extract of *Pleiospermium alatum* can be used as a antimicrobial substance for the treatment of microbial infections.

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**Biosynthesis and characterization of Alkaline protease from Bacillus subtilis**

**C Kiruba and K Manjula**

*PG and Research Department of Biochemistry, Mohamed Sathak College of Arts and Science, Sholinganallur, Chennai*

In the present study, alkaline protease producing *Bacillus subtilis* was isolated and identified by various biochemical tests and by 16S rDNA sequencing. Agricultural waste was used as a solid substrate for enzyme production in solid state culture. The process parameters such as fermentation period (72 h), pH (9.0), moisture content (120%), inoculum (12%), carbon source (maltose), nitrogen source (casein) and in-organic ion (sodium di-hydrogen phosphate) were optimized for maximum enzyme production. The crude enzyme was concentrated by ammonium sulphate precipitation and further purified by ion exchange and gel filtration chromatography. This enzyme was highly stable and active at 50 °C and at pH 8.0, respectively. The molecular weight of protease was estimated to be 42.5 KD by SDS-PAGE.
**MMIPP3**

**Antimicrobial activity of *Oxalis corymbosa* against various microorganism**

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*Department of microbiology, VELS University, Chennai-117*

This study has shown that many plants used in traditional medicine are very potent antibacterial activity but bioactive components of the plant may vary. The characterization of the active components of these plants may lead to full utilization by the local folks particularly. Collection was based upon the assortment of fresh and healthy leaves to avoid contamination and for obtaining acceptable results in the antimicrobial assay. Plant extracts was extracted by using a Soxhlet assembly for various solvents as mentioned before. Assembly was run for maximum 3 days for each sample at a particular temperature. From the above table it was found that the plant extracts with Ethyl acetate yielded (40%), more followed by Benzene extract (35%), Chloroform extracts (34%), Petroleum extracts (32%), Acetone extracts (30%) yielded least. Appearances of all the plant extracts were observed same i.e., dark green. The degree of activity of acetone extract was determined by measuring the zone of inhibition of growth around the disc. The MIC was determined for acetone extract concentration, which showed the maximum inhibition at minimum concentration against maximum number of bacteria. Highest zone of inhibition at minimum concentration gave the measure of MIC value. The use of plant extracts and phytochemicals, both with known antimicrobial properties, can be of great significance in therapeutic treatments.

**MMIPP4**

**Quorum quenching activity of soil microorganisms towards quorum sensing and pigment producing *Pseudomonas aeruginosa***

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Over the years bacteria have evolved beyond our imagination. The pathogenic potential of bacteria is evident from the increasing number of untreatable diseases. Escalation of resistance towards antibiotics has introduced us to various multidrug resistant organisms. *Pseudomonas aeruginosa* is an emerging multidrug resistant organism drawn in biofilm formation and pigment production driven by Quorum sensing (communication process prevalent among bacteria). Acyl Homoserine Lactone (AHL) is the most common Quorum Sensing molecule in Gram negative bacteria. Quorum Quenching (QQ) is a new field where soil microorganisms develop antagonistic molecules like AHL Acylase and AHL Lactonase which degrade the sensing molecules. Our study aims in targeting *Pseudomonas aeruginosa* with four soil isolates.
Isolation and identification of multidrug resistance *Staphylococcus aureus* from throat infected patients

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²PG& Research Department of Biotechnology, Mohamed Sathak College of Arts & Science, Chennai, Tamil Nadu, India

To investigate the prevalence of Multi Drug Resistance *Staphylococcus aureus* isolated from patients having throat infection. In our study totally 15 samples was collected out of 15 samples 11 samples showing positive results for culture and biochemical testes. Culture and biochemical positive isolates (11isolates) was subjected to the antimicrobial sensitivity testing. In antimicrobial testing out 11 isolates 9 isolates are resistance to the methicillin and two isolates are sensitive for methicillin. A total of 16 throat specimens were analyzed for detection of *Staphylococcus aureus* via culture on Blood agar, Mannitol salt agar, DNase agar and Biochemical tests. Colony morphology of isolates on selective media as follows Beta haemolytic colonies blood agar golden yellow colonies on manitol salt agar. The 10 isolates obtained from clinical sample were made to undergo antibiotic susceptibility test using commercially available antibiotics with the concentration. The antibiotic discs used and the concentration (µg) present in the discs. The results of antibiotic sensitivity test for *Staphylococcus aureus* isolated from clinical samples. The percentage of antibiotics, 81 and 100% resistant to Methicillin , Cefpodoxime, Penicilin-G, 72and 81% , sensitive to Gentamycin , Kanamycin and Vancomycin 10 positive isolates are subjected to antimicrobial sensitivity testing. Out of 10 positives 9 isolates are resistant to the methicillin only two isolate is sensitive to the methicillin.
**MMIPP6**

**Studies on the Diversity of Bacterial Flora of Ear Phones**

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The bacterial flora found as commensals of skin may become a causal organism of otitis externa in few cases. It is evident that external ear are always found associated with either commensals or opportunistic pathogens. The transfer of these pathogens to others is of concern. This can easily be transmitted through earphones. The youngsters, specifically school goers and college students are widely found to share their earphones whenever they are hearing songs or other videography. As earphones are widely shared among the population an interest is developed to find the bacterial flora associated with the earphones. The diversity of the bacteria was studied using 25 earphones collected from general subjects among which 10 are male and the remaining female. Age group ranges from 17 to 49. The swab samples of collected earphones are studied for their bacterial diversity using Nutrient Agar. The study revealed the presence of Micrococcus, Streptococcus and Bacillus as predominant genera and Escherichia and Pseudomonas as rarely occurring genera. The result in detail will be discussed.

**MMIPP7**

**Molecular approaches to screen Extended spectrum beta lactamase (ESBL) Production in Urinary Isolates of Enterobacteriaceae**

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In 19th and 20th century the antibiotics were a powerful antimicrobial agent to control pathogenic microbes including bacterial infectious disease such as Urinary tract infection (UTI), Bacteremia, pneumonia, Septicemia, diarrhea etc. They also cause genital tract infections particularly vaginitis, therefore that detection of their antibiotic resistance is a significant approach to control these infections. One essential mechanism of resistance is ESBL production by Enterobacteriaceae particularly E.coli and Klebsiella spp. The aim of this study was to investigate the prevalence of ESBL and MBL encoding genes among Enterobacteriaceae isolates. In this cross sectional study, 58 strains of E.coli, Klebsiella sp., Pseudomonas aeruginosa, Citrobacter were isolated from renal samples. The production of ESBLs and MBLs are detected by double disc synergy test (DDST) and confirmed by molecular analysis of expression of genes encoding ESBL and MBL production. Based on the resistance and susceptibility of bacterial species towards antibiotics they are classified according to CLSI guidelines.
MMIPP8

Preliminary study on isolation and characterization of dye decolorizing bacteria from lime stone soils

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³,⁴ Department of Biotechnology, St. Joseph’s college, Tiruchirappalli 620002

Microorganisms from saline environments proved to be beneficial for commercial as well as research applications. Calcium carbonate rich lime stone fossils are one among those unfavourable conditions that supports extremely halophilic or moderately halophilic organisms. Current investigation on arylaur lime stone samples is a preliminary initiative to unearth microorganisms possessing beneficial applications. Four distinct isolates were selected from pool of colonies and characterized for their ability to degrade following commercial dyes - reactive deep red, diazone green and reactive blue G. Results showed that all these isolates are found to be decolorizing the dyes in effective manner and they can be considered as potential candidates to address the menace of dyes as environmental pollutant.

MMIPP9

Molecular Evolutionary Analysis On Insect Acetylcholinesterase

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Acetylcholinesterase (AchE2 EC 3.1.1.7) encoded by acetylcholinesterase gene (ace) in insects can terminate neurotransmission in the postsynaptic membrane by hydrolysis of the neurotransmitter, acetylcholine (ACh). Evolutionary analysis of 75 Acetylcholine esterase gene sequences belonging to four different orders was determined. Statistical analysis was carried out using MEGA 4. This study will reveal sequence divergence between various species.
NanoMedicine (NM)
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| 2     | Padmanaban S, Ujjala Burman, Justin, Jenifer Selvarani, Antony V Samrot.  
Toxicity study of metalnanoparticles on *Eudrilus eugeniae*  
(African Night crawler)            | NMOP2       |
| 3     | Sheryl Ann Philip, Ujjala Burman, Padmanaban S, Antony V Samrot  
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Biosynthesis of silver nanoparticles from *Bacillus* species and their  
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Biosynthesis of silver nanoparticles from *Bacillus* species and their  
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Galactose mediated synthesis of silver nanoparticles (AgNPs) and its  
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Antibacterial evaluation of metallic salts against Infectious Bacteria | NMPP2       |
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Antimicrobial activity of silver nanoparticles synthesized from *Lactobacillus*  
species against UTI pathogens        | NMPP4       |
Oral Presentation (NMOP)
**Evaluation of anticancer activity of silver nanoparticles from Carica papaya against HepG2 cell lines**

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PG Student, PG & Research Department of Biochemistry, Mohamed Sathak College of Arts and Science, Sholinganallur, Chennai – 600 119

Traditional medicinal plants are often cheaper, locally available and easily consumable, raw or as simple medicinal preparations. Nowadays, traditional medicinal practices form an integral part of complementary or alternative medicine. Several plant biomass or plant extracts have been successfully used for extracellular biosynthesis of silver and gold nanoparticles that possess major medicinal benefits against chronic diseases. The aim of the present study is to identify the anticancer effect of bioactive nanoparticle produced by the selected medicinal plant *Carica papaya* (*C. papaya*). The results indicates the leaves of *C. papaya* effectively synthesized silver nanoparticles within one day in room temperature and comparatively the quantity of synthesized silver nanoparticles was found as 17mg which were quite higher in amount than other medicinal plants. The silver nanoparticles were further characterized by UV-VIS Spectrum, XRD, FT-IR, EDAX, SEM analysis. From the results the shape and size of the silver nanoparticles was confirmed as spherical structure with the size of 22-42nm. The Anticancer effect of *C. papaya* leaf on hepG2 cell line was evaluated by MTT assay. In this assay, cell death and cell viability and anticancer activity was estimated. Results showed the IC$_{50}$ cell viability was observed at the concentration of 68.99 μg/ml of the leaf extract. From the performed assay, the *C. papaya* leaf shows greater activity on hepG2 cell line. The results of the present study indicated the *C. papaya* plant extract was more efficient in synthesis of the silver nanoparticles. This may be due to mass of young cells with different ploidy in the plant which may be metabolically active to produce various types of chemicals responsible for the reduction of silver ions. The overall results conclude that the *C. papaya* leaf can be used as an anticancer agent.

**Toxicity study of metalnanoparticles on Eudrilus eugeniae (African Night crawler)**

Padmanaban S, Ujjala Burman, Justin, Jenifer Selvarani, Antony V Samrot.

Department of Biotechnology, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai -600 119

Metal nanoparticles have been used in all fields, where their disposal always would show impact on environment and obviously affects the soil organisms. Thus this study is intended to study the toxicity of metal nanoparticles on *Eudrilus eugeniae* (African night crawler), which act as model for soil organism. Silver and magnetite nanoparticles were prepared by chemical methods and characterised by UV-Vis, FTIR and SEM analysis. *Eudrilus eugeniae* were exposed to the produced nanoparticles at different compositions and the toxicity exhibited by the nanoparticle was studied by histopathology and ICP-OES analysis.
NMOP3

**Drug release kinetics of biopolymer coated magnetite coreshell nanoparticles**

*Sheryl Ann Philip, Ujjala Burman, Padmanaban S, Antony V Samrot*

*Department of Biotechnology, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai -600 119*

This study was done with the intention to study the drug release kinetics of biopolymer coated magnetite coreshell nanoparticles. Initially magnetite nanoparticle was synthesized by chemical method; it was characterized by UV-Vis, FTIR and SEM analysis. Coreshell magnetite was prepared having magnetite coated with drug/antibiotic and packed with biopolymers like casein, chitosan and starch. The produced coreshells were characterized by UV-VIS, FTIR and SEM. These nanoparticles were studied for their drug releasing and drug holding capacity, *in vitro*.

NMOP4

**Biological incorporation of metal into magnetite nanoparticle and its effect on the release of the antimicrobial agent**

*Sheryl Ann Philip, Ujjala Burman, Raikamal Bhattachariya, Arul Maximus Rebel, Antony V Samrot*

*Department of Biotechnology, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai -600 119*

Magnetic nanoparticles have been emerging as a developing network, in different fields especially in nanotechnology. In this study, the formation of coreshell is focussed, which is made by packing nanoparticles with antimicrobial agents and coated with the biopolymers. The nanoparticle used was prepared by chemical method and further characterised by FTIR, FeSEM and XRD. It was then biologically incorporated with metals (cobalt and molybdenum) to further the process to prepare coreshell by coating the incorporated magnetite with antimicrobial agents followed by the biopolymer coating. The study was continued to understand the drug release pattern against microorganisms.
NMOP5

Biosynthesis of silver nanoparticles from *Bacillus* species and their antibacterial activity

Cherukula Suryababu Mounika, A. Sahaya Lourdh Jenifa Lancy, T. Sudhakar*
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Nanotechnology is useful in diagnostic techniques, drug delivery, sunscreens, antimicrobial bandages, and disinfectants. In this study synthesis of silver nanoparticles was done by biological method by reducing silver nitrate using the bacteria *Bacillus* species. The formation of nanoparticles was confirmed by UV-visible spectroscopy with a maximum absorbance at 434nm, characteristic of silver nanoparticles. FTIR is taken to confirm the chemical bonding present in AgNPs. Further characterization of XRD and FESEM was used to determine the metallic character of AgNPs as well as size and morphology of AgNPs. The size of AgNPs is 41.13nm. The antimicrobial activity was done by disc diffusion method. Different concentrations of AgNPs was added to the plate and the concentration which gave maximum value is selected. Comparative analysis of synthesized AgNPs was done with water, AgNO3, extracted sample and AgNPs. Further synergetic activity was done to confirm the antimicrobial activity of AgNPs. AgNPs shows good antimicrobial activity against human pathogens so it can be used in drug delivery system.

NMOP6

Synthesis and Characterization of Silver Nanoparticles using combined fruit extracts of *Phyllanthus emblica* and *Terminalia chebula*

S Shamila Fathima and K Manjula
Department of Biochemistry, Mohamed Sathak College of Arts and Science, Sholinganallur, Chennai

Nanotechnology applications are highly suitable for biological molecules, because of their exclusive properties and found to be reliable and eco friendly. In spite of the advent of modern high throughputs drug discovery and screening techniques, traditional knowledge system have given clues to the discovery of valuable drugs. The aim of the present study is to synthesize and characterize Silver nanoparticles using methanolic extract of combined fruits of *Phyllanthus emblica* and *Terminalia chebula* and to evaluate its antibacterial activity. The preliminary phytochemical screening of combined fruit extract of *P. emblica* and *T. chebula* revealed the presence of tannins, saponin, proteins and phenols. The combined fruit extract of *P. emblica* and *T. chebula* effectively synthesized silver nanoparticles within one day in room temperature and the quantity of synthesized silver nanoparticles was found to be 40 mg/dl. Synthesis of silver nanoparticles was confirmed by UV-VIS, FTIR and EDAX spectrum analysis. From the results of SEM analysis, the shape and size of the silver nanoparticles was found to be spherical structure with the size range 23-27 nm. The antibacterial effect of combined methonolic fruit extract and the synthesized nanoparticles were tested against bacterial species such as *B.subtilis*, *S.aureus*, *E.coli*, *K.pneumoniae* and *P.aeriginosa* using Resazurin Microtitre method. The results confirmed that the nanoparticle synthesized using combined fruit extracts of *P.emblica* and *T.chebula* showed more activity compared than the fruit extract alone. The presence of phytochemicals found in this combined fruit extract proved to have potential antibacterial properties.
Poster Presentation (pp)
**NMPP1**

**Galactose mediated synthesis of silver nanoparticles (AgNPs) and its antimicrobial activity**

S.Krishnakumar*, R. Divya, N.R. Kanchana Devi, G. Keerthana, A. Ancy Judi  
*Faculty of Bio and Chemical Engineering, Department of Biomedical Engineering, Sathyabama University, Chennai 600 119*

Nanotechnology has drawn significant attention in recent years due to their unique and exceptional applications. The sustainable chemical methods of silver nanoparticles (AgNPs) synthesis have significant interest in the current scenario due to high demand. Silver nanoparticles were synthesized in solutions of galactose in DMSO and Milli-Q water at high temperature (80°C) under continuous stirring. Galactose acted as a reducing agents and stabilizing agents simultaneously for the synthesis of silver nanoparticles. Silver nitrate (AgNO3) was used as the metal precursor for the preparation of Ag-NPs over the reaction time. The Plasmon resonance kinetics and their activation energy were determined by UV – visible spectroscopy. The Milli-Q water solution of galactose was better reductive activity than the DMSO solution of galactose. The synthesized silver nanoparticles were subjected to characterized antimicrobial activity against selected bacterial and fungal pathogens. The Milli-Q water solution of galactose mediated silver nanoparticles were exhibited better antimicrobial activity against tested bacterial pathogens. Further characterization studies are under progress to pinpoint the size, morphology and actual constituents responsible for the antibacterial activity.

**NMPP2**

**Antibacterial evaluation of metallic salts against Infectious Bacteria**

N.K. UdayaPrakash¹, R. Caroline¹, D.S. Arjun Krishnan¹, N. Sripriya¹, N. Ashwin Karthick¹, S. Bhuvaneswari²  
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². Department of Plant Biology and Plant Biotechnology, Loganatha Narayanaswamy Government Arts College, Ponneri

The bacteria, *Bacillus subtilis*, *Enterobacter* sp., *Enterococcus* sp., *Escherichia coli*, *Klebsiella* sp., *Proteus* sp., *Pseudomonas aeruginosa*, *Salmonella typhi*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus* sp., *Vibrio cholerae* and *Vibrio parahaemolyticus* which were found to be either pathogen or opportunistic pathogen were evaluated for their sensitivity towards metallic salts. The antibacterial potency of the metallic salt solutions of Chromium, Cobalt, Mercury, Nickel, Lead, Cadmium and Zinc were evaluated. The study was conducted using Kirby-Bauer’s disc diffusion method. The results in detail will be discussed.
NMPP3
SYNTHESIS OF BIONANOPARTICLES FROM BACTERIA AND ITS ANTIFUNGAL ACTIVITY
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Department of Biotechnology, Shri Nehru Maha Vidyalaya College of Arts and Science,
Coimbatore -50, E mail: rbrajbhakya@gmail.com

Silver nanoparticles were produced by various bacteria when AgN0₃ is added to the cell-free filtrate. Reduction of AgN0₃ to Ag⁺ takes place with the help of some reducing agent. This reducing agent was determined as protein present in the cell-free filtrate. This was confirmed with the help of lowery et al and paper chromatography techniques antifungal activity of silver nanoparticles was exhibited only against few fungal sp but not all fungi. The produced nanoparticles can be used for various applications in medicine. They are used as antimicrobial agent, used in drug delivery, cancer detection etc. They can be used in bio-labelling, as catalysts in chemical reactions, as optical receptors etc.

NMPP4
Antimicrobial activity of silver nanoparticles synthesized from Lactobacillus species against UTI pathogens

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Department of Microbiology, Mohamed Sathak College of Arts and Science, Sholinganallur,
Chennai. Email ID: sankariuma26@gmail.com

Urinary tract infections (UTI) are most common infection worldwide. This study investigated the antimicrobial activity of silver nanoparticles synthesized from Lactobacillus against UTI pathogens. Twenty five urine samples were collected and the samples were processed using standard method. Among the 25 urine samples, 10 urine samples showed more than 1,00,000 CFU/ml of urine. A total 12 isolates were obtained from 10 urine samples. Among the 12 isolates, the predominant isolate was Escherichia coli which was accounted for 41.6 % (5), followed by Klebsiella pneumonia 25% (3), Proteus mirabilis 16.6% (2), and Pseudomonas aeruginosa 8.3% (1). The extra cellular synthesis of silver nanoparticles occurred during the exposure of Lactobacillus extract to AgNPs and it exhibited absorption peak at 200-300 nm in UV- spec. SEM image showed high density silver nanoparticles and XRD pattern showed the size of the nanoparticles were 10 to 50 nm with cubic and hexagonal shape. Microbial nanoparticles showed highest inhibitory action against E. coli strains viz., Ec-1, Ec-2, Ec-4, and Ec-5, followed by Klebsiella pneumonia strains K1, K2 & K3, Pseudomonas aeruginosa strains Ps-1 and Proteus mirabilis strains P1 & P2. Microbial silver nanoparticles could be a potential therapeutic approach for the treatment of UTI infection.
Vector-Borne Diseases
### VECTOR-BORNE DISEASES - ORAL PRESENTATION

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Oral Presentation (vbdop)
Inhibition of the Biosynthesis of Epicatechin in tea, *Camellia sinensis* (L. Kuntze) by insecticides deployed for the control of the tea mosquito bug, *Helopeltis theivora* Waterhouse

1Sewali Ghosh, 2S.K.M. Habeeb, 1K.P Sanjayan

1Department of Advanced Zoology and Biotechnology, Guru Nanak College, Chennai 600042
2Department of Bioinformatics, School of Bioengineering, SRM University, Kattakulathur, Tamilnadu – 603203

Herbal medicines have vital role in prevention and treatment of cancer. Most drugs for cancer care have originated from natural products. Epicatechin, a known anti-cancerous compound derived from tea (*Camellia sinensis* (L. Kuntze)) is produced due to the action of the enzyme anthocyanidin reductase (1.3.1.77) on its substrate cyanidin. *Helopeltis theivora* Waterhouse (Heteroptera: Miridae) or the tea mosquito bug (TMB) is a major sucking pest of tea (*Camellia sinensis* L.) in most tea-producing countries. Pesticides are the routine approaches to control this pest. Application of pesticides may be successful in controlling this pest, but could also cause an indirect loss to the production of vital secondary metabolites. Here, we have studied the effect of pesticides that are commonly used in the tea fields of India such as clothianidin, bifenthrin, cypermethrin, deltamethrin, endosulfan, imidacloprid, phosalone, profenofos, quinolphos, thiacloprid, thiamethoxam on the production of Epicatechin using molecular modeling approaches. This study reveals that the pesticides studied share the same binding site as the substrate, indicating competitive means of inhibition of Epicatechin biosynthesis by pesticides.

Antiplasmodial Phytotherapy and Drug discovery- An overview

R. Madhanagopal, M. R. Asiya Mariyam, A. Kalidoss*

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Malaria is the most destructive and dangerous parasitic infection in many tropical and subtropical countries. The burden of this disease is getting worse, mainly due to the increasing resistance of *Plasmodium falciparum* against the widely available antimalarial drugs. There is an urgent need for new, more affordable and accessible antimalarial agents possessing original modes of action. Natural products have played a dominant role in the drug discovery to treat human diseases and this fact anticipates that new antimalarial drugs may certainly emerge from tropical plant sources. This present review covers a list of antimalarial plants, natural compounds from plants with antiplasmodial and antimalarial properties, besides the majority of papers describing antiplasmodial crude extracts published in the last five years and prospecting of natural compounds. In addition, some perspectives and remarks on the development of new drugs and phytomedicines for malaria.
Poster Presentation (VBDPP)
Controlling of Vector Borne Diseases

Aiswarya, Pooja. S, Anupama M, Greeshma C, Edward Jayaprakash, M. B. Kavitha*

*Department of Microbiology, Shri Nehru Maha Vidyalaya College of Arts and Science, Coimbatore-641 050, Tamilnadu, India

The basic approach for vector borne diseases control involves a strategy directed against the parasite and vector. To enlist the involvement of community in practicing various preventive measures like Disease management, Insecticide resistance, Involvement of NGOs/private sector/community, Quality assurance on laboratory diagnosis, Long lasting insecticide treated nets Improve quality and efficiency of services at primary, secondary and tertiary levels, Environmental management, Monitoring and evaluation, Collaboration with National Malaria Institute of malaria research and medical colleges, Inter-sectoral collaboration etc., this current review discuss about how we can control the vector borne disease in a safety manner.
GENERAL Biotechnology
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<td>Bioprospecting of some pigment producing soil microorganisms Sanjay Kumar A, Divya Kumar, Antony Joseph Rio and Antony V.Samrot</td>
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Oral Presentation (gbtop)
Studies on physico – Chemical properties, nodulation pattern and rhizobial population of black gram cultivated soil

N. Sivakumar.

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*Corresponding author e-mail: jsuneetha@gmail.com*

Black gram (Vigna mungo L.) is one of the important pulse crops gaining importance all over the world in recent years. It is rich in proteins and contains amino acids higher quantities than any other cereals and pulses. Black gram is an annual food legume. Black gram seeds are boiled and eaten whole or after splitting into dhal. The dried seeds contain approximately 9.7 % water, 23.4 % protein, 1 % fat, 57.3 % carbohydrate, 3.8 % fibre and 4.8 % ash. It is very nutritious and is recommended for diabetics. The nutrient status of soil is more essential for root nodulation. The black gram soil samples were collected from Nagapattinam and Cuddalore belonged to 3 textural group viz., Red loam, Clay loam and Block soils. The soil samples were analysed for its pH, Electrical conductivity, soil organic carbon available N, P and K content (Tab-1). The nodulation pattern and its rhizobial population on the rhizosphere soil of black gram plants were also studied. The nodulation pattern was ranged from 5.00 to 21.00 plants (Tab-2). Native rhizobial populations (Tab-3) were also estimated for the 30 locations from the above mentioned Districts of saline areas in Tamil Nadu. Among the 30 locations, 13 locations were recorded more than 3×10^3 g^-1.

**Key words**: Physico-chemical, nodulation, rhizobial population, Black gram, Saline areas.

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A Report on caffeine degrading fungi and yeasts isolated from caffeine contaminated soil samples

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Yeasts are attempted to be isolated from coffee pulp, leaves and coffee grown soil and were screened for their capability of caffeine degradation. Based on the degradation efficiency, isolates was selected and identified as Saccharomyces cerevisiae which showed 60% degradation of caffeine in 72 hours when caffeine was utilized as the sole carbon and nitrogen as source. The influence of various factors such as pH, temperature, shaking speed, inoculum size, carbon source, nitrogen source and initial caffeine concentration on caffeine degradation were studied. The optimum growth conditions for caffeine degradation by Saccharomyces cerevisiae were found to be pH 6.5, temperature 28°C, shaking speed 120 rpm, inoculum size 4% (w/v) with initial caffeine concentration 2 gm/l and 100% degradation was achieved within 120 hrs in the presence of source (5 gm/l). The addition of external nitrogen sources viz. sodium nitrite and sodium nitrate decreased the caffeine degradation to 25% and 30% respectively.
A review on impact of probiotics on human health and disease management

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The aim of the review is to study about impact of probiotics on human health and disease management. Probiotics are nonpathogenic, nontoxic, and free of significant adverse side effects retain stability during the intended shelf life of the product contain an adequate number of viable cells to confer the health benefit are compatible with product format to maintain desired sensory properties and are labeled in a truthful and informative manner to the consumer. Lactobacillus acidophilus, Lactobacillus brevis, Lactobacillus delbrueckii.s, Lactobacillus ferment, Escherichia coli, Saccharomyces cerevisiae, Streptococcus thermophilus, Streptococcus salivarius are important probiotics. The study highlights the use of probiotics in the treatment of lactose maldigestion, bowel transit, Irritable Bowel Syndrome (IBS), gastrointestinal infections (GI), colon cancer and vaginal infection, human associated ecosystem and safety considerations of the use of probiotics.

Biosynthesis of Zinc oxide nanoparticles and its anti-amyalse activity

Parthiban G, Samanjit Kaur, Nasreen Najeeb

1PG & Research Department of Biotechnology, Mohamed Sathak College of Arts & Science, Chennai, Tamilnadu, India, *E mail: nasreen_biotech@yahoo.com

In modern science Nanotechnology is a fabulous field for the research and creating new materials and properties. Nanoparticles having a size of 1-100 nm in one dimension is used significantly concerning medical chemistry, atomic physics, and all other known fields. Nanoparticles are used immensely due to its small size, orientation, physical properties, which are reportedly shown to change the performance of any other material which is in contact with these tiny particles. These particles can be prepared easily by different chemical, physical, and biological approaches. But the biological approach is the most emerging approach of preparation, because, this method is easier than the other methods, eco-friendly and less time consuming. The metal nanoparticles are synthesized by biological method. When biological synthesis is better option for physical and chemical synthesis. Because, it is bio safe, nontoxic due to the environment and humans. The synthesis of nanoparticles has become the matter of great interest due to its various advantageous properties and application in various fields. Biogenic invention of zinc oxide nanoparticles is a better option due to eco-friendliness. Zinc oxide nanoparticles have found fabulous applications in various fields. The zinc oxide powder was characterized by SEM, Zeta analyzer, FTIR, UV-Visible spectroscopy. SEM pictures reveal the morphology of prepared zinc oxide nanoparticles. Zeta potential shows particle size and molecular weight. The UV-Vis absorption spectrum shows an absorption band at 355 nm due to zinc oxide nanoparticles.
GBTOP5

**Nanomedicine a true therapeutic agent for the treatment of infectious disease**

M. Akila, Selvakumar Dharamaraj  
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Many disease originated from alteration in biological processes at molecular and nanoscale level. It plays a certain role in activity of disease causing and sometimes leading to life threatening disease. Nanoscience and nanotechnology involve the ability to see and to control individual atoms and molecules. Nanomedicine is playing an increasingly important role in pharmaceutical R&D, primarily in the form of nanoparticle-based delivery systems for drugs and imaging agents. By many quantitative measures the overall field of nanomedicine is flourishing. Nanotechnology in medicine involves applications of nanoparticles currently under development, as well as longer ranges research that involves the use of manufactured nano-robots to make repairs at the cellular level. Nanomedicine give a promising result to treat and to diagnosis the disease at molecular scale level. For Example Researchers have developed "nanosponges" that absorb toxins and remove them from the bloodstream. The nanosponges are polymer nanoparticles coated with a red blood cell membrane. The red blood cell membrane allows the nanosponges to travel freely in the bloodstream and attract the toxins.

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GBTOP6

**Bioprospecting of some pigment producing soil microorganisms**

Sanjay Kumar A, Divya Kumar, Antony Joseph Rio and Antony V. Samrot  
*Department of Biotechnology, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Salai, Shollinganallur, Chennai- 600 119.*

**Bioprospecting** is search for development of new bioactive chemical compounds or important genes or any other valuable products from nature especially microorganisms. Microorganisms are adapting faster to the environment and also produce enough number of bioactive compounds chemicals or enzymes which help them live better. These chemicals or enzymes are having several benefits to the human population. In this study, three pigment producing microorganisms were isolated from environment and identified by its morphology and by 16SrRNA sequencing. All the microorganisms were optimized for pigment production. *Microvirga aerilata* and *Bacillus megaterium* were producing amylase, which was also characterized and optimized.
Physico-chemical properties of river cauvery collected from Pallipalayam near Erode

K. Prabakaran, S. Rajalakshmi,
Department Of Zoology, Kanchi Mamunivar Centre For Post Graduate Studies, Lawspet, Puducherry.

Pollution control and environment protection are the major challenges throughout the world. Among various kinds of industries, water pollution due to industrial effluents in attaining the greater dimension day by day in India. Pollution of water is one of the Serious Problems all over the world it is mainly because of increasing and rapid growth of population and industrialization. The study area Pallipalayam, near Erode enriched with many paper mills and the effluents are discharge along the coast of the Cauvery river at Pallipalayam. An year long study on the seasonal variations of Twenty Three Physio-Chemical parameters at Three selected stations along the river Cauvery were analyzed. The study was carried during Past monsoon (January-March) and summer seasons (April-June).The dates were subjected to student’s “t” Test, Duncan’s Multiple Range Test (DMRT) and Analysis of various (ANOVA OR “F”) Test using Two way classification. The results on the estimation of the hydrographical parameters of water samples and effluents revealed that pollution effect of the paper mill is more as a Function of inorganic salts (in the effluents) which is responsible for the onset of severe chemical and biochemical oxygen demands (COD & BOD), there by, resulting in the depletion of dissolved oxygen (DO) content the data also indicates that the pollution in more severe particularly during past monsoon and summer seasons that determinate the quality of water, alternations in the hydrography of Cauvery river. There by affecting the normal aquatic life in the riverine ecosystem.
Abstracts