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SOUVENIR

International Seminar on

RECENT SCENARIO IN BIOTECHNOLOGICAL INNOVATIONS

22nd February 2019

Organized by

PG & RESEARCH DEPARTMENT OF BIOTECHNOLOGY

(DST - FIST Sponsored)

INTERNATIONAL SEMINAR ON

RECENT SCENARIO IN

BIOTECHNOLOGICAL INNOVATIONS

22nd February, 2019

Sponsored By

MAHENDRA EDUCATIONAL TRUST

Mahendrapuri, Mallasamudram, Namakkal

Organized By

PG & Research Department of Biotechnology

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Kalippatti 637 501, Namakkal (Dt), Tamil Nadu, India.

INTERNATIONAL SEMINAR ON

RECENT SCENARIO IN BIOTECHNOLOGICAL INNOVATIONS

22nd February, 2019

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INTERNATIONAL SEMINAR ON

RECENT SCENARIO IN BIOTECHNOLOGICAL INNOVATIONS

22nd February, 2019

Inauguration

Date: 25.01.2019 Time: 9 30 AM – 10 00 AM Venue: Seminar Hall

Prayer

Lighting Kuthuvilakku : **Tmt. B. VALLIYAMMAL**
Secretary, Mahendra Educational Trust.

Welcome Address : **Dr. T.SELVANKUMAR**
Head, Dept. of Biotechnology, MASC (A)

Presidential Address : **Shri. M.G.BHARATH KUMAR**
Chairman, Mahendra Educational Trust.

Keynote Address : **Dr. R.SAMSON RAVINDRAN**
Executive Director, Mahendra Educational Institutions

Inaugural Address : **DR. S.ARJUNAN**
Principal, Mahendra Arts & Science College (A)

Chief Guest Address &

Release of Souvenir : **Dr. SERALATHAN KAMALAKANNAN**
Professor, Chonbuk National University, South Korea

Felicitation Address : **Mr. N.SAMPATH KUMAR**
Director - Administration,
Mahendra Arts & Science College

DR. AROULMOJI
Director, R&D, Mahendra Educational Trust.

Vote of Thanks : **DR. A.SENGOTTAIYAN,**
Asst. Professor, Dept. of Biotechnology
Mahendra Arts & Science College

Session starts

INTERNATIONAL SEMINAR ON

RECENT SCENARIO IN BIOTECHNOLOGICAL INNOVATIONS

22nd February, 2019

Technical Session

TIME	PROGRAMME
SESSION I 10.00- 10.45	**Bioremediation of metals** **Dr. Seralathan Kamalakannan** Professor, Chonbuk National University, South Korea
SESSION II 10.45-11.30 am	**Microbial Diversity in Crude Oil Reservoirs - Overview** **Dr.A.Rajasekar** Assistant Professor, Dept. of Biotechnology Thiruvalluvar University, Vellore.
11.30- 11.45 am	**Tea Break**
11.45-12.15 pm	**Paper Presentation**
SESSION III 12.15- 1.00 pm	**Role of ADME and Toxicity in the Drug Candidate Selection** **Dr. Girinath Pillai** Chief Scientific Officer, Zastra Innovations, Bengaluru.
SESSION IV 01.00-01.30 pm	**Poster Presentation**
01.30-02.00 pm	**Lunch Break**
SESSION V 02.00-02.45 pm	**BioEnergy: A Sustainable Biotechnological Innovations** **Dr.Aruna Jampani** Professor, Dept. of Life Science, Reva University, Bengaluru
02.45- 03.00 pm	**Tea Break**
SESSION VI 03.00- 03.30 pm	**Micro plastics pollution in aquatic and freshwater environment** **Dr.M.Govarthanan** Post Doctoral Fellow, University of Seoul, South Korea
3.30-4.00 pm	Valedictory Function
National Anthem	

INTERNATIONAL SEMINAR ON

RECENT SCENARIO IN BIOTECHNOLOGICAL INNOVATIONS

22nd February, 2019

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Published by

MAHENDRA EDUCATIONAL TRUST

Mahendrapuri, Mallasamudram , Namakkal (Dt.), Tamil Nadu.

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ARTS & SCIENCE COLLEGE

(Autonomous)

***K*alippatti - 637 501, Namakkal (Dt.) Tamil Nadu, India,**
Phone: 04288-288315 ***Fax*:** 04288-288302
Website: www.mahendraarts.org.

Shri M.G. Bharath Kumar
Chairman.

MESSAGE

I am extremely delighted to hear that the Department of Biotechnology is organizing an International Seminar on **Recent Scenario in Biotechnological Innovations** on **22th February, 2019**.

I am sure that this seminar will provide a forum to disseminate the latest knowledge and trends on several emerging topics in Biotechnology and Biological Sciences.

I wish the seminar all success.

MAHENDRA
ARTS & SCIENCE COLLEGE
(Autonomous)
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Phone: 04288-288315 ***Fax*:** 04288-288302
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Shrimathi B. Valliyammal,
Secretary.

MESSAGE

Science! The ocean of knowledge, mountain of challenge, can traverse through constant struggle or conquer by relentless journey fueled by an eternal inquisitiveness to unlock the secrets of NATURE.

Life! The ultimate gift of nature can be understood & enjoyed through the languages of science & innovations of technology.

In recent years, revolution in biology has occurred due to the potentials of biotechnology. Techniques have been developed to produce rare and medicinally valuable molecules to change the hereditary traits of plants and animals to diagnose diseases.

This way, biotechnology has great impact in the fields of health, food/agriculture and environmental protection. Developing and creating innovative scientific products are directly related to the welfare of humanity, ethics, sincerity and commitment.

I congratulate the organizers of the seminar and my best wishes for its success.

PERIYAR UNIVERSITY
State University
Salem - 636 011
Tamil Nadu, India

Professor P. KOLANDAIVEL
Vice Chancellor

Date: 14-02-2019

Message

I am happy to know that the PG and Research Department of Biotechnology, Mahendra Arts & Science College, Kallipatti is organizing an international seminar on "Recent Scenario in Biotechnological Innovations" on 22nd February 2019.

Today, Biotechnology with the aid of cutting edge technologies in Molecular Biology and Computational Biology is becoming a solution provider in Agriculture, Environment and Disease. Personalized health care is another area in which computational biology and stochastic modeling are improving our understanding about the progression of the disease and how to tackle them. Recent times are very fascinating with biotechnological innovation occurring almost everywhere. The technological innovations have made Biotechnology a game changer in multifaceted spheres to provide a healthy life and a cleaner environment.

I hope that this international conference will give more knowledge about the evolution of the biotechnological innovations and also provide a platform to the scholars and students to share their ideas towards a better tomorrow.

I appreciate the Department of Biotechnology, Mahendra Arts & Science College, Kallipatti for their sincere efforts in organizing this international conference.

P. Kolandaivel

[P. Kolandaivel]

Telephone 0427-2345161 (O) | Res 0427 - 2345464 | Fax 0427-2345565 (O) | E-mail vcperiyar@gmail.com | Website www.periyaruniversity.ac.in

Professor **N. Rajendran**
Vice - Chancellor

ALAGAPPA UNIVERSITY

Vallal Alagappar Valagam, Karaikudi - 630 003, Tamil Nadu, India.
(A State University Established by the Government of Tamil Nadu, Recognised by UGC.
Accredited with 'A+' Grade by NAAC (CGPA : 3.64) in the Third Cycle,
Graded as Category - I University and Granted Autonomy by MHRD - UGC)

MESSAGE

I am happy to note that Mahendra Arts & Science College, Kalippatti is organizing a national level conference on the theme "Recent Scenario in Biotechnological Innovations" on 22nd February 2019. Biotechnology is one of the great components of the emerging science era. It is important to learn the current developments in Biotechnology for the students and budding researchers. I hope that the conference will be a great place for learning the experience of experts in Biotechnology. I am sure, the conference will be of immense benefit for the students to update themselves in the current trends in Biotechnological research.

My best wishes to the management, Faculty and organizing committee for conducting such a useful conference. Also, I wish the conference a grand success.

(N.RAJENDRAN)

Ph. : 04565 225200 | Fax : 04565 225202
Mobile : 94980 57722, 94431 91277 | Email : vicechancelloralu@gmail.com

பெரியார் பல்கலைக்கழகம்
PERIYAR UNIVERSITY
SALEM- 636011, TAMIL NADU
NAAC **A** Grade - State University - NIRF Rank 90

Dr. K. Thangavel
Registrar i/c

Date: 21.02.2019

MESSAGE

I would like to congratulate the PG and Research Department of Biotechnology, Mahendra Arts & Science College, for their commitment and drive in organizing this one day International Seminar on "Recent Scenario in Biotechnological Innovations" on 22nd February 2019.

I am sure that this seminar will be able to provide a platform towards knowledge sharing and also enhance the necessary thrust in joint research collaborations. This seminar will be a foundation for the growth of new ideas towards a better tomorrow.

With great pleasure I extend my wishes to the organizers of the seminar. Let the good work continue forever.... Best wishes.

PERIYAR UNIVERSITY REGISTRAR OFFICE SALEM-636 011

K. Thangavel
Registrar 21.2.19
REGISTRAR i/c
PERIYAR UNIVERSITY
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Dr.R.Samson Ravindran
Executive Director,
Mahendra Educational Institutions.

MESSAGE

Biotechnology has emerged as one of the most important technological revolutions of the last century. It is used on various fields as agriculture, food science, pharmaceuticals, etc.

I am glad to know that the Department of Biotechnology conducts an international seminar on **RECENT SCENARIO IN BIOTECHNOLOCAL INNOVATIONS** ON 22nd Feb-2019.

I am sure that the deliberations during this seminar will benefit the research scholars and students from various fields.

I am sure that the seminar will achieve its objective hands down.

Mr. N.Sampath Kumar
Director - Administration,
Mahendra Arts & Science College.

MESSAGE

I feel proud of being a part of this great institution with its unique Bio-Technology department growing up in all fields by leaps and bounds, thanks to the untiring team of faculty members and its befitting leader who is blessed with a great vision. I am all appreciation for the various innovative healthy activities going on involving the latest technological developments taking place in Bio-Tech globally. I am sure that the day is not far off that this department hits the headlines of the daily magazines for its uniqueness at the international level and my hearty wishes for the same. I wish this national seminar massive success!

Dr. V. Aroulmoji,
Director R&D,

MESSAGE

I am pleased to know that the Department of Bio-Technology of Mahendra Arts and Science College is organizing an International Seminar based on the recent developments in Bio-technological innovations to be held on 22nd of February 2019.

It is be noted that the theme of the seminar is appropriate based on the incremental progress globally in the area of Bio-Technological Innovations.

I am confident that the conference will boost the participants with highly informative sessions targeting various levels of academic and industrial innovations in Bio-Technology.

Please accept my best wishes especially to the organizing committee of the Department of Bio-Technology for successful conduct of the seminar.

Dr.S.Arjunan
Principal

MESSAGE

"Aim at the sky. The sky becomes nearer"

Creating interest and excitement in science and nurturing a new generation of scientists is essential in improving the quality of life and enhancing the state and national competitiveness.

In our college we have been constantly working for imparting futuristic biotechnology education and to develop a cadre of highly qualified and trained technocrats having dedication for application of biotechnology. On that part, I am indeed happy to know that the department of biotechnology organizes International Seminar on **Recent Scenario in Biotechnological Innovations** and publishing a souvenir to mark the occasion.

As the programme is participated by a large number of young students of biotechnology from various colleges along with eminent faculties, I believe that it will provide a good scope for interaction between biotechnology at action and biotechnology as career.

I hope that the seminar will be a real exposure in biotechnology in society interface and inspire the younger generation to its glorious past and present.

I would like to congratulate the head of the department and faculty members for organizing the seminar on **Recent Scenario in Biotechnological Innovations**. I wish the seminar a grand success!

PRINCIPAL

MAHENDRA ARTS & SCIENCE COLLEGE

(AUTONOMOUS)

(Affiliated to Periyar University, Salem-11)

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96th NIRF All India Ranking - 2018

Attayampatti (Via), Kalippatti (Po), Tiruchengode (Tk),

Namakkal (Dt), Tamil Nadu, India.

Dr. T. Selvankumar,

Convenor,

Head, Department of Biotechnology.

MESSAGE

It's my privilege to welcome all the delegates and participants to attend the International Seminar on **Recent Scenario in Biotechnological Innovations** on **22th February, 2019** organized by the Department of Biotechnology, Mahendra Arts & Science College, Kalippatti 637 501, Namakkal (Dt), Tamil Nadu, India

Biotechnology refers to the application of living systems and organisms to develop useful products. It has become the world's fastest growing and most rapidly changing technology and it is necessary to update the recent developments. New concepts like Nanotechnology, Genetic engineering, Bioprocess Technology, Immumotechnology have emerged to facilitate better products for humanity.

I am sure that this conference will provide a forum to disseminate the latest knowledge and trends on several topics in biotechnology and I sure that it is very useful to the research scholars and students.

I am highly thankful to the invited speakers for exchanging their innovative views and ideas.

I would like to thank our management for its constant support and encouragement.

I am also thankful to the faculties, students of Biotechnology for their hard work and support to make the seminar a big success!

Dr. T. Selvankumar

MAHENDRA ARTS & SCIENCE COLLEGE

(AUTONOMOUS)

(Affiliated to Periyar University, Salem-11)

Accredited by NAAC with "A" Grade & Recognized with 2(f) and 12(B) u/s UGC Act 1956.

96th NIRF All India Ranking - 2018

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Namakkal (Dt), Tamil Nadu, India.

Dr.A.Sengottaiyan

Organizing Secretary

Asst. Prof., Department of Biotechnology

MESSAGE

I take pleasure in organizing this National Seminar on International Seminar on **Recent Scenario in Biotechnological Innovations** on **22th February, 2019** at **Mahendra Arts & Science College (Autonomous)** Kalippatti, Namakkal Dt., Tamil Nadu, India.

In the course of the seminar we see many programs that motivate the participants to take up career research and identify the required issues to be addressed towards sustainable development of the Biological techniques.

I am very sertain that the seminar will bring out useful and successful results of the past, describe present research trends and identify future unaddressed issues for the young scientists.

Dr. A.Sengottaiyan

DEPARTMENT OF BIOTECHNOLOGY
(DST-FIST Sponsored Department)
PERIYAR UNIVERSITY
(Accredited with 'A' grade by NAAC & 47th Rank by NIRF-MHRD)
SALEM – 636 011, TAMIL NADU, INDIA

Dr. P. Perumal, Ph.D.,
Professor & Head

Mobile: +91-9443986669
Ph.: 0427-2346265; Ext.: 225
Email: perumaldr@gmail.com

Date : 20.02.2019

MESSAGE

Advances in biotechnology brought in major changes in biology/life science areas through new techniques of genetic engineering and sequencing technologies, including rDNA technology that permits the transfer of genetic material between widely divergent species and micro-organisms with diverse characteristics. The increase in knowledge of many pathogenic species of micro-organism, toxins and other biological agents and the continuing pace of developments in civilian – related biotechnology areas have further increased the possibilities production and sociable use of biological production products like industrially important enzymes, antibodies, and so on.

Technologies like Recombinant DNA technologies, human genome projects [HGP], genomics and proteomics, Gene therapy, System biology, Animal Health care, Plant Pests and Diseases, Bio-pharming and Bio-remediation are converging in many ways that would enable life processes to be manipulated with far-reaching positive implications. The tools discussed above interactively create unanticipated opportunities for these technologies to be used for the benefit of humanity and agriculture.

Therefore, the topic of the present seminar will be of immense support to the researchers, faculty members and industrial sectors and I congratulate the organizers of the seminar.

I am immensely pleased to extend my hearty welcome to all the delegates of the one-day Inter National Seminar on Recent Scenario in Biotechnological Innovations" to be held on 22nd February 2019. I wish the seminar a grand success.

[P.PERUMAL]

DEPARTMENT OF MICROBIOLOGY
PERIYAR UNIVERSITY
(Reaccredited with "A" Grade by the NAAC)
PERIYAR PALKALAI NAGAR
SALEM - 636 011, TAMIL NADU

Phone: 0427 – 2345766, Extn.227
E-mail:rbalaguru@yahoo.com

Dr. R. BALAGURUNATHAN, Ph.D.
Professor & Head

20.02.2019

I am extremely glad to know that the Mahendra Arts & Science College is organizing its International conference, entitled "RECENT SCENARIO IN BIOTECHNOLOGICAL INNOVATIONS" scheduled to be held on 22nd of February 2019 at the Mahendra Arts & Science College (Autonomous) Kalippatti, Namakkal.

I have no doubt that the scientific presentations and deliberations during the conference will be quite useful to all the participants and will inspire then to strive for excellence in their respective disciplines. I am sure this conference will be a milestone in ensuring the highest standards in this profession. I wish the organizers the very best in this and all their other endeavours. I congratulate the Institute in organizing the International Conference and wish them a grand success.

(R.Balagurunathan)

DEPARTMENT OF BIOTECHNOLOGY
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Reaccredited with 'A' Grade (CGPA 3.13 Out of 4.0) by NAAC (3rd Cycle)
TIRUNELVELI – 627 012, TAMILNADU

Dr. K.Murugan, MSc., PhD
Professor
Addl. Controller of Examinations (DD&CE)

Date: **15/02/2019**

Green greetings.

It is an honour for me to write a message for the One-Day International Seminar on Recent Scenario in Biotechnological Innovations organised the P.G and Research Department of Biotechnology, Mahendra Arts and Science College, Kallipatti, Namakkal. I understand that the high profile resource persons and people of varied experiences are going to share their thoughts with a focus on encouraging the researchers and students to take-up challenges of fast developing next-generation biology. I am very confident that this seminar would act as a catalyst in equipping the students and researchers with the needed knowledge and necessary skills to meet the challenges of next-generation biology. I want to express my appreciation to Dr T.Selvankumar, the convener of this seminar and his team for their hard work and relentless effort for the successful delivery of this mega biotechnology event.

I wish you all a fruitful discourse.

PHONE: 9443696309 Email: murugan@msuniv.in; murutan@gmail.com

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Dr.S.N.Ganeshamoorthy, M.D. (Gen. Med)
Consultant Physician and Diabetologist

20.02.19

ERODE

It gives an immense pleasure to note that Department of Biotechnology, Mahendra Arts and Science College, Namakkal is organizing an **International Seminar on "Recent Scenario in Biotechnological Innovations"** on 22nd February 2019.

Biotechnology is an ever emerging field in which biological processes are exploited to develop novel expertise. Over the past two decades there have been revolutionary biotech innovations which helped the mankind. New tools and products developed by Biotechnologists are expedient in research, agriculture, industry and the clinic.

The topic for the Seminar is apt for the current situation as exploring the recent scenario in the field of Biotechnology will underpin our economy and provide solutions to intractable problems of human and animal diseases, climate change, fuel alternatives, food security as well as improving our quality of life.

I appreciate the efforts of the organizing committee and my best wishes for the successful conduct of the International Seminar.

S.N. Ganesha moorthy
DR.S.N.GANESHAMOORTHY,M.D.,

162 / 181, Perundurai Road, Erode - 638 011
Tel : 0424 - 2 45 45 45 (30 Lines) 2261353, 2260373

DEPARTMENT OF ANIMAL HEALTH & MANAGEMENT
ALAGAPPA UNIVERSITY
(A State University Established by Govt. of Tamilnadu in 1985)
KARAIKUDI - 630 003, TAMIL NADU, INDIA
www.alagappauniversity.ac.in

2017	2018	2018	2018	2019
A+ Grade by NAAC (CGPA : 3.64)	Graded as Category-1 & Granted Autonomy	Rank : 27	Swachh Campus Rank : 4	India Rank : 20BRICS Rank: 104 Asia Rank : 216

Dr. B. Vaseeharan
Professor and Head

Message

I am glad to know that, Department of Biotechnology, Mahendra Arts & Science College, Namakal are organizing the One day International Seminar on "Recent Scenario in Biotechnological Innovations" on 22nd February, 2019. It gives me added pleasure to know that a souvenir is also brought out.

Innovation in biotechnology is likely lead to the new production and improved methods in the field of agriculture, medicine and aquaculture. The field of biotechnology remains aninterested topic of discussion in today's society with the advent of gene therapy, stem cell research, cloning and genetically modified animals/food. This seminar will provide a forum for sharing new findings, thoughts and opinions on the most existing current research in biotechnology. It is an excellent opportunity to the budding researchers to interact with the experts from various institutions to update and widen their knowledge in the field of biotechnology. I am sure, that it would provide a best platform to scientists, academia and research scholars to nourish their knowledge with new innovations.

I extend my best wishes for the success of this international seminar and believe that, the outcome would help in moving forward to deal with occupational and environmental health at larger level.

Date: 20.02.2019

Yours Sincerely

Vaseeharan

MAHENDRA ARTS & SCIENCE COLLEGE

[AUTONOMOUS]

Department of Biotechnology

INTERNATIONAL SEMINAR

ON

RECENT SCENARIO IN BIOTECHNOLOGICAL INNOVATIONS

22nd February, 2019

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INVITED SPEAKERS

IS **-1**

BIOREMEDIATION OF METALS

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Abstract

Metal pollution has become a major problem worldwide. Conventional remediation technologies are not eco-friendly and often do not yield desirable soil properties for the reestablishment of contaminated soil. Bioremediation is a process that uses biotic communities such as microorganisms or green plants or their enzymes to degrade/detoxify the toxic contaminants present in the soil/wastewaters. It is considered as an inexpensive, less energy consuming, simple, and eco-friendly technology. Among the bioremediation techniques, microbial bioremediation is commonly used to remediate the metal contaminated soil. Bioaugmentation with indigenous *Bacillus* sp. reduced (26%) the bioavailable fraction of Pb in mine waste soil. However, bioaugmentation and subsequent biostimulation significantly increased the immobilization rate of Pb to 36%. X-ray diffraction studies confirmed the role of bacterially induced calcite precipitation in the immobilization of Pb. Bioleaching of the mine waste soil with *Herbaspirillum* sp. indicated that the bacteria interacted with the water soluble, strong organic, and residual fraction of metals. The *Herbaspirillum* sp. produces weak organic acids such as lactic, malic, succinic, acetic, and citric, which could be involved in the solubilization of metals. Furthermore, the bacteria *Herbaspirillum* sp. was screened for plant growth promoting activity and subsequently assessed the influence of metals on plant growth promoting activity. The bacteria were also used to enhance the phytoaccumulation rate in *Zea mays* L.

IS -2

BIOENERGY: A SUSTAINABLE BIOTECHNOLOGICAL INNOVATION

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Abstract

Climate change and energy security are major issues that need to be urgently addressed. While energy security is an issue of sovereignty; climate change is an area in which India can be a leader in providing solutions to the world. The need of energy is increasing continuously, because of increase in industrialization as well as human population. Climate change mitigation, economic growth and stability, and the ongoing depletion of oil reserves are all major drivers for the development of economically rational, renewable energy technology platforms. The basic sources of our energy are petroleum, natural gas, and coal, hydro and nuclear. The major disadvantage of using petroleum based fuel is atmospheric pollution. Petroleum diesel combustion is a major source of greenhouse gases (GHG). Apart from these emissions, petroleum diesel combustion is also major source of other air contaminants including NOx, SOx, CO, particulate matter and volatile organic compounds, which are adversely affecting the environment and causing air pollution. These environmental problems can be eliminated by replacing the petroleum diesel fuel with an efficient renewable and sustainable biofuel. Abundant, affordable, and sustainable feedstocks are essential to the burgeoning biofuels industry. Algae can play a significant role in providing biomass in areas even not suitable to traditional agriculture like, deserts, coastal areas, non-aerable lands etc.

Sustainable development is the development that meets the needs of the present without compromising the ability of the future generations to meet their own needs. Sustainability even include and integrate an economic, an environmental and a social dimension.Algal biomass is one of the emerging sources of sustainable energy, which includes, food security, energy security, environmental quality, economic viability(with their value added co-products) and social concern. The large-scale introduction of biomass could contribute to sustainable development on several fronts, environmentally, socially and economically. In fact,the biomass doubling time for microalgae during exponential growth can be as short as 3 to 4 hr, which is significantly quicker

than the doubling time for oil crops.Algae can have anywhere between 20-80% of oil by weight of dry mass. Lipids and hydrocarbons can normally be found throughout the micro algal biomass. They occur as membrane components, storage products, metabolites and sources of energy for microalgae. Algal strains, diatoms, and cyanobacteria (categorized collectively as microalgae) have been found to contain proportionally high level of lipid (over 30%). These microalgal strains with high lipid content are of great interest in search for sustainable feedstock for production of biodiesel.

Biodiesel from microalgae appears to be a feasible solution to India, for replacing petro-diesel. The estimated annual consumption of petroleum product in India is nearly about 120 million tonnes per year, and no other feedstock except microalgae has the capacity to replace this large volume of oil. However, if the feedstock were to be algae, owing to its very high yield of oil per acre of cultivation, it has been estimated that less than 2-3 percent of total Indian cropping land is sufficient to produce enough biodiesel to replace all petrodiesel currently used in country.

Algae can be cultivated either in open pond /closed pond ,air lift bioreactors and even photobioreactors. In fresh waters, *Anabena, Nostoc, spirulina, Dunaliella, Arthrospira*; in marine waters, *Isochrysisg albana, chlorococcum littorale, Chlamydomonas, Nanochloropsis salina, Botryococcus brauni*; in deserts, *Haematococcus pulivialis, Microcoleus vaginatus, Chlamydomonas perigranulata* and *Synechocystis* are the suitable algae for cultivation. In the production of energy from microalgal biomass, two basic approaches are employed depending on the particular organism and the hydro-carbon which they produce. The first is simply the biological conversion of nutrients into lipids or hydrocarbons.The second procedure entails the thermo-chemical liquefaction of algal biomass into lipid or hydrocarbons. Biotechnological implication in strain improvement for varied climate conditions, oil quality and quantity , improved cultivation methods, extraction techniques and purification methods are the present opportunities and challenges in algal bioenergy sector to evolve as the pioneer sustainable energy.

Government has set up a target of 20% blending by 2017. Apex financial institutions like the National Bank for Agriculture and Rural Development (NABARD), Indian Renewable Energy Development Agency (IREDA) and Small Industries Development Bank of India (SIDBI) have refinancing provisions to set up biodiesel plantations, oil expelling/ extraction units, and infrastructure for storage and distribution .The Bio-Diesel Association of India (BDAI), is a non-profit national association representing the biofuels sector more specifically biodiesel industry as

the coordinating body for marketing, research and development in India, encourage biofuels specially biodiesel and assure sustainable agricultural growth, rural development, energy security and equal opportunity for the masses with overall environmental protection. India's biofuel policy exempts the biofuel sector from central taxes and duties. While biodiesel is exempt from excise duty, bioethanol enjoys a concessional excise duty of 16%. Customs and excise duty concessions are also provided on plant and machinery for the production of biodiesel and bioethanol. These policies promote the biofuel sector .Though the policy mentions exemption of central taxes and duties on biofuels, sales tax, license fee, permit fee and import taxes still exist, hindering the growth and development of the industry

Algal bioenergy /biofuel pioneer industries are:Algenol Biofuels- Sonoran Desert-Mexico, Solix Biofuels-colo, Sapphire Energy - Southern New Mexico, Solazyme- South San Fransisco, seambiotic- Israel .Indian companies ,Shree Cements, Rajasthan – Algal biomass, Reliance Industries – Algal biofuels , Tata Power, Mumbai – CO_2 mitigation and biomass production, Abellon Clean energy, Ahmedabad - Remediation and biomass production , KGDS, Coimbatore – Algal biomass – Bioenergy, Jubiliant Life Sciences, Noida – Effluent treatment and biomass production, bioenergy, NFCL, Kakinada – Effluent treatment and algal biomass production , Jain Irrigation Systems Ltd. And Jain Plastic Park, Bambhori, Jalgaon – remediation and biomass production, Biocon, Bangalore – Remediation and algal biomass production, HPCL, Gujrat – Remediation and biomass production , GNE-India – Algal biomass for fish feed and oil, AGNI BIO ENERGY – Chandigarh – Remediation and algal biomass production, ONGC – CO_2 mitigation and biomass production are contributing for this new generation sustainable algal bioenergy in India. Improved biotechnological innovations, good government bioenergy policies and vision 2050 can make India as a potential lead in the world bioenergy sector to meet the needs of the present without compromising the ability of the future generations to meet their own needs.

IS -3

ROLE OF ADME AND TOXICITY IN THE DRUG CANDIDATE SELECTION

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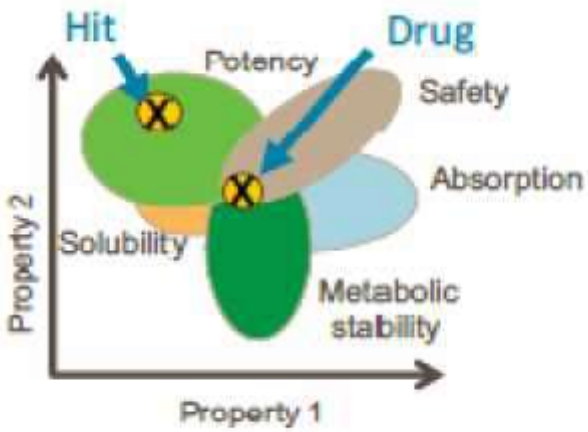
Abstract

Computer aided design plays an important role in the phase of drug discovery and has considerably improved in the last decade with candidate selection and decision-making process. A successful, efficacious and safe drug must achieve a balance of many properties, including potency and appropriate physicochemical, absorption, distribution, metabolism, excretion and toxicity (ADMET) properties. Exploring the latest developments in methods that guide compound selection, which help to quickly target compounds with the best balance of properties for a drug discovery is objective. Predictive modelling of ADMET properties and how these models can be used to guide the design of improved compounds are trivial. Understanding of 3-dimensional (3D) structure-based design information can be linked with 2D SAR analysis is vital to meet the requirements of a drug, such as: (i) bind to biological target invivo (ii) pass through cell membrane or bloodbrain barrier (iii) remain long enough to be effective (iv) eliminate from the body by metabolism, excretion, or other means. Use innovative, new methods to explore your complex data to find interpretable, multi-parameter scoring profiles, tailored to identify compounds for your drug discovery objective. The resulting scoring profiles will help you to quickly target compounds with a higher chance of success.



IS -**4**

MICROBIAL DIVERSITY IN CRUDE OIL RESERVOIR – OVERVIEW

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Abstract

The term microbial influenced corrosion (MIC) refers to the accelerated degradation of metals owing to the occurrence of biofilms on their surfaces. It has been estimated that MIC leads to loss of millions of dollars by causing damage over the production, transport and storage of oil in petroleum industries annually. Major microbes involved in MIC are sulphate reducers, iron oxidizers/reducers, manganese oxidizers, acid producers and methanoarchaea.

Our research interests include, molecular identification of the corrosive microbial communities and biocorrosion and electrochemical behavior of hydrocarbon degrading bacteria on various engineering material and its corrosion control strategies using biocide/inhibitors. In addition, biofilm formation and its role/mechanism on biocorrosion of different metals were elucidated. We have also screened many eco-friendly compounds and selected some green inhibitors to inhibit the microbial corrosion problems in the oil reservoir conditions. Additionally many of biocides and chemical inhibitors were also employed to inhibit the biofilm formation over the metal surfaces.

Other part of our research focuses on Biodegradation of hydrocarbon (aliphatic and aromatic) that indirectly influence/accelerate the MIC rate in marine environment. Metagenomic analysis of samples from petroleum industries mimic the complete profile of microbial communities involved in MIC and more significantly to understand the interactions between different communities. Advanced Molecular techniques such as, Polymerase chain reaction (PCR), Denaturing gradient gel electrophoresis (DGGE), Fluorescence in situ hybridization/4’,6-diamidino-2-phenylindole methods and Next generation sequence (NGS) are few of the effective tools used in (i) the identification and subsequent elucidation of functional role of individual microbes involved in MIC; and (ii) to develop a corrosion inhibitors/biocides to minimize the MIC induced loss in petroleum industries.

In addition we also carry out biodegradation of petroleum hydrocarbons using bacterial strains with reference to bioremediation purposes. We too have explored the role of biosurfactant towards biodegradation of hydrocarbons, that can be might be applied for other environmental applications such as microbial oil recovery, bioremediation, as emulsifier in food industry and in pharmaceutical applications.

Abatement of heavy metals pollution using integrated approaches is considered to be more effective to achieve the goal effectively and will overcome a major drawback of large scale implementation than individual. Therefore, we have devised an integrated approach of electro-kinetics with biodegradation as Bio-Electrokinetics (BEK) towards textile and tannery effluent remediation. Another integrated approach of Bio-enhanced Electrokinetic remediation (BEER) towards heavy metal removal has been explored and studied. Our research wings have extended even in fabricating customised microbial fuel cell with a dual purpose of waste water treatment electric power generation.

We strongly believe that our approaches willsurely evoke research thrust that could give rise to novel remediation projects for research community in the future in terms of integrated processes for remediation purposes.

Keywords: MIC, Biodegradation, BEK; BEER, Microbial fuel cell.

IS -**5**

MICROPLASTIC POLLUTION IN DRINKING WATER

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Abstract

Microplastics, very small pieces of (<5 mm) intentionally produced to be used in consumer products (e.g. as exfoliants in cosmetics) and in activities as abrasives (e.g. air blasting) and/or resulting from the fragmentation of larger objects, are highly persistent contaminants potentially harmful to organisms or ecosystems. For organisms, the risks associated with microplastics ingestion are not only due to the material itself, but also to its ability to absorb and concentrate environmental contaminants in seawater and subsequently transfer them through food chains. Moreover, microplastics could influence ecological processes. Recently, plastic debris is recognized as emerging pollutants and represents a great risk for marine biodiversity worldwide. Thus, the elimination of microplastics in water system is playing an important role in plastic research.

Keywords: Microplastics, Harmful, Contaminants, Ecosystem.

ABSTRACTS

ORAL PRESENTATION

BT-O-01

PUBLIC HEALTH: INFECTIOUS DISEASE VS CHRONIC DISEASE

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Abstract

Public Health is defined as the science and art of preventing diseases, prolonging life and promoting human health through organize the effort and informed choice of society organization Public and private communities and individuals. It is interdisciplinary with many subfield like environmental health, community health, behavioural health, health economic, public policy, mental health and occupational safety, sexual and reproductive health. The aim of public health is to improvethe quality of the life to prevention and curing of diseases which may be infectious diseases or chronic diseases. It includes mental health also. Common public health initiatives includes handwashing and breast feeding, delivery of vaccination, suicide prevention, distribution of condoms. There are few types of infectious diseases. That are separated they may be the anthrax, bird flu, bubonic plague, Chikungunya, cholera, dengueFever, Ebola, jaundice, malaria, rabies, tetanus, yellow fever. Chronic diseases is a long term diseases persists over a long period of time. Chronic diseases can hinder independent health of people with Disability. It can be controlled through regular participation in physical activities, eating healthy, not smoking, avoiding excessive alcohol consumption. There are few types of chronic diseases they May be HIV, cancer, diabetes and some heart diseases. This can be concluded by saying both Infectious and chronic diseases may cause danger or illness to public.

BT-O-02

PHA- BIOPLASTICS - A REVIEW

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Abstract

Now-a-day's plastic plays a more indispensable role in human being life. Plastics are synthetic or semi synthetic materials obtained from petroleum and natural gas. As these plastic materials became toxic to plants, animals, humans and pollute the environment, so bio-plastics came into existence & can be obtained from different sources. The main source of bio-plastics are microorganisms like bacteria, algae etc. When the microbes developed under a stressful condition it will produce bio plastics material. Many types of bio plastic material were introduced. They are cellulose based plastics, protein based plastic, starch based plastics etc., one such type produced from algal sources, discovered by Ari Johnson, Assistant professor, California University, made a bottle, out of red algae which is cent percent biodegradable. So that I can prefer Biotechnology techniques such as Fermentation and genetic engineering can play a key role in conducting the feasibility and sustainability studies in algal bio-plastics and the main content of bio plastic is Polyhydroxyalkanones which is completely degradable material.PHA is a thermoplastic material produced in the nutrient medium by *Cupriavidus necator*(Bacteria). It can multiple rapidly in the extreme conditions from 60 to 180 degree Celsius &synthesize PHA. It is the more advantageous process to reduce the environmental pollution.

BT-O-03

ANTIHYPERLIPIDEMIC EFFECT OF ETHANOL EXTRACT OF *PHYLLANTHUS MADERASPATENSIS* LINN IN STREPTOZOTOCIN-INDUCED DIABETIC RATS

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Abstract

The available drugs for diabetes, Insulin or Oral hypoglycemic agents have one or more side effects. Search for new Antidiabetic drugs with minimal or no side effects from medicinal plants is a challenge according to WHO recommendations. In this aspect, the present study was undertaken to evaluate the antihyperlipidemic effects of ethanol extract of *Phyllanthus maderaspatensis* in streptozotocin (STZ) induced diabetic rats. Diabetes was induced by intraperitoneal administration of STZ (50 mg/kg.b.w) in male Wister albino rats. The effect of extracts of *Phyllanthus maderaspatensis* on serum lipid profile like Total cholesterol, triglycerides, low density, very low density and high density lipoprotein were also measured in the diabetic and non diabetic rats. There was significant reduction in Total cholesterol, LDL cholesterol, VLDL cholesterol and improvement in HDL cholesterol in diabetic rats. These results suggested that *Phyllanthus maderaspatensis* possess an antihyperlipidemic effect.

Keywords: *Phyllanthus maderaspatensis*, Streptozotocin, Antihyperlipidemic.

BT-O-04

PHYTOCHEMICAL ANALYSIS AND *IN VITRO* ANTIOXIDANT ACTIVITY OF LEAVES OF *PHYLLANTHUS VIRGATUS*

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Abstract

Natural drugs play important and vital role in the modern medicine. The need for antioxidant agents, which can prevent oxidative stress, has become a major priority. Current investigation is directed to the detection of the Phytochemical analysis and *in-vitro* anti oxidant activity of the leaves of *phyllanthus virgatus*. The preliminary phytochemical screening of ethanol extract of leaves of *phyllanthus virgatus* was carried out using Harbone method. Various concentrations of ethanol extract of *phyllanthus virgatus* was taken for *in vitro* antioxidant activity. The ethanol extract showed the presence of alkaloids, flavonoids, glycosides, steroids, phenols, fixed oils and tannins. The ethanol extract of leaves exhibited strong scavenging effect on 2, 2-diphenyl-2-picryl hydrazyl (DPPH) free radical, hydrogen peroxide radical scavenging activity, superoxide radical scavenging activity and hydroxyl radical scavenging activity. The results of the present study deals with the exploration of phytochemical study and in vitro antioxidant activity of leaves of *phyllanthus virgatus*.

Key words: *Phyllanthus virgatus*, phytochemical analysis, antioxidant.

BT-O-05

OPTIMIZATION AND IDENTIFICATION OF HYDROCARBON DEGRADING MICROBES FROM CRUDE OIL POLLUTED SOIL

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Abstract

Due to increase of huge population and industries there is a need of crude oil and its products in large amount in all over the world. Large consumption of oil products leads to be tremendous amount of hydrocarbon release to our environment and cause adverse effects in living organisms present in the environment. There is a chance to pollute the environment heavily and cause carcinogenic and mutagenic effects to the microbes. In natural state the crude oil contains hundreds of thousands of hydrocarbon compounds. There is a need to remove the hydrocarbon pollutants present in our environment in efficient manner. Bioremediation is one of the techniques to remove the pollutants with the help of indigenous microorganisms. Many microorganisms are involved in the crude oil degradation process and transform more toxic to non toxic. In our present study aimed to be identified the hydrocarbon degrading bacteria from petrol, diesel, kerosene polluted soils. The soil samples were subjected into physicochemical, morphological and biochemical characterization. The selected colonies were grown in the Bushnell Haas medium with different concentration of diesel to identify the degradation capacity of an organism by zone formation. The isolates with a High zone of clearance were 16s rRNA sequenced by using specific primers and identified has genus of the microbes. Then the selected microbes were treated with GC-MS analysis and different pH and temperature. The ability of these isolates to degrade hydrocarbons is clear evidence that their genome harbors the relevant degrading gene. Totally six bacterial species were proved to degrade the hydrocarbon in efficiently.

BT-O-06

ISOLATION AND IDENTIFICATION OF MICROBES FROM PETROLLEUM CONTAMINATED SITES AND IDENTIFY THE BEST DEGRADER OF HYDROCARBON.

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Abstract

Petroleum considered as one of the important pollution in the world. Crude oil is non renewable natural resource of energy and produced globally in staggering quantities and oil demand foreseen to be 92.9 mega barrels per day in 2015, with an increasing demand reaching 110 mega barrels in 2035. Due to various reasons the hydrocarbons enter into our environment and causes severe damage to living organisms. Bioremediation is the important technique to remove the pollutants present in our environment. In the present study aims to identify the efficient bacterial strains under different parameters like pH and temperature. The soil samples were collected from petrol polluted soil and physiochemical and biochemical characteristics were analyzed. The growth of bacterial strains in different concentration of diesel was monitored to identify the effective hydrocarbon degrader. Then the bacterial strains are subjected into different pH and temperature. Totally 15 bacterial species isolated from hydrocarbon polluted soil. Out of fifteen *Pseudomonas stutzeri, Pseudomonas putida* and *Pseudomonas aeroginosa* are the best degrader and gave efficient degradation in all parameters. The *Pseudomonas* species grow well in 10% of petrol and grow even 9 pH and temperature 50^{o}C.

BT-O-07

A COMPARITIVE STUDY OF PHYSIOCHEMICAL PROPERTIES OF NORMAL SOIL WITH OIL CONTAMINATED SITES.

M.Jothika, N. Kamila Banu, P.Kowsalya, P. Kavitha, R. Karthika

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Abstract

Soil is a basic constituent of the ecosystem and the maintenance of ecological integrity that included the soil largely depends on the sustainable ecosystem. Crude oil pollution has become a serious problem all over the globe. Thus, this resulted in loss of soil fertility, soil degradation and wasteland. This is because the nutrient in the soil are no longer available for plant and micro organism due to pollution. Bioremediation which has been defined as the use of living organism, living system or its derivatives to detoxify and degrade environmental pollution. The long-term use of bioremediation is to achieve a cost effective way of remediation using locally available materials and to maintain the integrity of the environment. The impact of crude oil pollution on the physicochemical parameters of the polluted soil and the influence of remediating the soil with normal soil were investigated. The treatments were three different concentrations of crude oil pollution (150, 300 and 450 ml). The percentage total organic carbon were significantly increased two weeks after crude oil pollution while the pH, percentage total nitrogen, phosphorus significantly decreased. The results also showed that the amendment treatments significantly decreased the toxic effect crude oil at different degrees by improving the nutrient content of the soil. The C: N ratio was significantly reduced in the different concentrations of the polluted soil compared to the control. The results provided the physical, chemical and biological properties of crude oil polluted soils and improve their nutritional status thereby restoring the fertility of the soil for agricultural purposes.

BT-O-08

HEAVY METAL DEGRADATION WITH NATURAL COAGULANT STRYCHROS POTATORUM SEEDS AND ANALZING PHYSIOCHEMICAL PARAMETERS

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Abstract

Among the different industrial waste water share a major important pollution in the environment. Particularly industrial effluent from dye industry carry large amount of heavy metals like zinc, copper, cadmium, lead etc. for past several decades several attempts have been made for effective waste water treatment. However it is persist to note that there are number of traditional mechanism used in part of receive less attention and neglected. Using *Strychnos potatorum* seeds on such traditional technology for waste water treatment needs to be scientifically studied on their mechanism of waste water treatment. Wastewater treatment in textile and dye industry mainly involves treatment of highly colored wastewater containing variety of dyes in different concentrations. The wastewater needs to be treated prior to discharge by effectively removing dye color in order to protect environment and as per the statutory guidelines. Dye effluent from the industries are mostly not treated completely and left into natural water bodies with huge amount of heavy metals. These heavy metals are entering into the food chain of the human beings through aquaculture after getting biological magnified. These can cause serious threats to human beings and other organisms who consume the water contaminated with heavy metals. Therefore the present research is carried out in attempting scientifically to study the functional attributes of *Strychnos potatorum* seeds in treating the water pollution and heavy metals. The main objective of the present study is to reduction of heavy metal concentration present in the industrial dye effluent using *Strychnos potatorum* seeds.

BT-O-09

GC-MS ANALYSIS OF BIO-ACTIVE COMPOUNDS IN METHANOLIC EXTRACT OF *HARPULLIA ARBOREA* (BLANCO) RADLK

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Abstract

A medicinally important plant belongs to the family *Sapindaceae*. Traditionally bark is used in the treatment of rheumatism, cancer and skin diseases. In the present study, the bioactive compounds of *Harpullia arborea* bark have been evaluated using GC-MS. The chemical compositions of the methanolic extract of *Harpullia arborea* were investigated using perkin – Elmer Gas chromatography- Mass spectrum. GC-MS ananlysis of *Harpullia arborea* methanolic extract revealed the existence of the GC-MS chromatogram of the twenty peaks presented. the highly peak presented in catachol (80.84%). Phosphonic Acid, Methyl-, Bis(Tri (1.14%), (E)-1-(4-Methoxyphenyl)Propene(11.98%), 1h-Indole (0.76%), Decane, 1,1'-Oxybis-(0.58%), 2-Chloropropionic Acid, Decyl Ester(0.15%), Phenol, 2-Methoxy-4-(2-Propenyl)- (0.21%) Phenol, 3,5-Bis(1,1-Dimethylethyl)- (0.13%), Oxirane, [(Dodecyloxy)Methyl]- (0.09%), Heptadecane (0.17%), 1,2-Benzenedicarboxylic Acid, Die (1.10%), 2-Propenoic Acid, Tridecyl Ester (0.38%), 1-Decanol, 2-Hexyl-(0.18%), 2,6,8-Trimethylbicyclo[4.2.0], (0.41%), Phthalic Acid, Butyl Undecyl Ester(0.15%), Octadecanoic Acid, Methyl Ester (0.34%), Phthalic Acid, Butyl Oct-3-Yl Ester(0.21%), N-Pentadecanol(0.18%), 9-O ctadecenoic Acid (Z)-, Methyl E(0.29%), 2-Hexadecen-1-Ol, 3,7,11,15-Tetrame (0.71%).

Keywords: GC-MS analysis, Bioactive compounds, *Harpullia arborea*, methanolic extract.

BT-O-10

SCREENING OF PHYTOCHEMICAL AND SPECTRAL ANALYSIS OF METHANOLIC EXTRACT OF *CISSUS VITIGINEA* L.

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Abstract

The Vitaceae family species were used globally in traditional medicine to treat various ailments. In this present investigation was focused on the preliminary phytochemical, UV –Visible Spectrum and Fourier Transform Infrared Spectral analysis of methanolic extract for the stem part of *Cissus vitiginea* (Vitaceae). The results showed that the presence of phytochemical of alkaloids, phenol, flavonoids, steroids, saponins and glycosides. The UV – Visible spectrum showed the peaks at 245, 250, 280 and 330 nm with the absorption of 2.4, 2.8, 3.1 and 3.4 respectively. The FT-IR spectrum showed the presence of alcohols, alkanes, phenols, aromatics and amines. *Cissus vitigina* has a number of phyto-pharmacological activities and traditional medicinal uses.

Keywords: *Cissus vitiginea*, UV – Visible, FT-IR, amine, phenols, alkanes.

BT-O-11

SYNTHESIS OF SILVER NANOPARTICLES FOM *TRIBULUS TERRESTRIS* L. AND PEDALIUM MUREX L. WITH SPECIAL REFERENCE TO URINARY TRACT INFECTIOUS PATHOGENS

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Abstract

Today green synthesis of nanoparticles is inevitable field of research in the field of pharmaceutical science. *Pedalium murex* L. and *Tribulus terrestris* L. are used as an herbal medicine in and around the Tamilnadu state. In the present study green synthesis of nanoparticles from both the plants of aqueous leaf extract by simple, cost-effective and eco-friendly green route technique. The silver nanoparticles are formed by reduction of 1mM silver nitrate solution in the leaf extracts of *Pedalium murex* L. and *Tribulus terrestris* L. based on the phytochemicals present in the plants. The reduced silver nanoparticles are characterized by Transmission Electron Microscope (TEM), FTIR and UV-vis spectroscopy. the higher percentage of silver with fine particles of spherical shape with 12-24 nm size nanoparticles were observed and it was subjected to the antimicrobial activity of urinary tract infectious pathogens like *Escherichia coli*, *Staphylococcus* spp. and *Pseudomonas aeruginosa* by Kirby-Bauer method. The results proven that the maximum zone of inhibition was observed from aqueous leaf extracts of *Pedalium murex* L. followed by *Tribulus terrestris* L. The leaf extracts and synthesized silver nanoparticles both possess antibacterial potentials. The plant based synthesis of silver nanoparticles is moderately quick, wide spread and less expensive for antibacterial potential in modern medicine.

Keywords: *Pedalium murex*, *Tribulus terrestris*, green synthesis, silver nanoparticles, antimicrobial activity.

BT-O-12

EXPLORING THE TRADITIONAL RICE (*ORYZA SATIVA* L.) VARIETIES OF TAMIL NADU, INDIA FOR POTENTIAL ANTIOXIDANT AND ANTIDIABETIC ACTIVITIES WITH BIOACTIVE METABOLITE PROFILING

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Abstract

This study aimed to profile the nutrients, bioactive metabolites, antioxidant and antidiabetic properties of four traditionally conserved rice varieties such as Puzhuthikar (PTS), Elupaipoo Samba (EPS), Valan samba (VS) and Garudan Samba (GS). EPS, VS, and GS have already been recorded in the traditional medicine systems of India, for their therapeutic properties. ICP-AES and GC-MS were used to profile the nutrients and bioactive metabolites, respectively. Macro and micronutrient content levels were found to be higher in EPS followed by PTS compared to IR64. The level of total phenols and flavonoid content were significantly higher in PTS (358.2±7.10µg GAE/g DW) and EPS (151.2±8.86µg RUE/gDW) rice varieties, respectively. GC-MS profiling exhibited therapeutically noteworthy metabolites like naphthalenone,phytol, longipinocarvone, squalene, 2-methyl-3-isopropylpyrazine,methoxy-nb-alpha-methylcorynantheol, and hydnocarpic acid. These metabolites were reported for the first time in rice varieties. All these rice varieties revealed diverse antioxidant and anti-diabetic activity profiles. PTS displayed higher DPPH radical scavenging ($EC_{50}$of 1.667µg/mL) and total antioxidant activity (EC_{50} of 3.384µg/mL), whereas, EPS had the significant capacity to reduce ferric ions (EC_{50}-2.192µg/mL) and superoxide anions (EC_{50}-3.426µg/mL). *In vitro* anti-diabetic assays exhibited that PTS (EC_{50}-2.008µg/mL) and EPS (EC_{50}-2.129µg/mL) could effectively used to manage type-II diabetes, compared to IR64. EPS and PTS are the best among tested rice varieties, which had high nutrients, therapeutically important metabolites, antioxidant, and anti-diabetic properties.

Key words: Traditional rice, bioactive metabolites·antioxidant property, anti-diabetic activity· minerals.

BT-O-13

PRODUCTION, PURIFICATION AND CHARACTERIZATION OF LIPASE ENZYME FROM BACTERIAL STRAIN USINGTRADITIONAL SOAPNUTSAS SUBSTRATE

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Abstract

Sapindus mukorossi, commonly known as soapnuts, belong to family Sapindaceae. It is a popular ingredient of Ayurveda preparation such as shampoo, cleansers and medicine for treatment of eczema, psoriasis and for removing freckles. The aim of this work was to use the soap nuts as substrate for lipase production using bacterial strain. The substrate was stimulated by pre-treatment with 1% HCL and NaOH. Acid and alkali pre-treated samples were characterized using scanning electron microscopy (SEM) and X-ray Diffraction (XRD) for structural variation and crystalline nature. XRD confirmed the crystallinity of pre-treated sample. Powdered soap nuts were used as a substrate for the production of lipase under SSF (Solid State Fermentation) using bacterial strain isolated from the oil contaminated soil. The crude enzyme extract was purified by ammonium sulphate precipitation and anion exchange chromatography followed by SDS-PAGE for molecular weight determination.

Key words: *Sapindus mukorossi*, Solid state fermentation, Ammonium sulphate, Lipase Enzyme

BT-O-14

CHANGE IN DIELECTRIC PROPERTIES OF *PLECTRANTHUS ROTUNDIFOLIUS* (CHINESE POTATO) DURING MICROWAVE DRYING AND ITS APPLICATION IN DRYING MODELS

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Abstract

Chinese potato slices and stripes (thickness 5mm, 8mm) as single layer were dried at different microwave power levels (100W to 850W) in order to determine the effect of microwave power and sample shape on drying characteristics. Moisture ratio found to be decreased as the microwave power level increased. Conversely, drying rate found to be slowly increased from 100w and reached the peak value at the highest microwave power level.Dielectric properties of chinese potato slice were decreased with a reduction in moisture content. Among the eight drying models, Page model found to be suitable for describing experimental drying data regardless of microwave power and shape of chinese potato samples. The change in dielectric properties of chinesepotato slice could be predicted by Henderson and Pabis model and could be applied to estimate the change in moisture content of chinese potato during microwave drying.

Keywords: *Plectranthus rotundifolius* (Chinese potato), Drying models, Dielectric properties.

BT-O-15

HIBISCUS ROSA-SINENSIS LEAVES AS ALTERNATIVE FOR LIPASE PRODUCTION BY *BACILLUS CEREUS* UNDER SOLID-STATE FERMENTATION: PURIFICATION AND BIOCHEMICAL PROPERTIES

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Abstract

The aim of this work was to establish improved conditions for lipase production by *Bacillus cereus* using agricultural wastes in solid-state cultivation and purification. Dried leaves of *Hibiscus rosa-sinensis* (1g) supplemented with 25.0% (w/w) olive oil increased the lipase production to 332.7%, compared to the initial conditions. When olive oil was replaced by poultry fat, the highest lipase production found at 40% (w/w) was 31.43U/gds. By selecting, yeast extract supplementation (2.5%, w/w), cultivation temperature (25°C), and substrate moisture (30%, w/v), lipase production reached 163.83U/gds. Lipase was purified by anion exchange chromatography, presenting a molecular weight of 18.5kDa as determined by SDS-PAGE. The crude and purified enzyme showed optimum activity at pH 4.0 and 50°C and at pH 5.5 and 45°C, respectively. The estimated half-life at 50°C was of 23.5h for crude lipase and 6.7h at 40°C for purified lipase. Lipase presented high activity and stability in many organic solvents. Thus, *Bacillus cereus* lipase can be successfully produced by an economic and sustainable process and advantageously applied for poultry fat hydrolysis without an additional acidification step to recover the released fatty acids.

Keywords: *Hibiscus rosa-sinensis*, Solid state fermentation, Ammonium sulphate, Lipase.

BT-O-16

SYNTHESIS AND CHARACTERIZATION OF ACTIVATED CARBON FROM *PROSOPIS JULIFLORA* BARK FOR THE ADSORPTION OF AZO DYES

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Abstract

Activated carbon (AC) was developed from Prosopis juliflora wood by carbonization, chemical activation followed by thermal activation. The raw material was carbonized at 400 ^{o}C, then the carbon was immersed with Nitric acid (HNO_3) followed by thermal activation at 600 ^{o}C. Chemical and physical properties like moisture content, volatile matter, ash content, surface area and porosity have been estimated to determine the quality of AC as an adsorbent. The resulting sample was characterized by SEM, FTIR and the surface functional groups were investigated by Fourier transform infrared spectroscopy techniques. Thermo gravimetric analysis was carried out to determine the thermal stability of activated carbon with respect to temperature. The surface morphology of activated carbon was performed by Scanning Electron Microscopy. X-ray powder diffraction was used for identification of crystalline nature of the prepared activated carbon. This activated carbon was mixed with meganda dye in the radio of 1:1 the adsorption study was observed by UV, SEM, and FTIR analysis. Our conclusion was activated carbon was very effective material for the pollution control.

Keywords: Pollution, Meganda, Activated carbon.

BT-O-17

KINETICS AND EQUILIBRIUM STUDY FOR THE ADSORPTION OF TEXTILE DYES ON PROSOPIS JULIFLORA ACTIVATED CARBON

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Abstract

The preparation of activated carbon from *Prosopis juliflora* with H_2SO_4 activation and its ability to remove textile dyes (Meganda and acid yellow), from aqueous solutions were reported in this study. The adsorbent was characterized with Fourier transform infrared spectrophotometer FT-IR, and scanning electron microscope SEM. Various physiochemical parameters such as, contact time, initial dye concentration, adsorbent dosage, particle size, pH of dye solution and temperature were investigated in a batch-adsorption technique. Result showed that the adsorption of both Meganda and acid yellow dyes were favourable at acidic pH. The adsorption uptake was found to increase with increase in initial dye concentration, and contact time but decreases with the amount of adsorbent, particle size, and temperature of the system. The Chemisorption, intra-particle diffuse, pseudo-first-order and pseudo-second-order kinetic models were applied to test the experimental data. The pseudo-second order exhibited the best fit for the kinetic studies, which indicates that adsorption of (Meganda and acid yellow) is limited by chemisorption process. The equilibrium data was evaluated using Langmuir, Freundlich, Temkin and Fritz-Schluender isotherms. The Fritz - Schluender model best describes the uptake of (Meganda and acid yellow) dye, which implies that the adsorption of textiles dyes in this study from prosopis juliflora activated carbon, is heterogeneous with multi-layers. Thermodynamic parameters such as Gibbs free energy, enthalpy and entropy were determined. It was found that (Meganda and acid yellow) dye adsorption was spontaneous and endothermic.

Keywords: *Prosopis juliflora,* Activated Carbon, Meganda.

BT-O-18

COMPARATIVE STUDY ON CULTIVATION AND YIELD PERFORMANCE OF OYSTER MUSHROOM (*PLEUROTUS OSTREATUS*) ON DIFFERENT SUBSTRATES (PADDY STRAW, SUGAR CANE WASTE)

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Abstract

Mushroom is a crop which is cultivated in many countries using different agricultural wastes. The study was conducted to compare the effects of different agro-wastes on the growth, yield, and nutritional composition of oyster mushrooms *Pleurotus ostreatus* (PO), two substrate formulas including Paddy Straw (PS) and sugarcane bagasse (SB) and in combination of green gram and wheat t flour powder the production radio were investigated. The results indicated that different substrate formulas gave a significant difference in total colonization period, characteristics of fruiting bodies, yield, biological efficiency (BE), nutritional composition and protein contents of a oyster mushrooms Pleurotus ostreatus . The results showed that increasing PS and SB reduced C/N ratio, and enhanced some mineral contents (Ca, P, and Mg) of substrate formulas. The increased amount of PS and SB of substrate formulas enhanced protein, ash, mineral contents (Ca, K, Mg, Mn, and Zn) of fruiting bodies of both mushrooms. Substrates with 100% PS and 100% SB were the most suitable substrate formulas for cultivation of oyster mushrooms PS and PC in which they gave the highest values of cap diameter, stripe thickness, mushroom weight, yield, BE, protein, fiber, ash, mineral content (Ca, K, and Mg) and short stripe length.

Keywords: Wheat flour, green gram flour, Nutritional composition, Oyster mushroom.

BT-O-19

PRODUCTION OF VERMICOMPOST FROM DOMOSIC WASTE WITH COW DUNG BY USING *EUDRILUS EUGENIA*.

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Abstract

The use of earthworms in the degradation of various types of wastes from the past so many years. Present study examines the potential of the African night crawler Eudrilus eugeniae in the vermin composting of Kitchen waste. As domestic waste is rich in inorganic material while deficient in nitrogen cow dung was mixed with it to make it suitable for earthworms. A mixture of domestic waste and cow dung in the ratio of 1:1 was found to be the best ratio than 2 (domestic waste): 1 (cow dung) and 3 (domestic waste): 1 (cow dung). In 60 days time good quality compost was prepared by earthworms. Physical and biochemical parameters were analyzed during this period of 60 days. Pre decomposition of 15 days and subsequent vermin composting of 60 days indicates the role of this species in vermin technology. Increase was found in all the parameters like, Total nitrogen (%), Available phosphorus (%) and Exchangeable potassium (%) while a decrease was found in pH and C:N ratio as the timing of vermin composting increased from o days to 6 days.

Keywords: *Eudrilus eugeniae*, vermin composting, cow dung domestic waste.

BT-O-20

BIOSYNTHESIS AND CHARACTERIZATION OF *CEIBA PENTANDRA* MEDIATED SILVER AND GOLD NANOPARTICLES AND EVALUATION OF ITS ANTIMICROBIAL AND ANTICANCER ACTIVITY

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Abstract

Cancer is the leading cause of mortality and morbidity worldwide. Colorectal cancer (CRC) is the third most commonly diagnosed malignancy and the fourth leading cause of cancer-related deaths in the world, and its burden is expected to increase by 60% to more than 2.2 million new cases and 1.1 million cancer deaths by 2030.The current research aims on the synthesis of silver and gold nanoparticles, using ethanol extract of *ceiba pentandra* bark and characterization by UV-visible, SAED, EDX, FT-IR, AFM and HR-TEM. The synthesised nanoparticles were tested against selected pathogens and Colorectal cancer cell lines.

Keywords: Nanoparticles, Plant extract, anticancer activity.

BT-O-21

EFFECT OF *GARCINIA IMBERTI* EXTRACTS ON BIOFILM CAUSING ROOT CANAL PATHOGENS

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Abstract

Biofilm is a syntrophic consortium of microorganisms in which cells stick to each other. Obviously it seems to be embedded within the matrix of extra cellular polymeric substances and it has been theconglomeration of polysaccharideprotein,lipid and DNA. Infact, many intrinsic flora such as *Streptococcus mitis, Staphylococcus, Peptococcus, Enterococcus* and *Candida* sps are believed to be involved in biofilm formation. Moreover cell to cell communication, the process Qurom sensing enable them developing biofilm. Biofilm may form on non living surface as well as living surface. If biofilm is not properly treated which leads to dental infections like periodontitis&endodontics. Mostly the endodontic infection is caused by the surface associated growth of microorganisms and is owing to its pathogenic potential against antibiotics. When such pathogens are being continuously exposed to the treatment of antibiotics, which would enable them to have resistance and potential to be refrained from the action of antibiotics.As it initiates to develop multi drug resistant pathogen,treating such pathogen with antibiotic is being considered to be challenged nowadays. Hence the present study focuses the treatment using GarciniaImbertiextracts.In this connection samples were collected and the organisms like Enterococcus and Staphylococcus species were isolated and identified by 16S rDNA sequencing method followed by antibacterial, antibiofilm activity were performed. The biofilm inhibition activity of methanolic extract showed better activity against so called candidate with the results of 54.56%/100 µg/ml. Hence the present study conclude that methanolic extract of *Garcinia imberti* has been found potentially satisfied for treating biofilm causing root canal pathogens.

BT-O-22

ENDOPHYTIC FUNGI A WELL SPRING OF BIOMOLECULES

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Abstract

Endophytic fungi are ubiquitous and reported from different groups of the plant kingdom like algae, bryophytes, pteridophytes, gymnosperms and angiosperms. Endophytic fungi reside in intercellular or intracellular spaces of leaf, stem, root, bark etc. The endophytic fungi survive in the host plant without producing any obvious symptoms or damage to the host. Endophytic fungi conferring resistance to herbivores, insect, drought tolerance and protection against phytopathogens by producing novel and natural compounds called secondary metabolites. These bioactive secondary metabolites represent a chemical pool for antimicrobial, anti-insecticidal, antibiotics, antioxidants, and immunomodulating, anticancer and anti-parasitic compounds. Every host plant colonized by one or more endophytic fungi and they interact with the host and among themselves and produce arrays of biomolecules. During interactions small diffusible signaling molecules produced by the endophytic fungi or by the host plant may trigger silent biosynthetic pathways producing these secondary metabolites. However, endophyticfungi are a poorly investigated group of microorganisms that represent an abundant and dependable source of biomolecules. and chemically diverse molecules with ample of potential for exploitation in a wide variety of medical, agricultural and industrial areas.

BT-O-23

IDENTIFICATION AND MOLECULAR CHARACTERIZATION OF POTENTIAL PROBIOTIC BACTERIUM *BACILLUSAMYLOLIQUEFACIANS*CS4 FROM GUT OF SNAKEHEAD FISH (*CHANNA STRIATUS*)

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Abstract

The healthy snakehead (*Channa striatus*) fish samples were collected from the Mookaneri (Kannankurichi Lake), Salem district, Tamil Nadu, India. Totally of 37 bacteria were isolated from the gut region among that 12 isolates were discarded because they were catalase positive, only catalase negative isolates 25 were selected further analysis.Among the 28 isolates CS4 showed antagonistic analysis against five pathogenic bacteria (*Aeromonas hydrophilla, Vibrio harveyi, Vibrio parahaemolyticus, Serratia marcescens, Staphylococcus aureus*. The strains CS4 also, showed tolerance to 0.5% of bile salts for 24 h and also able to grow upto 2% bile concentration.The pH tolerance assay showed that the growth rate (optical density) of CS4 changed significantly ($p< 0.05$) from pH 3 to 7. The strain CS4 did not have any haemolytic activity against human blood. The autoaggregation capacity of strain was 71.4%, whereas the co-aggregation of isolates with *V. parahaemolyticus*was 62.6%. Antibiotic susceptibility profiles shows that both strains were highly sensitive to gentamycin, Chloramphenicol, Cephalosporinand moderate to Amoxicillin, Vancomycin and resistant to Methicillin, Penicillin, Ampicillin.Molecular identification of 16s rRNA gene sequencing ofCS4 showed high similarity (99%) with *Bacillus amyloliquefacians*. These findings reveal that *Bacillus amyloliquefacians*CS4 isolated from the intestine of fresh water fish *Channa striatus* might be a potential probiotic in aquaculture and pharmacological drug preparations.

Keywords: Probiotic, *Bacillus amyloliquefacians*, *Channa striatus*, fish gut, lactic acid bacteria

BT-O-24

GAMMA RADIATION EFFECTS ON SEED GERMINATION, GROWTH AND PIGMENT CONTENT, AND ESR STUDY OF INDUCED FREE RADICALS IN BLACK GRAM (*VIGNA MUNGO*) VAMBAN-4

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Abstract

The effects of gamma radiation are investigated by studying plant germination, growth and development, and biochemical characteristics of black gram. Black gram dry seeds are exposed to a gamma source at doses ranging from 200Gy to 800Gy. Our results show that the germination potential, expressed through the final germination percentage and the germination index, as well as the physiological parameters of black gram seedlings (root and shoot lengths) decreased by increasing the irradiation dose. Biochemical differences based on photosynthetic pigment (chlorophyll *a*, chlorophyll *b*, carotenoids) content revealed an inversely proportional relationship to doses of exposure. Furthermore, the concentration of chlorophyll *a* was higher than chlorophyll *b* in both irradiated and non-irradiated seedlings. Electron spin resonance spectroscopy used to evaluate the amount of free radicals induced by gamma ray treatment demonstrates that the relative concentration of radiation-induced free radicals depends linearly on the absorbed doses.

***Keywords*:** Gamma ray, Black gram seed, Germination potential, Growth parameters, Photosynthetic pigments, Electron spin resonance spectroscopy

BT-O-24

BIOMATERIALS IN CARDIOVASCULAR STENTS

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Abstract

Cardiovascular biomaterials (CB) dominate the category of biomaterials based on the demand and investments in this field.This review article classifies the CB into three major classes, namely, metals, polymers, and biological materials and collates the information about the CB. Blood compatibility is one of the major criteria which limit the use of biomaterials for cardiovascular application. Several key players are associated with blood compatibility and they are discussed in this paper. To enhance the compatibility of the CB, several surface modification strategies were in use currently. Some recent applications of surface modification technology on the materials for cardiovascular devices were also discussed for better understanding.

Finally, the current trend of the CB, endothelization of the cardiac implants and utilization of induced human pluripotent stem cells (ihPSCs),is also presented in this review. The field of CB is growing constantly and many new investigators and researchers are developing interest in this domain. This review will serve as a one stop arrangement to quickly grasp the basic research in the field of CB.

BT-O-26

EFFECT OF UV-C RAYS ON MORPHOLOGICAL AND ANTI-OXIDANT PROPERTIES IN BLACK GRAM (VAMBAN-4)

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Abstract

In plant breeding programs, one of the oldest methods is mutation breeding. Currently, mutation breeding has become a popular among the breeders and scientists again with its use in plant biotechnology and due to some restrictions on the other techniques such as hybridization cross breeding, and transgenic plants. Physical mutagens (X-rays, UV light, neutrons-alpha-beta particles, fast and thermal neutrons, especially gamma rays) are used more widely than chemical (ethyl methanesulfonate [EMS]) ones to artificially induce mutations (mutagenesis). During the irradiation of the seeds with ionizing radiation to generate mutants with desirable traits. In this chapter, usability of UV-C irradiation is used for irradiation and it is used to provide the permanent gene expression changes in morphological, photosynthetic pigment and antioxidant enzymes.

Keywords:

UV-C rays, plant mutation breeding, gene expression, anti-oxidant enzymes.

BT-O-27

THE EFFECT OF UV-B RADIATION ON PLANT GROWTH ANALYZED BY TWO LEGUMINOUS PLANTS

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Abstract

Experiment was conducted in the greenhouse, by applying UV radiation on different time intervals (20 min, 30min, 60min, and 80min) to the black gram and green gram seeds. Induced changes in leaf and plant morphology were observed. It was an increase of plant height, fresh mass of leaves, shoots and roots as well as leaf area by increasing doses. Our results show that the germination potential, expressed through the final germination percentage and the germination index, as well as the physiological parameters of black gram and green gram (root and shoot lengths) decreased by increasing the irradiation dose.

Keywords*:* UV-radiation, Black gram, green gram, Germination potential, Growth parameters.

BT-O-28

GREEN SYNTHESIZED SILVER NANOPARTICLES USING *CRATEVA ADANSONII* DC LEAF EXTRACT AND ITS ANTI-BACTERIAL ACTIVITY

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Abstract

Green synthesized silver nanoparticles from aqueous leaf extracts of *Crateva adansonii* DC were examined for its antibacterial activity. Aqueous leaf extract of *Crateva adansonii* DC was prepared using soxhlet apparatus and evaporated to dryness. Agar well diffusion method was employed to determine antibacterial activity against Gram Positive (*Bacillus subtilis, Staphylococcus aureus*) and Gram Negative (*Pseudomonas aeruginosa* and *Salmonella typhi*,) bacterial cultures were taken for the study. The cultures were swabbed evenly on Muller Hinton Agar (MHA) plates and different concentrations of green synthesized nanoparticle as well as aqueous leaf extracts were applied to the different wells of the MHA plate. The Minimal Inhibitory Concentration (MIC) was measured for all the bacterial cultures. The plant extracts shows antibacterial activity against all the bacterial cultures. The least MIC values were produced by silver nanoparticle against *S.aureus* (1.2mg/ml) than aqueous leaf extract (1.5mg/ml). The silver nanoparticle exhibit its maximal antibacterial activity against *P. aeruginosa* (1.7mg /ml) & *B. subtilis* (2.4mg/ml) than aqueous leaf extracts of the plant.

Keywords: *Crateva adansonii* DC, Bacterial cultures, Antibacterial activity, MIC.

BT-O-29

STRUCTURE BASED DRUG DESIGN AND MOLECULAR DOCKING IN *ZIZIPHUS JUJUBA*

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Abstract

Folic acid is an important cofactor for various enzymes involved in DNA synthesis. Various drugs which antagonise folic acid and thereby interfere with DNA synthesis and cell division have been tried for treatment of cancers and some autoimmune diseases. Prototype among these drugs is methotrexate (MTX). MTX is a folate analogue originally synthesised in the 1940s and designed to inhibit dihydrofolate reductase. MTX binds dihydrofolate reductase (DHFR) with high affinity and has a fairly high affinity for enzymes that require folate cofactors, including thymidylate synthetase (TS). MTX inhibits dihydrofolate reductase (DHFR), an enzyme responsible for the conversion of dihydrofolate (DHF) to tetrahydrofolate (THF) which acts as the proximal single carbon donor in several reactions involved in the de novo synthetic pathways for pyrimidines and purines, including thymidylate synthesis by TS. Consequently, there is a reduction in thymidylate and purines in dividing cells. DNA synthesis eventually halts, and cells can no longer replicate currently, molecular docking approach has been used in modern drug design and to understand drug-receptor interactions. This paper reports screening of various phytochemicals present in common medicinal plants used in India Mauritine A is present in of *Ziziphus jujuba* showed the anti-cancer activity of *Zizyphus jujuba* in human hepatoma cells (HepG2). *Ziziphus jujuba* leaves extract to possess significant antiinflammatory activity against carrageenan induced rat paw edema. Mauritine A may contribute to cytotoxicity and through DHFR inhibition along with other phytochemicals present in Ziziphus. Dicrocin (alpha-Crocetin diglucosyl ester) Isolated from saffron (Crocus sativus) is a watersoluble crocetin glycoside, a carotenoid pigment. Saffron has been used as a spice for flavouring and colouring food preparations, and in Chinese traditional medicine as an anodyne. Dicrocin is metabolised to crocetin in gut. Hence, cannot satisfactorily exert its binding property to DHFR and ATIC. Newer nano delivery systems may be used to overcome this disadvantage. Hecogenin is a component of *Agave sisalana* extract which shows

anti-inflammatory properties when examined in three acute mouse models (xylene ear oedema, hind paw oedema, and pleurisy) and a chronic mouse model (granuloma cotton pellet). Hecogenin itself possesses the antinociceptive property and attenuates mechanical hyperalgesia by blocking the neural transmission of pain at the spinal cord levels and by cytokinesinhibition mechanisms. These properties may be partly due to Hecogenin action on Adenosine pathway by AICAR inhibition.

The protein-ligand interaction plays a significant role in structural based drug designing. In the present work, potential phytochemicals with DHFR and AICAR transformylase inhibitory property like MTX have been identified. The present analysis shows that Melianone and dicrocin could be the potential lead molecules which can act as inhibitors of both DHFR and AICAR transformylase like MTX. Uscharidin, calotropin and mauritine A may be potential lead molecules for inhibition of DHFR and Hecogenin may be an AICAR transformylase inhibitor lead molecule. These natural compounds could be used as templates for designing therapeutic lead molecules which could result in massive reductions in therapeutics development time. This study may be the subject to experimental validation and clinical trials to establish these phytochemicals as more potent drugs for the treatment of different autoimmune diseases and cancers.

BT-O-30

ASSESSING THE ANTICANCER ACTIVITY OF THE AQUEOUS EXTRACT OF THE SELECTED FOUR UNDERUTILIZED MINOR MILLETS MIXTURE ON THE MCF-7 (BREAST CANCER) CELL LINE

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Abstract

Deaths from cancer worldwide are continually rising, with an estimated 13.1 million deaths in 2030. Breast cancer is the leading cause of cancer death in female. It is estimated that 30–40 percent of all cancers can be prevented by appropriate diets, physical activity, and maintenance of appropriate body weight. Several dietary constituents modulate the process of carcinogenesis and prevent genotoxicity. Most of the Indian foods like minor millets potentially have anti carcinogenic properties and also serves as functional foods .

In this study, mixture of four underutilized minor millets *Paspalum scrobiculatuml., Panicum sumatrense rothex roem.* and *schult, Eichinochola frumentacea link and Setaria italica (l.) P. Beauv.* which are found to possess good antioxidative property were chosen to assess its anticancer effect against the MCF-7 (breast cancer) cell line.The viability of the aqueous extract of the mixture of four minor millets treated cells were evaluated by direct observation of cells by inverted phase contrast microscope and followed by MTT assay method. It was found that the 100 µg/ml sample was found to have moderate (55.75 %) cytotoxicity.The apoptosis of the tumor cells (MCF 7) were determined by Acridine orange (AO) and Ethidium bromide (EB) double staining. The cells were cultured and treated at LD 50 concentration of 77.241 µg/ml of the aqueous extract of the sample for 24 hours and it was found that at the end of 24 hrs most of the cells were found to be necrotic. The apoptotic effects of the aqueous extract of the sample on MCF 7 cell line's total genome was also confirmed by running an agarose gel of isolated DNA(DNA fragmentation assay).Thus,the bioactive compounds of minor millets can serve as an attractive candidate for cancer drug development.

Keywords: Minor millets, MCF 7 cell lines, MTT Assay, Cytotoxicity, Apoptosis.

BT-O-31

BIO-ELECTROKINETIC (BEK) REMEDIATION OF HEAVY METALS FROM CONTAMINATED TANNERY EFFLUENT SOIL USING ALKALOPHILIC BACTERIA *BACILLUS LICHENIFORMIS*

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Abstract

The present study of Electrokinetic and Bio-Electrokinetic remediation process for the removal of tannery industrial waste water sludge containing heavy metals (Cr, Zn, Cu and Pb) contaminated sites. The electrokinetic phenomena were adjusting DC current potential gradient 2.0 V cm^{-1} for seven days. The results showed a maximum removal of heavy metals EK 35-48 % and 78-94 % by BEK at the end of 7 days. The removal priority of investigated metals from sludge by EK and BEK process was found as Cu > Pb > Zn > Cr. During the process, variations in electrical gradient and pH were studied and compared between EK and BEK. Chromium removal was further confirmed by UV absorption, FTIR and XRD studies. The results of FTIR showed notable difference in the intensities of the peak thus confirming the effective remediation by BEK. The obtained results have found to support BEK integrated system as an effective remediation option for cleaning up chromium contaminated soil environments.

Keywords: EK cell, DC power supply, Electromigration, Contaminated soil, SR3 bacteria.

BT-O-32

SCREENING OF POTENTIAL MEDICINAL PLANTS FOR THE BIOCORROSION INHIBITION OF ENGINEERING METALS

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Abstract

The aim of the present work is to evaluate the medicinal plant (*Lawsonia inermis* and *Catharanthus roseus*) extract of methanol and water to combat biocorrosion of mild steel (MS 1010) by corrosive B*acillus oleronius* EN9. The minimum inhibitor concentration assay (MIC) and biofilm assay are important characterization of antimicrobial performance of plant extracts. The corrosion study was performed using *Bacillus oleronius* EN9 on mild steel 1010 (MS) in a cooling water system, which was collected from the industrial processing cooling water system. To address the corrosion problems, anti-corrosive properties of the medicinal plants were evaluated using MIC assay and biofilm assay. Current study, the optimum concentration of both plant extracts found to be 100 ppm. Scanning electron microscopy and Fourier-transform infrared spectroscopy and Gas chromatography analyses for the biocorrosion and inhibition assay is in progress.

Keywords: *Lawsonia inermis, Catharanthus roseus, Biocorrosion,* Weight loss tests, Electrochemical tests Mild steel, Cooling Water System.

BT-O-33

IDENTIFICATION OF POTENT BIOSURFACTANT PRODUCING MARINE BACTERIA AND ITS APPLICATION IN BIODEGRDATION OF CRUDE OIL

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Abstract

Recently, with the development of offshore oil and transportation industry, the probability of oil spill is increasing on offshore oil platforms, oil tanker, and offshore oil facilities. Thus, the problem of oil leakage and pollution in coastal waters and ports has persisted for a long time. Bioremediation technology was used to degrade oil spill. This technology was considered as the best way for remediation due to its low cost and ecofriendly method. However, problems have been encountered in the field of application of bioremediation technology due to uncontrollable factors, such as the loss of effective strains and substantial decline in the efficiency of remediation, therefore biosurfactant producing bacterial strains will be identified for efficient degradation of crude oil.The present study is aimed to isolate a potent biosurfactant producing indigenous bacteria which can be employed for crude oil remediation, also characterization of the biosurfactant, produced during crude oil biodegradation. A potent biosurfactant producing bacterial strainswas isolated from marine sample and identified by 16s rDNAgene sequencing.Totally seven dissimilar bacteria were identified among them three potent biosurfactant producing bacteria (*Bacillus subtilis*) AS1, (*Bacillus licheniformis*)AS2 and (*Bacillus methylotrophicus*)AS3 were identified that could efficiently produce biosurfactant by utilizing crude oil components as the sole carbon source. The bacterial strains AS1, AS2 and AS3 were degrade crude oil after addition of bacterial culture in Zobell marine media supplemented with 2% (v/v) crude oil as the sole carbon source. GC-MS results of the biodegraded crude oil samples revealed that AS1, AS2 and AS3 were potentially degraded various hydrocarbon contents from the crude oil. Therefore our study concludes that the isolated bacteria can be used for biosurfactant production and crude oil degradation.

Keywords: Biosurfactant, Crude oil, Biodegradation, Bioremediation.

BT-O-34

CHARACTERISATION OF MARINE BACTERIAL ISOLATES FOR BIODEGRADATION OF HYDROCARBONS

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Abstract

Hydrocarbon is regarded as one of the major environmental pollutant that pose a major threat to aquatic life during oil spills. Therefore, the aim of the present study to isolate indigenous marine bacteria from the Pichavaram Mangrove lake area and to evaluate its potentiality towards hydrocarbon degradation. Preliminary studies included the isolation of bacterial samples by standard isolation protocols. Based on the screening results of the drop collapse, oil dispersion, emulsification assay and BATH assay the organism showing the best hydrocarbon degradation was selected and proceeded for characterization studies by biochemical and 16S rRNA molecular methods. The selected organism was named as *Enterococcus faecium* after phylogenetic analysis using TREEVIEW software version 3. Lab-induced hydrocarbon degradation studies were carried out using BushnellHaas medium with diesel serving as sole carbon source. The experiments were conducted for 7 days. The percentage of degradation was assessed by collecting samples at regular intervals. The results were analysed by Gas chromatography–mass spectrometry (GC-MS) and Fourier-transform infrared spectroscopy (FTIR) studies. Based on the obtained results we conclude that the isolated organism showed best hydrocarbon degradation efficacy and hence it can be used as an efficient biological agent to treat hydrocarbon contaminated sites

Key words: Biodegradation; FTIR; GC-MS; Hydrocarbon degradation; Marine sediment

BT-O-35

IDENTIFICATION OF COMPOUNDS PRESENT IN *HEPTAPLEREUM STELLATUM* (GEARTN.)BAILL. LEAF

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Abstract

Chromatographic techniques have significant role in natural products chemistry as well as contribute dramatically in the discovery of novel and innovative compounds of pharmaceutical and biomedical importance. This study focused on step-by-step visual demonstration of fractionation and isolation of biologically active plant secondary metabolites using column-chromatographic techniques. Isolation of bioactive compounds using column-chromatographic involves: a) Preparation of sample; b) Packing of column; c) Pouring of sample into the column; d) Elution of fractions; and e) Analysis of each fractions using thin layer chromatography. GC-MS have been used to identify the number of secondary metabolites present in leaf extract. The results of the current study indicate that the leaf of *Heptaplereum stellatum* contains effective compounds exhibiting therapeutic potential.

BT-O-36

ANTIMICROBIAL AND ANTIOXIDANT ACTIVITY OF *HALOPHILAOVALIS*

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Abstract

Seagrasses are flowering plants (angiosperms) which grow in marine environments. *Halophilaovalis,* commonly known as paddle weed, spoon grass or dugong grass, is a seagrass in the family Hydrocharitaceae. It is a small herbaceous plant that occurs in sea beds and other saltwater the antimicrobial activity was carried out by the disc diffusion method. Methanol extract inhibited the growth of *Bacillus cereus* at a minimum inhibitory concentration of 75µg/mL and other Gram-negative pathogens at 50 µg/ml, except *Vibrio vulnificus*. Reducing power and total antioxidant level increased with increasing extract concentration. *H. ovalis* exhibited strong scavenging activity on 2,2-diphenyl-1-picrylhydrazyl (DPPH) and superoxide radicals at IC(50) of 0.13 and 0.65 mg/mL, respectively. the methanol extract of *H. ovalis* exhibited appreciable antibacterial, noticeable antioxidant Activity. This could be used as a potential source for natural health products

Keywords: *Halophila ovalis,* Antimicrobial activity, Antioxidant activity.

BT-O-37

MYCOTOXIN – PRODUCING FUNGI OCCURRING IN SORGHUM GRAINS

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Abstract

Sorghum is a staple cereal crop that is well adapted to arid and semi-arid lands. It has a potential of assuring food security and livelihoods in these lands. The objective of this study was to determine the effect of Sorghum grain conditions on occurrence of mycotoxin – producing fungi. Five hundred grams of different varieties were sampled from the farmer saved sorghum collected from districts of Dharmapuri, Namakkal and Salem in Tamil Nadu, India. Grains were plated on potato dextrose agar medium and incubated at 25 $\pm$ 2 ^{o}C for 7 days. Fungal colonies growing were sub-cultured and identified using a microscope and a standard mycological catalogue based on micro and macro morphological features. Identified fungi were *Aspergillus*, *Penicillium* and *Fusarium* species. Mycotoxin investigations using HPLC revealed that mycotoxin producing isolates varied in the type and concentration of toxins produced. *Aspergillus niger* isolates were the highest producers of aflatoxins followed by *A. flavus* and *A.terreus*. There was no aflatoxin detected in certain samples. Isolation of these toxicogenic seed-borne fungi from sorghum grain samples should alert plant pathologists to make more effort to minimize the risks of post harvest fungi in storage grains. Rigorous quarantine and health storage conditions should be undertaken to minimize fungal contamination and prevent further hazard to human and animal health.

Keywords: Fungi, Mycotoxin, Sorghum, Aflatoxin.

BT-O-38

INVITRO ANTIBACTERIAL ACTIVITY AND PHYTOCHEMICAL SCEERNING OF *SESAMUM INDICUM*

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Abstract

The present study is designed to assess the antimicrobial activity and phytochemical screening of the leaves of *Sesamum indicum* extracted with acetone, ethanol and petroleum ether. Agar well diffusion method was used to determine the antimicrobial activity against the selected bacterial and fungal isolates. The antimicrobial susceptibility of the bacteria and fungi to various concentrations of the extract was evaluated by the micro broth dilution method. The preliminary phytochemical screening was performed in the leaves of *Sesamum indicum*. The results showed that the acetone extract exhibited maximum antimicrobial activity against the tested bacteria and fungi when compared with ciprofloxacin and fluconazole respectively (standard antibiotics). Minimum inhibitory concentration (MIC) indicated that the wells containing a concentration of 12.5 mg/ml and 6.25 mg/ml of acetone extract inhibited the bacteria and fungi effectively. Phytochemical screening of acetone extract of *S.indicum* revealed the presence of saponins, flavanoids, alkaloids, steroids, carbohydrates and phenolic compounds. Thus the acetone extract of the *S. indicum* leaves is effective against selected bacterial and fungal strains and the data suggests that *S. indicum* might be a novel source of antimicrobial drug.

Keywords: *Sesamum indicum*, Antimicrobial activity, Phytochemical analysis.

BT-O-39

VIRTUAL SCREENING OF *GARCINIA IMBERTI* BOURD PHYTOCHEMICALS AGAINST B-LACTAMASE OF *ENTEROCOCCUS FAECALIS* AND *STAPHYLOCOCCUS SCIURI*

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Abstract

The development of drug-resistant strains of *Enterococcus faecalis* and *Staphylococcus sciuri* is a major concern in the treatment of root canal infections. In line with this, the 3D structure of beta-lactamase from *E. faecalis* and *S. sciuri* was modeled by using modeler and the structures were validated through SAVES. The phytochemical constituent from *Garcinia imberti* with better inhibition activity was explored through molecular docking studies. The docking studies revealed that compound-10 and compound-15 exhibited promising inhibitory activity against both drug-resistant strains of *S. sciuri* and *E. faecalis* when compared to the standard antibiotic gentamicin. Interestingly, the *in vitro* studies of the methanolic extracts of *G. imberti* exhibited significant activity in terms of zone of inhibition against both *S. sciuri* and *E. faecalis*. The docking studies imply that the conserved amino acids such as glutamine (Q), asparagine (N), lysine (L) and phenylalanine (F) in the binding pockets of beta-lactamase are keys in favoring the binding interactions with the ligands. Thus, this study significantly suggests that compound-10 and compound-15 can be considered as good inhibitors against the most troublesome drug-resistant strains of *S. sciuri* and *E. faecalis* during the treatment of root canal infections.

BT-O-40

IMPACT OF SLF OF *HORMOPHYSA CUNEIFORMIS* (GMELIN) SILVAON *VIGNA RADIATA (L.)* R.WILCZEK

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Abstract

India is mainly an agricultural country with approximately 70% of the population located in rural areas and directly engaged in agriculture.The growing population is facing pressure on food production and to meet the increasing demand, farmers are using chemical fertilizers to enhance their crop production.Recent researches have proved that Seaweed Liquid Fertilizer (SLF) is better than other chemical fertilizers. It is also found to be superior to chemical fertilizers because of the high level of organic matter aids in retaining moisture and minerals in the upper soil level available to roots. The present study was undertaken to investigate the effect of different SLF concentrations of *Hormophysacun eiformis*on the growth and biochemical characteristics of *Vignaradiata*. The collected plant materials were air dried and powdered using tissue blender. 10g of powdered plant sample was mixed with 100ml distilled water. *Vigna radiata* is one of the most important pulses and cultivated in almost all the states in India. Therefore, *Vigna radiata* is selected for the present study. The treatments were replicated three times in a completely randomized manner. On 8th day, the shoot length and root length were measured, followed by total carbohydrates, total proteins, total lipids, total phenols, total chlorophylls and total carotenoids were also estimated.The present study revealed that Seaweed Liquid Fertilizer could be excellently used as one of the organic manures to improve the productivity of *Vigna radiata*.

Keywords: Seaweed liquid fertilizer, Hormophysa, *Vigna radiata*

BT-O-41

EXTRACTION OPTIMIZATION AND CHARACTERIZATION OF BIO-PIGMENTS FROM *DELONIX REGIA* BY USING BOX–BEHNKEN DESIGN

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Abstract

Currently, natural dyes and pigments gain more importance in food, textile industries and sensitized solar cells because of their non toxic and eco friendly characteristics. The aim of this study was to optimize the pigment extraction from the *Delonix regia* by Box–Behnken design (BBD). Response surface methodology (RSM) was applied to evaluate the optimal conditions of three process variables namely *D. regia* (g), extraction time (h) and temperature (ºC). Statistics based contour and 3-D plots were generated to evaluate the changes in the response surface and to understand the relationship between the extraction and the pigment yield. The optimum process conditions were found to be mass of *D. regia*: 3 g, contact time: 3 h and extraction temperature: 30^{o}C. Response surface methodology was performed well to identify the optimal levels of extraction process variables and the validation of predicted model was fitted 99.76% with the experimental results conducted at the optimum conditions. Fourier transform infrared spectroscopy (FT-IR) was also confirmed the presence of Quercitin pigment by identifying the major functional groups.

Keywords: *Delonix regia*, Bio-Pigment, Response surface methodology.

BT-O-42

PIGMENTS FROM *LAWSONIA INERMIS* L. AS A PHOTOSENSITIZER IN DYE-SENSITIZED SOLAR CELLS DEVELOPMENT

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Abstract

Dye-sensitized solar cells (DSSC) are expected to be used for future clean energy. Currently, most of the researchers in this field use Ruthenium complex as dye in the dye-sensitized solar cells. However, Ruthenium is a rare metal and high cost. The present study was investigating the use of natural dye extract of *Lawsonia inermis* L. was used as sensitizer to fabricate titanium dioxide nanoparticles (TiO_2NPs) based dye sensitized solar cells. The dyes have shown absorption in broad range of the visible region (400-700 nm) of the solar spectrum and appreciable adsorption onto the semiconductor (TiO_2) surface. DSSC fabricated using the pre dye treated and pure TiO_2 NPs sensitized by natural dye extract of *L. inermis* showed a promising solar light to electron conversion efficiency of 1.01%. Natural pigments offer advantages of natural abundance, simplicity of preparation, low cost and environmental friendliness.

Keywords: Dye-sensitized solar cells, Natural dye, TiO_2, Photovoltaic

BT-O-43

HEALTH IMPACT OF SECONDARY METABOLITES ISOLATED FROM CYANOBACTERIA IN COASTAL REGIONS OF RAMESWARAM, TAMIL NADU

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Abstract

The biochemical composition of four species of cyanobacteria namely, *Oscillatoria salina*, *Phormidium tenue*, *Gloeocapsa* sp. and *Lyngbya confervoids* were isolated from Sandy Coastal Regions of Rameswaram, Tamil Nadu. The biochemical constituents were analyzed in terms of total carbohydrates, total protein, total lipid, fatty acid and mineral contents. The analysis showed that maximum amount of total carbohydrate in *Lyngbya confervoides* (24.15% dry weight) and minimum in *Oscillatoria salina* (8.0% of dry weight). Maximum amount of total protein was in *O. salina* (11% of dry weight). *Phormidium tenue* showed higher amount of total lipid (15% dry weight). A total of 14 types of fatty acids were detected among which lauric acid was in high quantity. Among the polyunsaturated fatty acids, steric and oleic acids were present in all the four species ranging from 0.98 to 2.97%. *Lyngbya confervoides* showed high amount of copper, manganese, ferrous and zinc which showed potential antioxidant, antimicrobial and anti cancer activities.

BT-O-44

ECO-FRIENDLY SYNTHESIS AND CHARACTERIZATION OF SILVER NANOPARTICLES FROM *PIPER BETEL* AND THEIR ANTIDIABETIC ACTIVITY AGAINST ALLOXAN INDUCED ALBINO RATS

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Abstract

Piper betel, a medicinal plant, traditionally used in treating diabetes mellitus. In this study, we used the leaf extract of the plant to synthesize silver nanoparticles (AgNPs), as a proposition to treat alloxan induced diabetic rats. The eco-friendly synthesised AgNPs were analyzed using UV–visible spectroscopy at 420nm and Fourier transform infra-red spectroscopy for their functional groups. Transmission electron microscopy revealed that, the synthesized particles are found to be 10-25 nm in size. Monodispersed and spherical nature of synthesized AgNPs were shown by scanning electron microscope and the presence of Ag in the AgNPs was confirmed by energy dispersive spectrum. The eco-friendly synthesised AgNPs were evaluated for its antidiabetic activity in alloxan-induced diabetic rats. AgNPs-treated diabetic rats found to be significantly improved the dyslipidemic condition as seen in the diabetic control. Furthermore, it also reduced the blood glucose level over the period of treatment. The improvement in body weight was also found to be evidence for *P. betel* extract-mediated synthesised AgNPs as a potential anti-diabetic agent against alloxan induced diabetic rats.

Keywords: Diabetes mellitus, *Piper betel*, Silver Nanoparticles, Alloxan

BT-O-45

BIO-SYNTHESIS OF MULTIWALLED CARBON NANOTUBES FOR THE REMOVAL OF INDUSTRIAL TEXTILE DYES

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Abstract

Textile dyes are chemicals with complex aromatic structure designed to resist the effects of laundering and sunshine. A great number of dyes and other chemicals are used in textile wet processing. There are more than 105 commercially available dyes with over $1X10^{6\ ton}$ of dye stuff produced annually worldwide. Among these available dyes, azo dyes constitute about 70% of all known dyestuffs in the world and represent 70% of total dyes produced per year, thus making them the largest and most important group of synthetic colorants released into the environment. Azo dyes are difficult to treat by convententional wastewater treatment method. Compared with physical and chemical and biological techniques are preferable becauses of economical advantages and low possibility of by products production. At present, a number of studied focused on MWCNTs, which are able to decolorize azo dyes and efficient application

Multi-walled carbon nanotubes (MWCNTs were prepared by CVD method and further characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), Fourier transform infrared (FT-IR), and UV-vis absorption spectra. The performances of the MWCNTs were evaluated for the decomposition of Reactive light yellow K-6G (K-6G) and Mordant black 7 (MB 7) azo dyes solution. The results showed that the addition of MWCNTs has the adsorption activity for the degradation of azo dyes K-6G and MB 7. The effect of MWCNTs content, catalyst dosage, pH, and initial dye concentration were examined as operational parameters. The kinetics of photo catalytic degradation of two dyes was found, the degradation efficiency still higher than 70%.

Keywords*:* Multi Walled Carbon nanotubes, CVD, Azo dyes, Textile Dye.

BT-O-46

IMPACT OF TOXIC METALS (PB AND NI) STRESS ON GREEN GRAM PLANTS GROWTH PROFILE

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Abstract

Naturally plants are exposed with many adverse environmental conditions like biotic and abiotic stress. Despite all other stresses heavy metal stress is one of great importance which has a notable adverse effect on crop productivity and growth. Based on the data, it is suggested that lead and nickel as heavy metals exert toxic effects on Green gram plants. It decreased the content of proline, protein, chlorophyll and phenolic compounds. In the present investigation it was observed that leads and nickel concentration produced toxic impact on growth of green gram plant. Increase in the concentration of both heavy metals, brought up changes in most of the growth parameters of plants. Therefore there is a need to important certain rules that help in the reduction of metal from wide range of sources. Vegetable crops have the ability to uptake the heavy metals through their roots and transport them to the edible portions of the plant that are consumed by people or fed to animals. Their increased concentration in human food chain over a long time can provoke detectable damage to health (carcinogenic and mutagenic effect). Therefore there is a need to undertake further studies to establish the state of knowledge on the responses of plants to metal toxicities.

BT-O-47

FACILE SYNTHESIS OF COPPER OXIDE NANOPARTICLES USING *SPIRULINA PLATENSIS* AND THEIR ANTIBACTERIAL ACTIVITY

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Abstract

The synthesis of copper oxide nanoparticles (CuO NPs) by green methods attained vast attention in recent years due to its eco-friendly, low-cost, simple and nontoxicity. In this present study, we account for the use of cell-free extract of *Spirulina platensis* in the biosynthesis of copper oxide nanoparticles (CuO NPs) of dimensions 30 - 40 nm. The facile synthesised CuO NPs were confirmed visually by appearance of dark brown colour formation in mixture and surface plasmon resonance (SPR) band observed at 260 nm by using UV-Visible Spectroscopy. The size and morphology of the nanoparticles were confirmed by scanning electron microscopy- energy dispersive X-ray (SEM-EDX) and transmission electron microscopy (TEM) analysis. Furthermore, these NPs were found to exhibit high antibacterial activity against *Staphylococcus aureus*, *Escherichia coli*, *Klebsiella pneumonia* and *Bacillus cereus*. The CuONPs had shown maximum zone of inhibition 24.0 ± 0.32 mm in *B. cereus*.

Key words: Facile synthesis; *Spirulina platensis;* Antibacterial activity.

BT-O-48

PHYSICOCHEMICAL CHARACTERISATION OF TREATED SAGO INDUSTRIAL EFFLUENT

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Abstract

Sago industry is one of the most important agro based industries in India especially in Tamil Nadu and is highly responsible for creating major impact on rural economy. The effluent water is more toxic when released to the environment without proper treatment. Treated sago effluent was obtained from Erode district, Tamilnadu and assessed for its physico chemical characters. The present study is aimed to characterize the effluent by physicochemical parameters like color, odor, pH, Electric conductivity, Total Dissolved Solids (TDS), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Dissolved Oxygen (DO) and acidity,alkanity, salinity and hardness. The physico chemical parameters analysed were within the BIS limit prescribed for the discharge of industrial effluent. Thus the study paves way for the use of treated effluent in agricultural and aquacultural practices.

Keywords: Sago industry, physicochemical paramaters.

BT-O-49

OCCURRENCE OF mecA GENE IN *MRSA* ISOLATED FROM CLINICAL SAMPLES

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Abstract

Staphylococcus aureus is a facultative pathogenic Gram's positive bacterium which is well known as colonizer of the human skin and can cause a variety of diseases ranging from minor skin and soft tissue infections to life threatening disease including septicaemia, pneumonia, endocarditis and deep scaled abscess. Methicillin resistant Staphylococcus aureus (MRSA) and multidrug resistant Staphylococcus aureus strains are responsible for a large proportion of nosocomial infections making treatment difficult pathogenicity of these organisms are related to a number of virulence factors that allow it to adhere to surfaces invade or avoid the immune system and cause harmful toxic effects to the host. These factors include cell surface components (example Protein-A, fibronectin-binding protein, collagen binding protein and clumping factor), and exoproteins (example enterotoxins, exfoliations, toxic shock syndrome toxin and Panton valentine leucocidin [PVL]). The Different mechanisms of virulence and pathogenicity of Staphylococcus aureus favours the development of antibiotic resistance and increases vulnerability to infection. This work emphasis the isolation and characterization of the pathogenic *Staphylococcus aureus* isolates from clinical samples and determination of the frequency of pvl gene among *Staphylococcal aureus* isolates and characterization of mec A gene in MRSA isolates.

BT-O-50

MARINE VENOM TARGETING THERAPEUTIC APPLICATION AS ANTICANCER EFFECT

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Abstract

The current investigation was accomplished to inspect the antimicrobial, antioxidant .insecticidal and cytotoxic action of isolated venom from the toxin gland of *C.inscriptus*. The anticancerous activity was studied with, C33A (negative HPV) SiHa (HPV-16) cancer cells.. Anticancer at 120ug/ml showed C33A (17 %) SiHa (12%) Vero normal cells (40%). *C.elegans* (worm) lethality test 100% at 200ug/ml. Toxicity assay was carried out in *Artemia salina* and MTT assay with Vero(normal) and HeLa (cancer) cell lines evidenced anticancer properties in *Conus* venom protein Hemolytic, Phospholipase and hyaluronidase assays were also performed for biomedical applications. In the current state of art, the venom of many mollusks is being employed as one of the major sources for the development of novel drugs. The marine fauna are reported as bioactive peptides due to their high selectivity and efficiency in treating various disorders . Among the mollusks, the venom of the predatory cone snails and sepia that are rich in pharmacologically active peptides can serve as a potential source for the discovery of novel drugs. The venoms of the each species are reported to contain more than 100's of pharmacologically active components that mainly target different voltage and ligand-gated ion channels . These peptides are well established due to their extraordinary properties as biopharmaceutics and have gained increasing interest in recent days. The approved analgesic drug made up of conotoxin MVIIA demonstrated the established biomedical potentials of peptides with highly interesting pharmacological properties. Thus the research is anticipated to screen the bioactive peptides from the broad biodiversity of cone snails.

BT-O-51

ANTI-DIABETIC POTENTIAL OF *ABUTILON INDICUM* METHANOLIC LEAVE EXTRACT

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Abstract

Abutilon indicum is an Asian phytomedicine traditionally used to treat several disorders, including diabetes mellitus. One of the anti-diabetic therapeutic approaches is to reduce gastrointestinal glucose production and absorption through the inhibition of carbohydrate digesting enzymes such as α- amylase and α-glucosidase. Inhibition of amylase and glucosidase enzymes involved in digestion of carbohydrates can significantly decrease the post prandial increase of blood glucose after a mixed carbohydrate diet and therefore can be an important strategy in management of blood glucose. The aim of the current study was to screen the methanolic leaf of *Abutilon indicum* for its in vitro anti-diabetic activity. Our assay result reveals that methanolic extract of *Abutilon indicum* exhibit dose-dependent increase in percentage inhibitory activity on α-glucosidase enzymes (IC50 370.11±5.18 µg/ml) and α-amylase (IC5 of 476.24 ± 2.38 µg/ml). Acarbose was used as a standard drug. Thus, it could be concluded that the phytochemical constituents of the *Abutilon indicum* methanolic leaf extract will be useful in finding more potent anti-diabetic principle for the clinical development of anti-diabetic therapeutics.

Keywords: *Abutilon indicum*, Anti-diabetic, α- amylase and α-glucosidase.

BT-O-52

CELL TO CELL COMMUNICATION IN BACTERIA BY QUORUM SENSING

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Abstract

Quorum sensing (QS) is a process of cell-cell communication in bacteria and it is a way of signalling between bacterial cells, in bacteria, chemical communication involves producing, releasing, detecting, and responding to small hormone-like molecules termed autoinducers. This process, termed quorum sensing, allows bacteria to monitor the environment for other bacteria and to alter behavior on a population-wide scale in response to changes in the number and/or species present in a community. Most quorum sensing- controlled processes are unproductive when undertaken by an individual bacterium acting alone but become beneficial when carried out simultaneously by a large number of cells. Identification of the chemical signals, receptors, target genes, and mechanisms of signal transduction involved in quorum sensing is leading to a comprehensive understanding of cell-cell communication in bacteria which providing insight into the variety of molecular arrangements that enable communication between cells as well as the unique characteristics that the various signaling architectures provide in terms of information dissemination, detection, relay, and response. Final conclusion of quorum sensing principle in bacteria is that each quorum sensing network organization evolved to solve the particular set of communication needs for a particular species of bacteria encounters.

Keywords: Quorum sensing, Autoinducers, Bacterial signaling and Cell-cell communication.

BT-O-53

MICRO PROPAGATION OF ORCHIDS

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Abstract

Orchids are among the most diverse of the flowering plant families, with over 900 described genera and 25,000 species. Orchids are prized for their beautiful long lasting flowers exhibiting an incredible range of diversity in size, shape and colour. Today growing orchids is more than just a hobby, it is an international business covering around 8% of the world floriculture trade and has the potential to alter the economic landscape of a country. Large-scale multiplication of exquisite and rare hybrids using tissue culture techniques has helped orchids occupy a position as one of the top ten cut flowers. As orchids are outbreeders, their propagation using seeds leads to the production of heterozygous plants. Hence, protocols providing regeneration from various vegetative parts of the plants are needed. Though orchid micropropagation has shown spectacular development in the recent years, the wide spread use of micropropagation is believed to be still limited due to problems like exudation of phenolics from explants, transplantation to field, somaclonal variation etc.,

Keywords: Orchids, Micropropagation, Tissue culture of orchids.,

BT-O-54

IN VITRO REGENERATION OF MULTIPLICATION SHOOTS IN *HEDYCHIUM CORONARIUM*- AN IMPORTANT MEDICINAL PLANT

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Abstract

Hedychium coronarium an important medicinal plant belongs to the family Gingiberaceae. The present study describes a simple, efficient and large-scale regeneration system for *in vitro* propagation of *Hedychium coronarium* through nodal segment explant obtained from field-grown mature plants. Nodal explants were cultured on Murashige and Skoog (MS) medium supplemented with different concentrations of 6-Benzylaminopurine (BAP), naphthalene acetic acid (NAA) indole 3-acetic acid (IAA) and indole-3-butyric acid (IBA) for regeneration of multiple shoots. Sub-culturing of shoots every 4 weeks on fresh multiplication medium yielded a consistent proliferation rate. Multiple shoots were produced on all the concentrations of BAP, NAA and IAA; however MS medium supplemented with a combination of BAP (0.5 mg/l) + NAA (0.1 mg/l) proved to be optimal for the production of maximum number of shoots per explants. Microshoots were rooted onto MS medium supplemented with indole-3-butyric acid (0.5 mg/l). Regenerated plantlets were green and healthy in appearance. Finally, healthy and complete plants with well developed roots were hardened, acclimatized and planted in the field successfully with 90 % survival rate.

Keywords: *Hedychium coronarium*, In vitro propagation, MS medium.

BT-O-55

BIOSYNTHESIS OF UROLITHIN FROM MANGO WASTE USING PROBIOTICS

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Abstract

A work was carried out to produce bio-perspective metabolite of urolithin production from mango wastes by using gut bacteria and to assess their pharmaceutical applications.Mango (*Mangiferaindica*L.) is one of the most important tropical fruit.It belongs to the family*Anacardiaceae,* which comprises more than 70 genera andeconomically important fruit also. And moreover it was commonly called as 'king of fruits'.Mango and its residues (seeds, peel, leaves, flowers) have a rich content of various polyphenolic compounds and it has several pharmaceutical properties (Anti oxidative, Anti carcinogenic, Anti mutagenic, Anti atherosclerotic, and Angiogenesis activities)**.**Tannins are a complex family of polyphenolic compound. The ellagitannins derivatives are naturally occurring polyphenols found in mango are further metabolized to urolithins by the gut microbiota in the colon. This study focused on the utilization of mango wastes for urolithin production. The mango was used as a substrate and several gut microbiota was used to study the metabolic conversion of ellagic acid to urolithinsfor their therapeutic applications. The results obtained from this study shows that the Urolithin production was high with 2% mango waste.. It also showed positive for antioxidant property thus provides to be an excellent therapeutic agent.

Keywords: Mango waste, Probiotic bacteria, Urolithin.

BT-O-56

PRELIMINARY PHYTOCHEMICAL ANALYSIS, ANTIMICROBIAL ACTIVITY AND INHIBITION STUDIES OF *VALONIOPSIS PACHYNEMA* EXTRACT ON BRASS CORROSION IN PHOSPHORIC ACID

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Abstract

Ethanolic extract of marine alga *Valoniopsis pachynema* (VP) have been investigated as non toxic corrosion inhibitor for brass in 0.1 N phosphoric acid. Corrosion rates were evaluated at 30 ^{0}C using the weight loss, electrochemical impedance spectroscopy and potentiodynamic polarization techniques. VP extract was found to inhibit brass corrosion in acidic media via adsorption of the organic matter on the metal/solution interface. Polarisation data indicate that the extract functioned via a mixed inhibition mechanism, affecting both the cathodic and anodic partial reactions of the corrosion process. Preliminary phytochemical analysis revealed the presence of secondary metabolites alkaloids, flavanoids, monosaccarides and terpenes in the extract. The identified corrosion inhibitors from *Valoniopsis pachynema* was evaluated for their anti-microbial activity against the virulence factors of Pseudomonas aeruginosa and Klebsilla pneumonia. The finding affinities between the virulence proteins and the corrosion inhibitor was determined by molecular docking, which significantly reveals the compounds identified to posses corrosion inhibitory activity also possess anti-microbial activity. Thus these coating the brass vessels with this marine alga extract contained the reported compounds might not only act as anti-corrosion activities, but also implies that the brass vessel will be safer for human usages. *Ab initio* calculations on reported compound were carried out using Gaussian 05 software with – 31 G (d, p) basis sets on B3LYP method to predict the molecular structure and vibrational wave numbers. The frontier orbital (HOMO and LUMO) analysis were paid much attention as they play significant role in determining the stability of the compounds. Establishment of difference in the energies of the HUMO and LUMO and their band gap in eV envisages that compounds excitement which fascinates the compounds capability as potential corrosion inhibitor.

Keywords: *Valoniopsis pachynema*, Corrosion, Phytochemical, DFT Study.

BT-O-57

MARINE VENOM TARGETING THERAPEUTIC APPLICATION AS ANTICANCER EFFECT

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Abstract

The current investigation was accomplished to inspect the antimicrobial, antioxidant .insecticidal and cytotoxic action of isolated venom from the toxin gland of *C.inscriptus*. The anticancerous activity was studied with, C33A (negative HPV) SiHa (HPV-16) cancer cells. Anticancer at 120ug/ml showed C33A (17 %) SiHa (12%) Vero normal cells (40%). *C.elegans* (worm) lethality test 100% at 200ug/ml. Toxicity assay was carried out in *Artemia salina* and MTT assay with Vero (normal) and HeLa (cancer) cell lines evidenced anticancer properties in *Conus* venom protein Hemolytic, Phospholipase and hyaluronidase assays were also performed for biomedical applications. In the current state of art, the venom of many mollusks is being employed as one of the major sources for the development of novel drugs. The any marine fauna are reported as bioactive peptides due to their high selectivity and efficiency in treating various disorders. Among the mollusks, the venom of the predatory cone snails and sepia that are rich in pharmacologically active peptides can serve as a potential source for the discovery of novel drugs. The venoms of the each species are reported to contain more than 100's of pharmacologically active components that mainly target different voltage and ligand-gated ion channels. These peptides are well established due to their extraordinary properties as biopharmaceutics and have gained increasing interest in recent days . The approved analgesic drug made up of conotoxin MVIIA demonstrated the established biomedical potentials of peptides with highly interesting pharmacological properties. Thus the research is anticipated to screen the bioactive peptides from the broad biodiversity of cone snails.

BT-O-58

GREEN SYNTHESIS OF SILVER NANOPARTICLES AND ITS ANTICANCER ACTIVITY AGAINST THP-1 CANCER CELL LINE

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Abstract

Nanotechnology is a field of science which involves the synthesis and applications of nanoparticles. Silver nanoparticles (AgNp) have applications in various fields due to their unique optical, physical, electrical and medicinal properties. In this study, silver nanoparticles were synthesized by biophysical method. Silver nanoparticles were characterized by using UV-Visible absorption spectroscopy, Energy Dispersive Spectroscopy (EDX), Scanning Electron Microscopy (SEM) and X- ray diffraction (XRD). The anticancer activity of silver nanoparticles on cell line (THP – 1 cell line) was studied *in vitro*. The activity of chemotherapeutic drugs Cyclophosphamide and Busulfan was enhanced in presence of silver nanoparticles whereas Mercaptopurine was found to be more effective when used individually against the THP- 1 cell line.

Keywords: Silver nanoparticles, Anticancer, Cyclophosphamide, Mercaptopurine.

BT-O-59

POTENTIAL PERSPECTIVES AND ANTIMICROBIAL ACTIVITY OF BIONANCOMPOSITES FOR FOOD PACKAGING APPLICATIONS

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Abstract

Nanoparticles and polymers in their respective fields have contributed greatly in the form of science and hence in daily life application products. In recent years ,antimicrobial packaging has attracted much attention from the food industry because of the increase in consumer demand for minimally processed ,preservative free product. The film or coating technique is considered to be more effective, although new antimicrobial packaging materials are continually being developed .The prepared nancomposites were characterized using XRD,TEM,ATR FT-IR,Contact angle .The Chitosan /PVA/Silver nanocompsites exhibited superior antibacterial activity .The various concentrations of silver showed various zone formation.

Keywords: Nanocompsites, Antimicrobial activity, Packaging material.

BT-O-60

EXPLORING FUNGAL BIODIVERSITY FOR THE PRODUCTION OF WATER SOLUBLE PIGMENT AS POTENTIAL BIOCOLORANT FOR TEXTILE INDUSTRY

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Abstract

Various industries use chemical coloring agent for the commercial products like food, textile and Pharmaceutical products. Use of synthetic dyes causes health hazards to human beings in addition to environmental pollutions. The fungal pigments are used as a substitute to current synthetic colorants. Water soluble fungal pigment was recovered by using filtration method and it was analyzed by using UV-Visible Spectrophotometer. The isolated pigment was subjected to toxicity test. Application of the fungal pigment is evaluate for different grades of textile materials commercially available in the market. The main idea is to use positive non-toxic pigment producing fungi to produce pigment.

Keywords*:* Biocolorant, Fungal pigment, Water soluble pigment.

BT-O-61

ISOLATION AND CHARACTERIZATION OF PIGMENT PRODUCING MICROBES FROM SOIL MICROFLORA

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Abstract

Bacterial pigments have many applications in current day to day life. The pigments produced by chromobacteria can be used for applications in dairy pharamaceutical and food etc. The aim of the present study was to isolate the microorganisms from different geographical location, capable of producing pigment with antimicrobical activity. Soil samples were collected from different climatic conditions. A total four pigmented colonies were isolated that produced intracellular pigments and isolated organisms were characterized. Then the further study focused on the pigment extraction and checks the antimicrobial activity. The pigment may be has the antimicrobial activity against gram positive, gram negative bacteria and fungi (pathogen).

Keywords: Bacterial pigment, Chromobacteria, Antimicrobial activity, Pathogen.

BT-O-62

MONASCUS: A REALITY ON THE PRODUCTION AND APPLICATION OF MICROBIAL PIGMENTS

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Abstract

Monascus species can produce yellow, orange, and red pigments, depending on the employed cultivation conditions. They are classified as natural pigments and can be applied for coloration of meat, fishes, cheese, beer and pates, besides their use in inks for printer and dyes for textile, cosmetic and pharmaceutical industries. These natural pigments also present antimicrobial activity on pathogenic microorganisms and other beneficial effects to the health as antioxidant and anticholesterol activities. Depending on the substrates, the operational conditions and fermentation mode (state solid fermentation or submerged fermentation), the production can be directed for one specific color dye. This review has a main objective to present an approach of Monascus pigments as a reality to obtaining and application of natural pigments by microorganisms, as to highlight properties that makes this pigment as promising for worldwide industrial application.

Keywords: Monascus, Pigment, Industry, Fermentation, Dye.

BT-O-63

BIODEGRADATION OF CHICKEN FEATHER BY KERATINASE PRODUCING MICROORGANISM

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Abstract

To analyze the degradation of chicken feather and estimate the amount of protein present in the degraded sample media. In this study, we isolated the Bacillus sp. It is capable of producing keratinase from habitats of feather dumping sites. The search for promising strain of keratinase producers is a continuous process. The degradation of chicken feather by using keratinase producing bacteria, *Bacillus sp*. Thus the estimated protein can be used in the food and dairy industries. They can also be used as an animal feed. The degradation of feathers with keratinolytic bacteria is the best eco-friendly approach in the poultry waste management.

Keywords**:** *Keratinase*, food and dairy industries, *Bacillus sp*

BT-O-64

SONOCHEMICAL SYNTHESIS AND ANTIMICROBIAL PROPERTIES OF FE/CO ALLOY NANOPARTICLES

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Abstract

Nanoparticles have become the focus of intensive research, owing to their numerous applications in diverse fields such as catalyst production, ultramodern electronics, optical devices, super magnets, photographic suspensions, xerography, etc. Nanoparticles of the Fe/Co alloy have been prepared by sonolysis of a Fe(CO)5 and Co(NO)(CO)3 mixture in diphenylmethane solution under argon. The as-prepared product is an amorphous material having 10 nm diameter particles. The Fe/Co alloy nanoparticles have been characterized by XRD, TEM, TGA, DSC, XPS, EPR, MES and magnetic susceptibility measurements. The present study showed that interaction of $Fe_{40}Co_{60}$ nanoparticles with the bacterial cell and the mechanism of interaction of nanoparticle in the bacterial cell along with its antimicrobial activity. The $Fe_{40}Co_{60}$ nanoparticles synthesized by sonication method have shown excellent antibacterial activity. In this interaction the $Fe_{40}Co_{60}$ nanoparticle that are having lesser size will penetrate inside the cell and were interacted intracellularly through absorption process and showed high inhibition of growth by arresting the metabolic mechanisms and those having larger size of nanoparticles were interacted extracellularly with high concentration which shows less inhibition growth. So from these studies we concluded that the interactions of nanoparticles with bacterial cells are varied based on their species and concentration.

BT-O-65

MAGGOT PROTEIN FROM POULTRY WASTES SERVE AS FEED SUPPLEMENT FOR GROWING CHICKS IN POULTRY INDUSTRY

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Abstract

Poultry industry is one of the largest and fastest growing livestock production systems in the world, there are about 3430 of 3.30 million tons per year. The localized nature of poultry production also means that it can represent a large industry is currently facing with a number of highly complex and challenging environmental problems, many of which are related to its size and geographically concentrated nature. This experiment was performed to utilize poultry waste (droppings) for producing maggots as poultry feed supplement. Poultry droppings were dissolved in half liters of water. The mixture is allowed to stand in shade condition for 4 days. Water was added for maintaining moisture content and occasional stirring was done for aeration. After 3 days of incubation, maggots larvae were observed in the incubated tray on the fourth day fully developed adult larvae were noticed. These adult larvae were served as feed supplement in the poultry diet for growing chicks. Control group of chicks were allowed to take normal poultry diet, where as maggots were served as additional supplement in the test group. The difference in the chick weight growing period and protein content of chicken flesh were determined. Test group of chicks found to have more flesh weight and minimum days for growing. Thus maggots produced from poultry waste can serve as a best protein supplement in poultry diet management.

BT-O-66

IMMOBILIZATION OF BACTERIAL LIPASE ONTO CHITOSAN- FERROUS SULPHATE MAGNETIC NANOPARTICLES AND OPTIMIZATION USING RESPONSE SURFACE METHODOLOGY

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Abstract

Bacterial lipase was immobilized on chitosan beads having magnetic properties for the ease of separation and increasing the reusability of bacterial lipase for cost effective assay conditions. The present work reports immobilization of bacterial lipase on polymeric support chitosan- ferrous sulphate beads subsequently activated with 0.05% ferrous sulphate. The magnetic immobilized enzyme was characterized by Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD) analysis and scanning electron microscopy (SEM). The immobilized bacterial lipase can be reused up to 10 cycles with retention of more than 60% activity. The optimum pH was shifted from 7 for bacterial lipase to immobilized bacterial lipase and optimum temperature from 45 °C for the immobilized bacterial lipase. Based on response surface methodology, the optimal immobilization conditions obtained were: enzyme concentration, 3 mg/ 296 mg beads; optimal pH 7; temperature 35ºC ferrous sulphate concentrations, 0.25%; reaction time, 14.4 h, which resulted 85% maximum immobilization. The enzyme magnetic nanoparticles could be separated magnetically for easy reuse. Immobilization of bacterial lipase onto the magnetic nanoparticles could be useful for biotechnological applications and bioassay due to its reusability and improved stability.

Keywords: Bacterial lipase, ferrous sulphate nanoparticles, Box- Behnken design.

BT-O-67

COMPARISON OF CONVENTIONAL AND ULTRASONIC ASSISTED EXTRACTION METHOD BY DIFFERENT PH FOR NATURAL COLOR EXTRACT OF *PTEROCARPUS MARSUPIUM ROXB.* SAW DUST

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Abstract

The efficiencies of two extraction methods for extraction such as conventional and ultrasonic assisted extractions of natural colorant from saw dust of *Pterocarpus marsupium Roxb.* were determined for applications in food as well as dyeing industries. The colorant was extracted and compared with the different pH such as 7, 8, 9 and 10. Analytical study was also performed on the extract using UV-Vis spectrophotometer. The spectral results indicate that pH 10 with ultrasonic assisted method is the efficient method when compared with conventional method of dye extraction from *Pterocarpus marsupium Roxb.* Saw dust due to the use of ultrasound technology.

Keywords: *Pterocarpus marsupium Roxb*, Saw dust, conventional.

BT-O-68

OPTIMIZATION OF ENZYME IMMOBILIZATION ON FUNCTIONALIZED MAGNETIC NANOPARTICLES FOR LACCASE BIOCATALYTIC REACTIONS

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Abstract

Magnetic materials can be easily separated from reaction media by application of an external magnetic field. On the other hand, nanomaterials are innovative platforms which present high surface-to-volume ratio allowing low mass transfer limitations. Magnetic nanoparticles (MNPs) can be considered as supports for catalysts immobilization since they greatly improve their reutilization avoiding the need of energy and time consuming centrifugation steps. Enzymes immobilization processes providing high biocatalysts stability are very desirable due to enzymes associated costs. Laccase (EC 1.10.3.2), an oxidative enzyme with numerous industrial applications, requires new technologies for its immobilization in order to improve its biocatalytic activity with reduced costs. In this study, the conditions of laccase immobilization on magnetic nanoparticles were optimized by box-Behnken experimental design. Laccase was successfully bound on functionalized MNPs according to FTIR spectroscopy. At the optimal conditions, the highest recovery activity of immobilized laccase reached 47.3 U/L. Compared to free laccase, thermal stability of immobilized laccase was improved. The immobilized laccase was able to retain above 85% of activity after 6 consecutive cycles of reaction. MNPs can be used for immobilization of important enzymes at industrial level, as these nanomaterials can improve both enzymatic application properties and easy and fast recovery for reutilization.

Keywords: Biocatalyst characterization, Immobilization, Magnetic nanoparticles, recovery, reutilization.

BT-O-69

PREPARATION OF PANCHAGAVYA FOR THE BETTER YIELD OF PLANTS

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Abstract

Panchagavya, an organic product has the potential to play a important role of promoting growth and providing immunity to plant system. Panchagavya consists of nine products viz. cow dung, cow urine, milk, curd, jaggery, ghee, banana, Tender coconut and water. When suitably mixed and used, these have miraculous effects, Cow dung, Cow ghee, Mix the above two ingredients thoroughly both in morning and evening hours and keep it for 3 days, Cow Urine, Water, After 3 days mix cow urine and water and keep it for 15 days with regular mixing both in morning and evening hours. After 15 days mix the following and panchagavya will be ready after 30 days, Cow milk, cow curd, after that panchagavya material were applied for plant growth promoting and plant growth was identify. The panchagavya amended plant was observed good growth when compare to normal farming plants.

Keywords : Panchagavya, cow dung, plant growth promoting and immunity of soil.

BT-O-70

A STUDY ON THE EFFECT OF FLY ASH FROM BANNARI AMMAN SUGARS UNIT 4 KOLUNDAMPATTU TIRUVANNAMALAI AND THEIR ON THE GROWTH RESPONSE OF *SACCHARUM OFFICINARUM* (SUGARCANE)

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Abstract

Fly ash is the product produced by burning of coal. As a results a huge disposal of fly ash which causes pollution. The recycling of fly ash has become an increasing concern in recent years due to increasing landfill costs and current interest in sustainable development. Use of fly ash in agriculture provides a possible alternative for it is safe disposal to improve the soil environment and enhance the crop productivity. In present study were collected fly ash from "Bannari amman sugars unit 4 kolundampattu , Tiruvannamalai . Based on that, the pot experiment carried out using sugarcane plant (*Saccharum officinarum*) growing in different concentrations of fly ash (5%, 10%, 20%, 30%, 40%, 50% & 100%) and labeled as T1-T7. Pot without fly ash is taken as control. After 90 days of the experiment, the physicochemical parameters of soil and fly ash, biochemical parameters and heavy metal accumulation in plants were noted. The morphological changes of the plants were noted at 30 days, 60 days and 90 days. At 30 days of growth all the plants showed almost equal growth. In 60 days there was a slight difference in the growth of all the plants. After 90 days, there was an increase in growth up to T4 (30% of fly ash) and the growth decreased in T5 (40% of fly ash) and T6 (50% of fly ash). All the plants possessed a single flower with greenish leaves and hair-covered steams. Every plant of all the concentrations was found without infections. Plants grown in 100% of fly ash showed stunted growth. Bio chemical parameters showed a gradual increase up to T4 (30% of fly ash) and decreased in T5 (40% of fly ash) and T6(50% of fly ash). Heavy metals accumulated in plants in the order of Fe > Mn > Cu > Zn > Cr. Except chromium all the heavy metals accumulated in increasing concentration of fly ash plants. The growth was found to be optimum in 30% fly ash and the result showed that at lower doses fly ash is a beneficial to plants.

Keywords: Fly ash, Sugarcane, *Saccharum officinarum And* Growth Response

BT-O-71

EXTRACTION OF CARRAGEENAN AND CHITIN FROM MARINE BIO RESOURCE AND PREPARATION OF BIO FILM AND THEIR APPLICATIONS

M.Gopu

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Abstract

The use of non biodegradable plastic based packaging materials has been stopped in several food industries due to their disadvantages, so bio based polymers like polysaccharides are the alternative source for the preparation of films in food packaging. Thus, the present work was aimed to prepare the carrageenan (polysaccharides) based antibiotics amended films to prevent the food borne microbial pathogen in packed foods to extend its shelf life. The red seaweed *Amphiroa anceps* was collected from *Kootapuli Village*, Valliyoor Taluk, Tirunelveli District, Tamil Nadu, India. From that, the carrageenan was extracted by biological method using endophytic fungal cellulase. After the extraction of carrageenan the antibiotics such *as Amoxycillin, Tetracycline, Chloroamphenical, Erythromycin, Doxycyoline, Ofloxacin, Cephalexin, Dictoxacilin* and *Ampicillin* were amended and different films were prepared using standard protocols. All the films were tested against different seafood borne pathogens such as, *E.coli, Vibrio cholerae, V.parahaemolyticus, Salmonella* sp, *Shigella* sp and *Listeria* sp. Among them, the *Cephalexin* amended film was showed the maximum zone of inhibition (ZOI) against all the tested pathogens. From the results, the study concluded that, the extraction of carragenan by biological substances increase the production and antibiotic amended carrageenan based films will be used for food packaging to control the pathogenic microbes and preserve the foods from spoilage.

Key words: Seaweeds, Carrageenan, Antibacterial Activity, Seafood Packaging.

BT-O-72

MULTIENZYME PRODUCING BACTERIA ISOLATED FROM AGRICULTURAL FIELDS IN THIRUVANNAMALAI, TAMIL NADU, INDIA

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Abstract

Soil Microorganisms as potential source of novel and or improved products of industrial importance have gained highest importance in Microbial technology and bioprocess engineering. The present study was carryout the isolated the multi-enzyme producing bacteria from agricultural field at Arni, Thiruvannamalai District, Tamilnadu, India. Totally 26 morphologically different colonies were isolated namely SCBT01 to SCBT26 and checked different enzyme activities such as Amylase, Protease, Lipase and Cellulase. There are 12 strains with it ability to produce the enzymes and particularly SCBT06 it produced Amylase, Protease and SCBT19 it produced the Amylase, Protease, Lipase and Cellulase in this strain concerted as potential strain. In the strain to suggest to industry which have the capacity to produce commercially important enzymes on industrial scale; Microbial enzymes are generally cheaper to be produced and are obtained in high yields.

Keywords: Multi-enzyme, Amylase, Protease, Lipase, Cellulase and Soil Microorganisms.

BT-O-73

IN VITRO REGENERATION OF MULTIPLICATION SHOOTS IN *HEDYCHIUM CORONARIUM*- AN IMPORTANT MEDICINAL PLANT

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Abstract

Hedychium coronarium an important medicinal plant belongs to the family Gingiberaceae. The present study describes a simple, efficient and large-scale regeneration system for *in vitro* propagation of *Hedychium coronarium* through nodal segment explant obtained from field-grown mature plants. Nodal explants were cultured on Murashige and Skoog (MS) medium supplemented with different concentrations of 6-Benzylaminopurine (BAP), naphthalene acetic acid (NAA) indole 3-acetic acid (IAA) and indole-3-butyric acid (IBA) for regeneration of multiple shoots. Sub-culturing of shoots every 4 weeks on fresh multiplication medium yielded a consistent proliferation rate. Multiple shoots were produced on all the concentrations of BAP, NAA and IAA; however MS medium supplemented with a combination of BAP (0.5 mg/l) + NAA (0.1 mg/l) proved to be optimal for the production of maximum number of shoots per explants. Microshoots were rooted onto MS medium supplemented with indole-3-butyric acid (0.5 mg/l). Regenerated plantlets were green and healthy in appearance. Finally, healthy and complete plants with well developed roots were hardened, acclimatized and planted in the field successfully with 90 % survival rate.

Keywords: *Hedychium coronarium*, In vitro propagation, MS medium.

BT-O-74

ANTIMICROBIAL AND ANTIOXIDANT POTENTIAL OF GREEN SYNTHESIZED COPPER NANOPARTICLES FROM *ANNONA MURICATA L.*

S. Kayalvizhi, P. Srinivasan, C. Sudhakar, A. Sengottaiyan, K. Selvam *

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*Corresponding author: ksk.selvam@gmail.com

Abstract

Nowadays, plant material based synthesis of nanoparticles gain great interest in pharmaceutical applications. The present study aimed to synthesize and characterize copper nanoparticles using the aqueous leaf extract of *Annona muricata L*. The synthesized copper nanoparticles were characterized by using various spectral and microscopic studies like UV, FT-IR, XRD, SEM-EDX and TEM. Antimicrobial and antioxidant potential of synthesized copper nanoparticles were determined by standard methods. Results of spectral and microscopic data revealed that the size of synthesized copper nanoparticles. The copper nanoparticles showed significant antimicrobial activity against most of the tested microbial pathogens. Copper nanoparticles exhibited considerable DPPH radical scavenging potential. The findings of the present study encourage the application of copper nanoparticles synthesized from *Annona muricata L.* as an anti-infective and antioxidant agent in medicine.

Keywords: *Annona muricata L.,* copper nanoparticles, Antimicrobial activity, Antioxidant activity.

BT-O-75

CHARACTERIZATION, PREPARATION AND PURIFICATION OF MARINE BIOACTIVE PEPTIDES

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Abstract

Marine bioactive peptides, as a source of unique bioactive compounds, are the focus of current research. They exert various biological roles, some of the most crucial of which are antioxidant activity, antimicrobial activity, anticancer activity, antihypertensive activity, anti-inflammatory activity, and so forth, and specific characteristics of the bioactivities are described. This review also describes various manufacturing techniques for marine bioactive peptides using organic synthesis, microwave assisted extraction, chemical hydrolysis, and enzymes hydrolysis. Finally, purification of marine bioactive peptides is described, including gel or size exclusion chromatography, ion-exchange column chromatography, and reversed-phase high-performance liquid chromatography, which are aimed at finding a fast, simple, and effective method to obtain the target peptides.

Key words: Bioactive, peptides, purification, anticancer, antihypertensive, anti-inflammatory

BT-O-76

IN VITRO REGENERATION OF MULTIPLICATION SHOOTS IN *HEDYCHIUM CORONARIUM*- AN IMPORTANT MEDICINAL PLANT

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Keywords: *Hedychium coronarium*, In vitro propagation, MS medium.

BT-O-76

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S. Kayalvizhi, P. Srinivasan, C. Sudhakar, A. Sengottaiyan, K. Selvam *

PG and Research Department of Biotechnology, Mahendra Arts and Science College (Autonomous), Kalippatti, Namakkal 637 501, Tamil Nadu, India

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Abstract

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Keywords: *Annona muricata L.,* copper nanoparticles, Antimicrobial activity, Antioxidant activity.

BT-O-77

CHARACTERIZATION, PREPARATION, AND PURIFICATION OF MARINE BIOACTIVE PEPTIDES

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Abstract

Marine bioactive peptides, as a source of unique bioactive compounds, are the focus of current research. They exert various biological roles, some of the most crucial of which are antioxidant activity, antimicrobial activity, anticancer activity, antihypertensive activity, anti-inflammatory activity, and so forth, and specific characteristics of the bioactivities are described. This review also describes various manufacturing techniques for marine bioactive peptides using organic synthesis, microwave assisted extraction, chemical hydrolysis, and enzymes hydrolysis. Finally, purification of marine bioactive peptides is described, including gel or size exclusion chromatography, ion-exchange column chromatography, and reversed-phase high-performance liquid chromatography, which are aimed at finding a fast, simple, and effective method to obtain the target peptides.

Key words: Bioactive, peptides, purification, anticancer, antihypertensive, anti-inflammatory

BT-O-78

DYE-SENSITIZED SOLAR CELL USING NATURAL DYES EXTRACTED FROM *SERRATIA MARCESCENS* STRAIN CSK

Chinnappan Sudhakar, Kandasamy Selvam, Arumugam Sengottaiyan,

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Abstract

Dye sensitized solar cells (DSCs) are designed for the conversion of solar radiation in to electric energy. In this present work, prodigiosin dye from fresh flowers of *S. marcescens* was extracted. The dyes have shown absorption in broad range of the visible region (400–700 nm) of the solar spectrum and appreciable adsorption onto the semiconductor (TiO_2) surface. The cells were fabricated with the extracted dyes and the J-V curves were recorded under solar simulation of 85mW/cm^2. The DSSCs made using the extracted dyes have shown that the open circuit voltages (V_{oc}) varied from 0.430 to 0.610 V and the short circuit photocurrent densities (J_{sc}) ranged from 0.11 to 0.29 mA cm^{-2}. Natural dye sensitized TiO_2 photo electrodes present the prospect to be used as an eco-friendly, environmental friendliness, low-cost alternative system.

Keywords: Dye Sensitized Solar Cell, *S. marcescens*, Natural dye, TiO_2 nanomaterial.

BT-O-79

PHYTOCHEMICAL SCREENING AND ANTIOXIDANT ACTIVITY OF *SPIRULINA PLATENSIS*

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Abstract

The aim of the present paper is to evaluate the phytochemicals, the antioxidant activity of marine algae *Spirulina platensis*. The phytochemicals present in the marine algae *S. platensis* were screened and their antioxidant activities were tested. The marine algae was collected, shade dried, powdered and extracted with methanol. The presence of a variety of chemical constituents, such as saponins, phenols, glycosides, flavonoids and alkaloids were analyzed in these marine algae by TLC and HPLC method. Their antioxidant activities were studied by Fentons method and DPPH assay. Phytochemical screening showed the presence of active molecules. The selected alga is having antioxidant potential. From the study, it is clear that these *S. platensis* are the prospective sources of bioactive compounds.

Keywords: *S. platensis;* Phytochemical; antioxidant.

BT-O-80

PHYTOCHEMICAL SCREENING AND ANTIOXIDANT ACTIVITY OF MARINE ALGAE *VALONIOPSIS PACHYNEMA*

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PG and Research Department of Biotechnology, Mahendra Arts and Science College (Autonomous), Kalippatti, Namakkal 637 501, Tamil Nadu, India

*Corresponding author: ksk.selvam@gmail.com

Abstract

The aim of the present paper is to evaluate the phytochemicals, the antioxidant activity of marine algae *Valoniopsis pachynema*. The phytochemicals present in the selected marine algae *Valoniopsis pachynema* was screened and their antioxidant activities were tested. The marine algae was collected, shade dried, powdered and extracted with methanol. The presence of a variety of chemical constituents, such as saponins, phenols, glycosides, flavonoids and alkaloids were analyzed in these marine algae by TLC and HPLC method. Their antioxidant activities were studied by Fentons method and DPPH assay. Phytochemical screening showed the presence of active molecules. The selected algae are having antioxidant potential. From the study, it is clear that these Valoniopsis pachynema are the prospective sources of bioactive compounds.

Keywords: *Valoniopsis pachynema*, saponins, phenols, glycosides, flavonoids and antioxidant.

BT-O-81

MEDICAL MICROBIOLOGY (VIRAL PATHOGENESIS)

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Abstract

Viral pathogenesis seeks to understand how a virus interacts with its host at multiple levels. Source (an infected human, animal, or insect vector), the transmission mechanism and how the virus is transmitted. Following transmission, pathogenesis is governed by the initial site of replication, whether the virus disseminates within the host and for specific tissues and organs. These steps are dictated by the structure and replication strategy of the virus. In addition to utilizing selected synthetic biochemical pathways in the host cell, viruses frequently reprogram host cells by inducing intracellular signaling pathways that render the cell more permissive. Host–virus interactions also control whether the infection is acute, chronic, latent, or transforming how the virus interacts with the immune system and the consequent pathophysiological response of the host.

Pathogenesis is the process by which an infection leads to disease. Pathogenic mechanisms of viral disease include implantation of virus at the portal of entry, local replication, spread to target organs spread to sites of shedding of virus into the environment. Factors that affect pathogenic mechanisms are accessibility of virus to tissue, cell susceptibility to virus multiplication, and virus susceptibility to host defenses. Natural selection favors the dominance of low-virulence virus strains. Most viral infections are subclinical, suggesting that body defenses against viruses arrest most infections before disease symptoms become manifest. This provides an overview of these basic concepts of viral pathogenesis, with emphasis on the interactions of viruses with their host cells and organisms.

BT-O-82

EXTRACTION OF CARRAGEENAN AND CHITIN FROM MARINE BIO RESOURCE AND PREPARATION OF BIO FILM AND THEIR APPLICATIONS

M. Gopu, K.Selvam*

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Abstract

The use of non biodegradable plastic based packaging materials has been stopped in several food industries due to their disadvantages, so bio based polymers like polysaccharides are the alternative source for the preparation of films in food packaging. Thus, the present work was aimed to prepare the carrageenan (polysaccharides) based antibiotics amended films to prevent the food borne microbial pathogen in packed foods to extend its shelf life. The red seaweed *Amphiroa anceps* was collected from *Kootapuli Village*, Valliyoor Taluk, Tirunelveli District, Tamil Nadu, India. From that, the carrageenan was extracted by biological method using endophytic fungal cellulase. After the extraction of carrageenan the antibiotics such *as Amoxycillin, Tetracycline, Chloroamphenical, Erythromycin, Doxycyoline, Ofloxacin, Cephalexin, Dictoxacilin* and *Ampicillin* were amended and different films were prepared using standard protocols. All the films were tested against different seafood borne pathogens such as, *E.coli, Vibrio cholerae, V.parahaemolyticus, Salmonella* sp, *Shigella* sp and *Listeria* sp. Among them, the *Cephalexin* amended film was showed the maximum zone of inhibition (ZOI) against all the tested pathogens. From the results, the study concluded that, the extraction of carragenan by biological substances increase the production and antibiotic amended carrageenan based films will be used for food packaging to control the pathogenic microbes and preserve the foods from spoilage.

Key words: Seaweeds, Carrageenan, Antibacterial Activity, Seafood Packaging.

BT-O-83

PROTEOMICS AND GENOMICS

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Abstract

Compared to genomics, proteomics is often regarded as an "emerging technology". While the successful implementation of proteomics workflows and technology still requires significant levels of expertise and specialization, great strides have been made to make the technology more powerful, streamlined and accessible. In 2014, two landmark studies published the first draft versions of the human proteome.

We aim to provide an introduction specifically into the background of mass spectrometry (MS)-based proteomics. Within the field, mass spectrometry has emerged as a core technology. Coupled to increasingly powerful separations and data processing and bioinformatics solution, it allows the quantitative analysis of whole proteomes within a matter of days, a timescale that has made global comparative proteome studies feasible at last. We present and discuss the basic concepts behind proteomics mass spectrometry and the accompanying topic of protein and peptide separations, with a focus on the properties of datasets emerging from such studies.

BT-O-84

BIOREMEDIATION IN BIOMEDICAL WASTE MANAGEMENT

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Abstract

The biomedical and health care waste management is very difficult from household and industrial waste management. The biomedical waste management is one of the biggest challenges of the present day times, because it has direct impact on health of human beings. It is hazardous in nature hence, proper disposal is important. Excretion of removal of skin waste during its donation by the process of incineration. Burning of biomedical waste produces ash and also toxic gases which has its poisonous effects on environment. This can be rectified by dissolving the toxic gases in sewage system. The dissolved toxins can be degraded by certain microbes. Then, the sludge can be again incinerated. Now the ash of sludge can be converted into fertilizer by gasification. Due to Bioremediation the toxins can be degraded. This method is mostly recommended as it is eco friendly. The bottom ash can mixed with H_2O, making it fit for bioremediation. Now the process carried out for gas degradation and it also can be followed for ash degradation.

BT-O-85

EXTRACTION, CHARACTERIZATION AND BIOLOGICAL STUDIES OF PHYTOCHEMICALS FROM *VALONIOPSIS PACHYNEMA*

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Abstract

The present work involves extraction of phytochemicals from the marine alga *Valoniopsis pachynema* with ethanol and evaluation of it in vitro antimicrobial and antioxidant activities using standard methods. The phytochemical analysis indicates the presence of some interesting secondary metabolites like alkaloids, flavanoids, monosaccarides and terpenes in the extracts. Also the solvent extracts displayed promising antimicrobial activity against *Pseudomonas aeruginosa* and *Klebsilla pneumonia*. Further results of its antioxidant screening revealed that was better antioxidant. Interestingly, FT-IR analysis established the presence of various biologically active functional groups in the extract.

Keywords : *Valoniopsis pachynema,* Phytochemical, Antimicrobial activity, Antioxidant.

BT-O-86

RECENT INNOVATION IN MEDICAL BIOTECHNOLOGY

K.R.Haripriya, Amala John, S. Keerthana

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Abstract

Biotechnology is a broad area of biology involving living systems and organisms to develop or make products for specific use. Human kind uses biotechnology in agriculture, food production, medicine and even more. Biotechnology has expanded to include new and diverse sciences such as genomics, recombinant gene technique, applied immunology and development of pharmaceutical therapies and diagnostic test.

Biotechnology has major applications in 4 areas, including health care (medical), crop production and agriculture, non food (industrial) and environmental uses.

Medical application of biotechnology is the directed use in medical and pharmaceutical industry and health preservation. This branch involves the production of vaccines, antibiotics, regenerative therapy, and creation of artificial organ and new diagnostic of diseases. Recent innovation includes Research in GDF 11- antiaging protein, Pig extract used to regenerate human muscle,3D X-ray film, Smart flare RNA detection probes, ADCC reporter bioassay etc**.**

New application and biotechnological inventions are continuously being developed to help improve our world.

BT-O-87

ANTI-HIV USING NANO ROBOTS

M. Assar, P. Jeeva Hari, S. Keerthana

Department of Biomedical Engineering, Mahendra Institute of Technology, Namakkal-637503

Abstract

Nanorobots are nano devices that will be used for the purpose of maintaining and protecting the human body against pathogens. Nano is one billionth of one centimeter. It is the application of different technologies primarily interested in the reduction of size. The credential part of this paper gives the theoretical application of nanodevices in the treatment of AIDS. There is no technology for the treatment of AIDS. Some of the drugs of specific composition are given nowadays to the patients depending on the intensity of the disease which increase their life time to a few years only. To make the treatment more specific, we use the nanodevices that use nano sensors to sense the AIDS infected WBC's. In this method, we are using nanorobots to get back the HIV infected WBC's. By doing so, constant levels of WBC's are maintained in the blood stream.

Thus, the AIDS patient is provided with an immunesystem so that he can defend himself from diseases. In this paper, only a theoretical analysis is given and all the information provide disspecifically organized by us. In India, more than 50lakhs of people are infected by this dreaded disease and it constitutes 10% of the total infected. We are doing research on this paper and we hope that this theoretical approach can be made practical in the near future, so that the killer disease AIDS could also be made in control in the hands of Human with the emerging new technologies like nanotechnology which has a Bio-medical application

BT-O-88

IN-VITRO CYTOTOXICITY ACTIVITY OF *SOLANUM NIGRUM* EXTRACT AGAINST HELA CELL LINE AND VERO CELL LINE

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Abstract

The study was aimed to evaluation of the anticancer activity of the leaf of *Solanum nigrum* on the *HeLa* cell line. The leaf of *Solanum nigrum* methanol extract was tested for its inhibitory effect on *HeLa* Cell Line. The percentage viability of the cell line was carried out by using Trypan blue dye exclusion method. The cytotoxicity of *Solanum nigrum* on *HeLa* cell was evaluated by the SRB assay and MTT assay. *Solanum nigrum* methanol extract has significant cytotoxicity effect on *HeLa* Cell Line in concentration range between 10 mg/ml to 0.0196 mg/ml by using SRB assay and study also showed that inhibitory action on *HeLa* cell line in concentration range between 10 mg/ml to 0.0196 mg/ml by using MTT assay. IC50 value and R_2 value of *Solanum nigrum* on *HeLa* cell and *Vero* cell were 847.8 and 0.8724, 9088 and 0.1017 respectively by SRB assay. IC_{50} value and R_2 value of *Solanum nigrum* on *HeLa* cell was 265.0 and 0.9496 respectively by MTT assay. IC_{50} value of *Solanum nigrum* on *Vero* cell was 6.862 by MTT assay. R2 value of *Solanum nigrum* was not found by MTT assay. From the performed assay, methanol extract of these drug shows greater activity on *HeLa* cell line and little activity on *Vero* cell line and that mean *Solanum nigrum* can be used as anticancer activity.

Keywords: Cytotoxicity Activity, MTT Assay, *Solanum nigrum*, *HeLa* cell line,

ABSTRACTS

POSTER PRESENTATION

BT-P-01

Controlling of Water Pollution Using Transgenic Plants

G. Hemapriya

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Abstract

Every element of sewage, damaging our environment.Meadowsweet, Yellow flag, Melancholy thistle are some of the plants which grow in sewage areas by utilizing elements which is present in sewage areas and also these plants has medicinal values. But they uses only trace amount of elements. By using genetic engineering studies, We planned to modify those kinds of plant genes with the plant which consumes high amount of water for their life span. As a result, the transgenic plant use the high amount of sewage water and also controlled and we can use these transgenic plant for its medicinal values.

Key words: Transgenic Plant, Plant gene, Medicinal values.

BT-P-02

New way to Degrade Plastics That Turns Them into Fuel

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Abstract

Polyethylene (PE) is the largest-volume synthetic polymer, and its chemical inertness makes its degradation by low-energy processes a challenging problem. We report a tandem catalytic cross alkane metathesis method for highly efficient degradation of polyethylenes under mild conditions. With the use of widely available, low-value, short alkanes (for example, petroleum ethers) as cross metathesis partners, different types of polyethylenes with various molecular weights undergo complete conversion into useful liquid fuels and waxes. This method shows excellent selectivity for linear alkane formation, and the degradation product distribution (liquid fuels versus waxes) can be controlled by the catalyst structure and reaction time. In addition, the catalysts are compatible with various polyolefin additives. Therefore, common plastic wastes, such as postconsumer polyethylene bottles, bags and films could be converted into valuable chemical feed stocks without any pretreatment.

Keywords: Alkaline metathesis method, Degradation of polyethylene, Polyolefin.

BT-P-03

NATURAL BIOLOGICAL PROCESSES TO COMPLETELY ELIMINATE TOXIC CONTAMINANTS BY USING BIOREMEDIATION

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Bharathidasan College of Arts and Science, Erode.

Abstract

Bioremediation is an ecologically sound and state of the art technique that employs natural biological processes to completely eliminate toxic contaminants. Any process that uses micro-organisms, fungi, green plants or their enzymes to return the natural environment altered by contaminants to its original condition. Bioremediation technologies can be generally classified as *in- situ* or *ex-situ*. *In-situ* bioremediation involves treating the contaminated material at the site while ex- situ involves the removal of the contaminated material to be treated elsewhere. Some examples of bioremediation technologies are bioventing, land farming, bioreactor, compositing, bioaugmentation, rhizo- filtration, and bio-stimulation. Micro-organism which performs the function of bioremediation is known as Bio remediators (bioaugmentation). Not all contaminants, however, are easily treated by bioremediation using microorganisms.

Keywords: Bioremediation, contaminants, Bioreactors.

BT-P-04

MICRO PLASTIC CONTAMINATION

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Abstract

Increased production and release of plastics in the environment causes a huge health hazards to animal habitats. The release of plastics in aquatic environments is increasing nowadays. These plastics are in the form of micro plastics which means the size is less than 1mm are released into the oceans these micro plastic can easily enter the food pipe of fishes and it can be dangerous to its life. The chemicals used in the plastics may also be thread to aquatic organisms if humans consume those fishes affected by plastics, then these would cause problems in human life's also. The best remedy for reducing plastics in ocean is biodegradation, which is done by micro-organisms. Various types of plastics can be degraded by different micro organisms. For example,polyhydroxy alkanoates (PHA) can be degraded by fungi isolated from soil and marine environment such as *Penicillium, A Scomycetes* etc..

BT-P-05

BIODEGRADATION OF PAPER WASTE USING *EISENIA FOETIDA* BY VERMICOMPOSTING TECHNOLOGY

K.K.Gulma, A.Priyadharshini

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Abstract

The paper wastes are being a big concern over past decades. The process of reuse of the paper wastes is employed by *Eiseniafoetida* in Vermiculture. The paper waste iscollected around 50kg and organic wastes like vegetable wastes and cow dung wastes are also collected. In the experimental setup is done in a Geosynthetic polymer bag. The area is divided into three segments and in each segment appropriate amount of paper waste and organic waste were added along with 25 numbers of earthworms. The set up is watered daily and monitored periodically and it is kindled for proper aeration. The soil samples were collected on 20 days, 45 days and 60 days from the day the earthworms were added. After 60 days of the experiment, the paper wastes, compost and earthworms were separated. The quantities of the waste were compared to the initial amount and the composts were collected. The elemental analysis of the soil was used as Vermi-bed is analyzed for improvement of soil nutrients. The vermiwashed water of the setup is analyzed for total protein. The number of earthworm is also compared to initial quantity. Out of all, the loss percentage of the organic waste and paper waste shows the degradation of the paper wastes.

Keywords: Eiseniafoetida, vermicompost, paperwaste.

BT-P-06

DYE REMOVAL OF AN INDUSTRIAL EFFLUENT USING ACTIVATED CARBON ACTIVITY

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Abstract

A weed is a collective term given to plants that grow and compete with the cultivated crops. This is typical of the situation facing the textile industry especially in the area of colour pollution emitted into the earth waterwaysAC treatment to remove colour from waste water could be solution to the problem of colour pollution.Activated carbon(AC) has been widely used in wastewater (dye effluent) treatment for the removal of various pollutants because of its large surface area and high adsorption capacity. In this present study the activated carbon activity was studied by using *Tribulusterrestris* and *sidaacuta* weed modified as activated carbon using conc. H_2SO_4muffel burner. All of the classes of the dyes used in the textile industry are removed from wastewater to a certain extent, some poorly and other almost completely. Colour removal is a prime example of the advantages of this method. Then before and after treatment analyze the pH, electrical conductivity, total dissolved salts, total suspended solids, COD and BOD.

Keywords: Effluents, TSS,Tribulusterrestris, BOD, COD.

BT-P-07

SYNTHETIC MICROBES AS DRUG DELIVERY

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Abstract

Synthetic biology was used for developing novel genetic circuits and employed in a variety of applications. Several chassis have been used as synthetic drug delivery system. Bacteria chassis is used in development of microbiota derived therapeutics. *In vivo* synthesis and delivery via cell therapy has many important advantages over systematic treatment. i) The required dosage of the therapeutic agent is reduced by several orders, to achieve a therapeutic effect. ii) The route of the administration is less invasive than intravenous (or) subcutaneous injection. iii) The multiple therapeutic agent produced by the same cell is simultaneously used as combination therapy. In vivo production and drug delivery by a synthetic chassis provides a more - cost effective treatment. The disadvantages are synthetic cell therapy raises issues surrounding safety, containment and public opinion on using genetically modified organisms in medicine.

13BT-P-08

DEGRADATION OF PLASTICS USING MICROORGANISMS

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Abstract

Plastics have become an important part of modern life and are used in different sectors of applications like packaging, building materials, consumer products and much more. Each year about 100 million tons of plastics are produced worldwide. Demand for plastics in India reached about 4.3 million tons in the year 2001-02 and would increase to about 8 million tons in the year 2006-07. Degradation is defined as reduction in the molecular weight of the polymer. The Degradation types are (a).Chain end degradation/de-polymerization (b).Random degradation/reverse of the poly condensation process. Biodegradation is defined as reduction in the molecular weight by naturally occurring microorganisms such as bacteria, fungi, and actinomycetes. That is involved in the degradation of both natural and synthetic plastics. Examples of Standard Testing for Polymer Biodegradability in Various Environments. ASTM D5338: Standard Test Method for Determining the Aerobic Biodegradation of Plastic Materials under Controlled Composting Conditions, ASTM D5210: Standard Test Method for Determining the Anaerobic Biodegradation of Plastic Materials in the Presence of Municipal Sewage Sludge, ASTM D5526: Standard Test Method for Determining Anaerobic Biodegradation of Plastic Materials under Accelerated Landfill Conditions, ASTM D5437: Standard Practice for Weathering of Plastics under Marine Floating Exposure. Plastics are biodegraded, (1).In wild nature by aerobic conditions CO_2, water are produced,(2).In sediments & landfills by anaerobic conditions CO_2, water, methane are produced, (3).In composts and soil by partial aerobic & anaerobic conditions. This review looks at the technological advancement made in the development of more easily biodegradable plastics and the biodegradation of conventional plastics by microorganisms. Additives, such as pro-oxidants and starch, are applied in synthetic materials to modify and make plastics biodegradable. Reviewing published and ongoing studies on plastic biodegradation, this paper attempts to make conclusions on potentially viable methods to reduce impacts of plastic waste on the environment. Keywords: Biodegradation, plastics waste, bacteria, fungi.

BT-P-09

MOLECULAR DOCKING, VIBRATIONAL SPECTROSCOPY STUDIES OF ETHYL INDOLE-3-ACETATE THYROID HORMONE RECEPTOR ALPHA1

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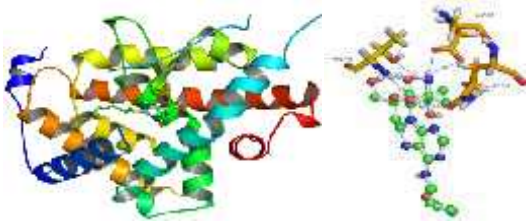
Abstract

We designed, prepared and evaluated a new ligand Ethyl indole-3-acetate for anticancer activity against a panel of human thyroid cancer cell. The FT-IR and FT-Raman spectroscopies represent one of the most powerful techniques to study chemical bonding and chemistry identify molecular structure. The results of a study on the Geometries, Electrostatic potential energy map and electronic properties of 9H6HMP were investigated by ab initio and Density Functional Theory (DFT) with B3LYP functional. The Protein-Ligand interaction plays a significant role in structural properties of designed drug molecule. Molecular docking results were performed by using the FlexX and LeadIT docking software and the binding energies were obtained as scores from -5.96kcal/mol. The above mentioned compounds can be utilized to the thyroid cancer therapy and it leads a way to create platforms for chemotherapy or hormonal therapy of thyroid cancer treatments.

Keywords: DFT; FT-IR; FT-Raman; MESP surface map; Molecular docking.



Molecular Docking