National Seminar on

Contemporary Advances in Biotechnology

[NSCAB - 2018]

25th January 2018

Organized by

DEPARTMENT OF BIOTECHNOLOGY

MAHENDRA

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NATIONAL SEMINAR ON

CONTEMPORARY ADVANCES IN BIOTECHNOLOGY [NSCAB'18]

25th January, 2018

Sponsored By

MAHENDRA EDUCATIONAL TRUST

Mahendrapuri, Mallasamudram, Namakkal

Organized By

Department of Biotechnology

Mahendra Arts & Science College [Autonomous]

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Kalippatti 637 501, Namakkal (Dt)

Tamil Nadu, India

NATIONAL SEMINAR ON

CONTEMPORARY ADVANCES IN BIOTECHNOLOGY [NSCAB'18]

25th January, 2018

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NATIONAL SEMINAR ON

CONTEMPORARY ADVANCES IN BIOTECHNOLOGY [NSCAB'18]

25th January, 2018

Inauguration

Date: 25.01.2018 **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.
Special Address	:	**Dr.L.Senthilvadivu,** Principal, Mahendra Arts & Science College (A)
Inaugural Address	:	**Dr.Pennathur Gautam,** Director, Centre for Biotechnology,Anna University, Chennai
Release of Souvenir	:	**Dr. S. Murugan** Associate Professor, Department of Biotechnology, Karunya University
Felicitation	:	**Dr. Aroulmoji,** Director, R&D, Mahendra Educational Trust.
Vote of Thanks	:	**Dr. A.Sengottaiyan,** Asst. Professor, Dept. of Biotechnology Mahendra Arts & Science College (A)
Session starts		

NATIONAL SEMINAR

ON

CONTEMPORARY ADVANCES IN BIOTECHNOLOGY [NSCAB'18]

25th January, 2018

Technical Session

TIME	PROGRAMME
Session I	Bioanalysis Using meso-5,10,15, 20 – Tetrakis
10.00- 10.45 am	(4-sulphonatophenyl) Porphyrin
	Dr.Pennathur Gautam,
	Director, AU-KBC Research Center, Anna University, Chennai.
10.45-11.00 am	**Tea Break**
11.00- 11.15 am	**Poster Presentation**
Session II	Production of laccase using statistical optimization
11.15- 12.00 pm	techniques
	Dr. S. Murugan
	Associate Professor, Department of Biotechnology, Karunya University, Coimbatore.
12.00-01.30 pm	**Paper Presentation**
01.30-02.15pm	**Lunch Break**
Session III	Biogenic Nanotechnology on Environmental
02.15- 03.00 pm	applications
	Dr.R. Arthur James,
	Head, Department of Marine Science, Bharathidasan University, Tiruchirappalli.
3.15-3.30 pm	**Tea Break**
3.30-4.00 pm	Valedictory Function

National Anthem

NATIONAL SEMINAR

ON

CONTEMPORARY ADVANCES IN BIOTECHNOLOGY [NSCAB'18]

25th January, 2018

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Published by

MAHENDRA EDUCATIONAL TRUST

Mahendrapuri, Mallasamudram

Namakkal (Dt.), Tamil Nadu.

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Shri M.G. Bharath Kumar
Chairman

MESSAGE

I am extremely delighted to hear that the Department of Biotechnology is organizing **NSCAB'18** a National Seminar on **Contemporary Advances in Biotechnology** on **25th January, 2018.**

I am sure that this seminar would 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.

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Shrimathi B. Valliyammal,
Secretary.

MESSAGE

Science! The ocean of knowledge, mountain of challenge, can be traverse across through constant struggle or conquered 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.

In this way, biotechnology has great impacts 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.

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Dr.L.Senthilvadivu,
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 working for the constant endeavor of imparting futuristic biotechnology education and to develop a cadre of highly qualified and trained technocrats having dedication for application of biotechnology. In part of that, I am indeed happy to know about that the department of biotechnology is organizing NSCAB'18 and publishing a souvenir to mark the occasion.

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

I hope the NSCAB 18 will be a real exposure for biotechnology in society interface and to 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 **NSCAB18**. I wish the seminar a grand success to achieve its goal.

PRINCIPAL

MAHENDRA

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Dr. T. Selvankumar,

Head, Department of Biotechnology

MESSAGE

It's my privilege to welcome all the delegates and participants to attend the **NSCAB'18** is a National Seminar on **Contemporary Advances in Biotechnology** on **25th January, 2018**. 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 the 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 to give a better product for the humanity

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

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

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

I am also thankful to the faculties, students of Biotechnology for their hard work and support to make the seminar successful.

Dr. T. Selvankumar

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Dr. A.Sengottaiyan
Organizing Secretary
Asst. Prof., Department of Biotechnology

MESSAGE

I take pleasure in organizing this National Seminar on **Contemporary Advances in Biotechnology** on **25th January, 2018** at **Mahendra Arts & Science College [Autonomous**] Kalippatti, Namakkal Dt., Tamil Nadu, India.

In this process we could see such programs motivate the participants to take up research in career option and identify needy issues to be addressed towards sustainable development of the Biological techniques.

I wish the present seminar would bring out useful successful results of the past, describe present research trends and identify future unaddressed issues for the young scientists.

Dr. A.Sengottaiyan

PERIYAR UNIVERSITY

PERIYAR PALKALAI NAGAR
SALEM – 636 011

Prof. P. Kolandaivel
Vice Chancellor

Date: 18-01-2018

Message

It gives me an immense pleasure to know that the Department of Biotechnology, Mahendra Arts and Science College, Kalippatti is organising a National Seminar on **"Contemporary Advances in Biotechnology" (NSCAB)** during 25th January 2018.

I am confident that the department would take care of the expectations of the scientific community in the areas of Biotechnology, Bioinformatics, Biochemistry, Nanotechnology and Microbiology, creating a dais for exchange of innovative ideas.

I extend my congratulations to the organizers of the seminar and I wish the seminar a grand success.

P. Kolandaivel

[P. Kolandaivel]

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திருவள்ளுவர் பல்கலைக்கழகம்
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Prof. Dr. K.MURUGAN
M.Sc., M.Phil., Dip.Ent., Ph.D., D.Sc.,
Vice-Chancellor

23rd January 2018

MESSAGE

I am immensely happy to note that Department of Biotechnology, Mahendra Arts & Science College is organizing National Seminar on **"Contemporary Advances in Biotechnology (NSCAB)"** on 25th January 2018.

Developing innovative and effective biotechnology solutions to problems encountered by us in health, environment and in agriculture is a pressing challenge faced by today's researchers. There is a need for cutting-edge research and development efforts in biotechnology and new strategic partnership in this important interdisciplinary field. May this Seminar help to improve quality of future research and new practical applications, a dialogue between experienced colleagues, young scientists and Professionals.

I expect that the deliberations in the seminar will not only help the researchers from academia and industry but also provide a platform for further initiating research activities. Once again I would like to congratulate the organizers for bringing out the proceedings of the Seminar as an edited volume.

Further, I convey my warm felicitations to Convener, Organizing Secretary, Faculty, Research Scholars, staff & Students of Mahendra Arts & Science College and to all the participating delegates and wishes the National Seminar all success.

My best wishes to all the delegates participating in the seminar.

THIRUVALLUVAR UNIVERSITY * VELLORE-632 115 *

(Prof. Dr. K. MURUGAN)
VICE-CHANCELLOR
THIRUVALLUVAR UNIVERSITY
SERKADU, VELLORE - 632 115.
23.01.2018

Department of Animal Health & Management
Alagappa University

{A State University Accredited with A+ Grade by NAAC (CGPA: 3.64) in the Third Cycle}

Dr. B. Vaseeharan M.Sc., M.Phil., Ph.D

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MESSAGE **Dare: 19.01.2018**

It's my great pleasure to welcome you all to "National Seminar on Contemporary Advances in Biotechnology – NSCAB – 2018" during 25th January, 2018 organized by Department of Biotechnology, Mahindra Arts & Science College. It is heartening to note that the seminar intends to cover a wide range of thrust areas in the field of Biotechnology. It is an interesting and emerging science of biology that has scope in every livelihood of our planet.

The souvenir of this seminar will bear the abstracts of paper and poster presentations by delegates from all over the India definitely will be a very fruitful reference for students and scholars. I am sure that the seminar will provide a good platform for sharing of scientific findings, thoughts and opinions about all spheres of biotechnology.

This seminar will bridge the scientists, academia and research scholars to discuss, disseminate, update and enrich their knowledge in the latest biotechnological research. It is hoped that this National seminar will pave the way for the young minds towards the introspection of new techniques in Biotechnology for a better tomorrow.

In this regard, I would appreciate and congratulate the faculty members, research scholars and students of Department of Biotechnology for their involvement and praise worthy hard work in organizing this National seminar.

I wish the seminar a grant success.

Thanking You

Yours faithfully

(Dr.B.Vaseeharan)

DEPARTMENT OF BIOTECHNOLOGY
MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI – 627 012, TAMILNADU

Dr. K.Murugan, MSc., PhD
Professor

Date: 19/01/2018

Biotechnology is a powerful tool which opens up a new age of science and technology for achieving impossible tasks encountered during making or modifying products and processes of specific use. The booming biotechnology which advances rapidly now a day provides benefits in all sectors of human life. It influences almost all domains of human life including agriculture, environment, food, health, etc. The scope for biotechnology in India shall always be on the rise and Indian biotech industrial investment is expected reach USD 100 billion by 2025. Hence, the Indian biotech industry is an employment intensive sector which offers a plethora of opportunities for a qualified biotechnologist.

Therefore, the proposed NSCAB-2018 "National seminar on contemporary advances in biotechnology" is an important and timely one when our country is looking at biotechnology. Hope, the NSCAB-2018 will create a great platform for researchers, scientists, academicians and industry experts for addressing a range of critically important areas, sharing research findings and acquiring the desired knowledge. In this great conglomeration, it is my privilege and pleasure to congratulate the convener Dr.T.Selvankumar and his team for organizing this wonderful NSCAB-2018.

I wish this NSCAB-2018 a great success.

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

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

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Professor & Head

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Date: 18.01.2018

MESSAGE

I am immensely pleased to extend a hearty welcome to all the delegates of the one day National seminar on "**Contemporary Advances in Biotechnology (NSCAB-2018)**", to be held on 25th January 2018.

Advances in biotechnology have 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 in micro-organisms with diverse characteristics. The increase in knowledge of many pathogenic species of micro-organisms, toxins and other biological agents and the continuing pace of developments in civilian-related biotechnology areas have further increased the possibilities for production and sociable use of biological products like industrially important enzymes, antibodies, and so on.

Technologies like Recombinant DNA (r-DNA) Technologies, Human Genome Project (HGP), Genomics and Proteomics, Gene Therapy, Systems Biology, Animal Healthcare, Plant Pests and Diseases, Bio-pharming, Biological Pest Control, Bio-prospecting 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 wish the seminar a grand success.

[P. PERUMAL]

PERIYAR UNIVERSITY
(Reaccredited with 'A' Grade by NAAC)
DEPARTMENT OF MICROBIOLOGY
(DST-FIST Supported Department)
SCHOOL OF BIOSCIENCES
PERIYAR PALKALAI NAGAR
SALEM – 636 011, TAMIL NADU, INDIA

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

Message

I am happy to note that **Department of Biotechnology, Mahendra Arts & Science College, Tiruchengodu, Namakkal** is organizing a National Seminar on "**Contemporary Advances in Biotechnology (NSCAB – 2018)**" on **January 25, 2018.**

Science leads to development of numerous techniques and technologies. Availability of expertise leads to products. It should be the mission of modern young and experienced researchers to see that they make scientific discoveries, which will lay the foundation for future technologies of the country. Nowadays, Biotechnological research and development are moving at a very fast rate. The subject has assumed greatest importance in recent years in the development of agriculture, pharmaceuticals, environment and human health. The science of biotechnology has endowed us with new tools and tremendous power to create novel products for improving quality of life of our people.

My hearty greetings to the Organizing Secretory and faculty members of the Department of Biotechnology, Mahendra Arts & Science College for organizing a seminar on an important topic of academic interest.

My best wishes for the successful conduct of the National Seminar.

Dr. R. Balagurunathan

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http://www.chonbuk.ac.kr/biotech

Message

I am extremely happy to notice that the Department of Biotechnology, Mahendra Arts and Science College, Kallippatti, Namakkal, Tamil Nadu, India is organizing National Seminar on **"Contemporary Advances in Biotechnology"** on 25th January 2018. With advances in technology, biological sciences have become an effective tool in providing sustainable solutions to the mankind. I am sure the presentations and interactions in the conference will benefit the students, budding researchers, faculties, and participants from different scientific discipline.

I congratulate the faculty members and organizers of this conference and wish the conference a grand success.

With Regards

Dr. S. Kamala-Kannan

Associate Professor in Biotechnology

Mahendra Arts & Science College [Autonomous]

Department of Biotechnology

NATIONAL SEMINAR

ON

CONTEMPORARY ADVANCES IN BIOTECHNOLOGY [NSCAB'18]

25nd January, 2018

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Invited speakers

BIOANALYSIS USING MESO-5,10,15, 20 - TETRAKIS(4-SULPHONATOPHENYL) PORPHYRIN

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Abstract

Enzymes hydrolyzing water-soluble short-chain triacylglycerols to corresponding fatty acids and glycerol are termed as esterases (EC 3.1.1.1), and enzymes catalyzing the hydrolysis of carboxylic ester bonds at the lipid–water interface are termed lipases (EC 3.1.1.3). Lipases and esterases are versatile biocatalysts and find potential application in organic synthesis. The activities of these enzymes are estimated using tributyrin and triolein as substrates, and the product of hydrolysis (i.e., the fatty acids released) is quantified. We have developed a colorimetric assay format for the determination of lipase activity, using sodium salt of tetra sulfonatophenyl porphyrin (Na–TSPP) as a chromogenic indicator, that can also overcome the problem of the toxic nature of various indicators that are used. Protein identification in Polyacrylamide Gel Electrophoresis (PAGE) requires postelectrophoretic steps like fixing, staining and destaining of the gel, which are time consuming and cumbersome. We have developed a method for direct visualization of protein bands in PAGE using TSPP as a dye without the need for any post electrophoretic steps, where separation and recovery of enzymes becomes much easier for further analysis. Activity staining was done to prove that the biochemical activity of the enzymes can be preserved after electrophoresis. The use of tetra ammonium TSPP as stain to analyse bacterial cells using fluorescent microscopy was also investigated. TSPP was effectively used to analyse two different bacteria; *Pseudomonas aeruginosa* and *Bacillus cereus*. The variation in brightness with varying concentrations of TSPP was studied. The patterns of variations for these bacteria were found to be the same, but with consistently higher brightness for *Bacillus cereus*. This allows for a possible method for distingushing bacteria.

Keywords - tetra sulfonatophenyl porphyrin (Na–TSPP), Polyacrylamide Gel Electrophoresis (PAGE), *Pseudomonas aeruginosa* and *Bacillus cereus*

BIOGENIC NANOTECHNOLOGY ON ENVIRONMENTAL APPLICATIONS

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Biogenic nanoparticles have received considerable attention in recent years due to their wide range of applications in the fields of catalysis, photonics, optoelectronics, biological tagging, pharmaceutical applications environmental pollution control, drug delivery systems, and material biotechnology. The application of nanoscale materials and structures, usually ranging from 1 to 100 nanometers (nm), is an emerging area of nanoscience and nano-biotechnology. Nano-materials may provide solutions to technological and environmental challenges in the areas of solar energy conversion, catalysis, medicine, and water treatment. This increasing demand must be accompanied by "green" synthesis methods. In the global efforts to reduce generated hazardous waste, "green" technology and biological processes are progressively integrating with modern developments in science and industry. Implementation of these sustainable processes should adopt the fundamental principles of basic biotechnology. These principles are geared to guide in minimizing the use of unsafe products and maximizing the efficiency of biological processes.

The green synthesis of NPs involves in three main steps, which must be evaluated based on green technology perspectives, including (i) selection of solvent medium, (ii) selection of environmentally benign reducing agent, and (iii) selection of nontoxic substances for the NPs stability. Those natural products isolated from biological organisms that could be used as alternate agents are called biogenic compounds. A number of potential biogenic compounds have been isolated and searches for natural compounds, often include sponges, sea plants, corals, ascidians, sea grasses, sea stars, bacteria, fungi, micro and macroalgae. Based on these paleo organisms one could manage the human kingdom without affecting our environment.

ABSTRACTS

ORAL PRESENTATION

BT-O-01

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

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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 very expensive. The present study is aimed to find out the use of natural dye extract of *Lawsonia inermis* L. which can be used as sensitizer to fabricate titanium dioxide nanoparticles (TiO_2NPs) based dye sensitized solar cells. The dyes have shown absorption in broad range at the visible region (400-700 nm) of the solar spectrum and appreciable adsorption onto the semiconductor (TiO_2) surface. TiO_2 NPs fabricated DSSC with natural dye extract of *L. inermis* showed promising electron conversion efficiency at 1.01%. Natural pigments offer advantages such as simplicity of preparation, low cost and environmental friendliness.

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

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BT-O-02

IN-SITU REGULATION OF HYDROGEN SULFIDE AND METHANE PRODUCTION FROM ANAEROBIC DIGESTER

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Abstract

The main objective is to test and optimize the *in-situ* biogas pressure during the (AD) anaerobic digestion of saline sulfate rich sludge for elimination of SRB activity to limit the hydrogen sulphide (H_2S) production and improve the CH_4 content in biogas. The proposed alternate approach will lead to reduce the H_2S and increase the methane percentages in biogas, while the calorific value will be significantly improved. Eventually, any additional treatment costs for H_2S removal/treatment from biogas will be minimized and digestion efficiency upregulated to accommodate more organic materials (e.g. food waste) with high methane (CH_4) yield. Also study the effect of *in-situ* biogas pressure on the degradation of organics and CH_4 recovery. Test and optimize the different sulfate loading rate on SRB and MPA activity under optimized pressure conditions. Study the effect of biogas composition on the SRB and MPA activity under optimized pressure conditions.

Keywords: Biogas, Anaerobic digester

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BT-O-03

IMPACT OF INDUSTRIAL POLLUTANTS ON HISTOPATHOLOGICAL ALTERATIONS IN THE SELECTED TISSUES OF FISH, *CATLA CATLA*

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Abstract

The present study is aimed to assess the histological damage caused to the fish *Catla catla*, by variable aquatic pollutants (Cd. Copper Zn) present in polluted water of River Cauvery, Electronic microscopic studies exhibited severe histopathological changes in the Kidney, Liver, gills, due to the Impact of pollutant. The significance of the result was discussed in relation to physiological stress leading to the development of anaerobic conditions at the tissue level in pollutant stressed fish.

Key words: Histopathological alterations *Catla Catla,* River Cauvery, Pollutants

BT-O-04

GREEN SYNTHESIS OF SILVER NANOPARTICLES USING *SESBANEA GRANDIFLORA* FLOWER EXTRACT AND ITS ANTIBACTERIAL ACTIVITY

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Abstract

In the last decades development of nanotechnology is become a major step in pharmaceutical industry. Nanotechnology is the branch of science that deals with synthesizing and studying the materials in nano scale level. Synthesis of nanoparticles is the advanced technology used for various purposes. Green synthesis of silver nanoparticles is a simple, cost effective and ecofriendly method when compare with chemical method. Nanoparticles are the particles with the size range of about 1-100nm.In the present work the silver nanoparticles are synthesized using the extract of the plant *Sesbanea grandiflora* as a reducing agent treated with the silver nitrate solution and the confirmation of silver nanoparticles were done by using UV visible spectroscopy which shows the absorbance near 420 nm and the active functional group attachment were studied through FTIR .The size of the silver nanoparticles were confirmed using a scanning electron microscope and Zetasizer. The synthesized nanoparticles were studied for its antimicrobial activity against gram positive and gram negative bacteria.

Key Words : *Sesbanea grandiflora,* Green synthesis, FTIR, Gram negative bacteria

BT-O-05

FUNGI PARASITIZING TWO EXOTIC TROPICAL ORNAMENTAL FISHES

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Abstract

Fungal infections have been causing problematic diseases to fish. The objective of this study was to investigate fungal infection in two ornamental fish *Ictaluruspunctatus* and *Hypostomusplecostomous.* The fish were collected from shops in Erode, Tamilnadu during the period of December 2017 for mycological study. Different parts of organs (head, eyes, gills fins and intestine) from of fish were inoculated on Potato dextrose agar, Sabouraud dextrose agar, malt extract agar supplemented by suitable antibiotics. Identification and characterization of the fungi were made with the help of authentic manuals of fungi. The fungal species such as *Aspergillus* spp., *Alternatia* spp., *Fussarium* spp., *Cunninghamella* spp., *Mucor* spp., *Pencillium* ssp., were isolated from the experimental fish. This study showed that fungi isolated from different freshwater ornamental fishes are considered as normal mycoflora but they can cause infection.

Key Points: *Ictalurus punctatus, Hypostomus plecostomous, Alternatia* spp, *Cunninghamella* spp.

BT-O-06

EVALUATION OF BIOACTIVE AND ANTIOXIDANT ACTIVITIES COMPOUNDS ISOLATED FROM *HEPTAPLEUREUM STELLATUM* (GAERTN.) BAILL.

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Abstract

Heptapleuerum stellatum is commonly known in India as Umbrella tree, has a wide range of medicinal uses. This study aimed to evaluate the phytoconstituents, antioxidant activities, total phenolic content and its compound characterization in leaves of *H. stellatum*. Phytochemical analysis for *H. stellatum* indicated the presence of alkaloids, carbohydrates, steroids, saponins, glycosides, and terpenoids. The total phenolic content was measured by folin ciocalteau assay. The total antioxidant capacity was estimated spectrometrically by 1,1-diphenyl-2-picrylhydrazyl radical (DPPH), ferric reducing antioxidant power (FRAP) and H_2O_2 assay. The methanol extracts exhibited maximum antioxidant activity in the entire test. Bioactive compounds were screened using GC-MS analysis. The results suggest that *H.stellatum* has promising antioxidant activity and could serve as a potential source of natural antioxidants.

Keywords: Schefflera, Antioxidant, Total phenolic, Hydrogen peroxide, DPPH, GC-MS**.**

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BT-O-07

BIOCHEMICAL COMPOSITION OF SOME SPECIES OF CYANOBACTERIA ISOLATED FROM SANDY COASTAL REGIONS OF RAMESWARAM, TAMIL NADU

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Abstracts

The biochemical composition of four species of cyanobacteria namely, *Oscillatoriasalina, 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%. *Lyngbyaconfervoides* showed high amount of copper, manganese, ferrous and zinc.

Keywords: *Oscillatoriasalina, Phormidium tenue, Gloeocapsa* sp. And *O. salina, Lyngbya confervoides*

BT-O-08

INVITRO STUDY OF PHYTOCHEMICAL AND ANTIBACTERIAL ACTIVITY FROM *BAUHINIA VARIEGATA* USING MULTI DRUG RESISTANT MICRO ORGANISM.

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Abstract

Bauhinia variegata is well known medicinal plant used with many medicinal values. This plant is very much useful in wound healing and urinary tract infections. The bark of this plant is used as herbal Kanchanar guggul, and tonic for the treatment of ulcers and skin diseases. The methanolic and ethanolic extract of *B. variegata* leaves, barks and flowers were screened for antibacterial activity. The extracts were tested against three different strains of *Staphylococcus aureus* by using agar well diffusion method. The extract showed the high level antibacterial activity against the test organism with a zone of inhibition ranges from 13mm to18 mm. The antibiotics such as Penicillin, Methicillin and Erythromycin were used in this study. The results revealed the ability of this plant to develop as an antibacterial drug specifically against the major multi drug resistant micro organism.

Keywords: Antibacterial, Phytochemical, *Bauhinia variegate*

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BT-O-09

ANTIMICROBIAL AND ANTIOXIDANT POTENTIAL OF GREEN SYNTHESIZED ZINC NANOPARTICLES FROM *ELAEAGNUS INDICA*

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Abstract

Nowadays, plant material based synthesis of nanoparticles gain great interest in pharmaceutical applications. The present study aimed to synthesize and characterize zinc nanoparticles using the aqueous leaf extract of *Elaeagnus indica.* The synthesized zinc nanoparticles were characterized by using various spectral and microscopic studies like UV, FT-IR, XRD, SEM-EDX and HR-TEM. Antimicrobial and antioxidant potential of synthesized zinc nanoparticles were determined by standard methods. Results of spectral and microscopic data revealed that the size of synthesized zinc nanoparticles (9.54 – 164.01 nm). The zinc nanoparticles showed significant antimicrobial activity against most of the tested microbial pathogens. Zinc nanoparticles exhibited considerable DPPH radical scavenging potential. The findings of the present study encourage the application of zinc nanoparticles synthesized from *Elaeagnus indica* as an anti-infective and antioxidant agent in medicine.

Keywords: *Elaeagnus indica*, Zinc nanoparticles, Antimicrobial activity, Antioxidant activity

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BT-O-10

Bio-Artificial Liver (BAL)

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Abstract:

The liver is one of the major organs necessary for survival, and the most metabolically complex organ. It is also the only organ that can completely regenerate itself and performs many detoxification and protein synthetic functions that are essential to life. The most effective treatment of liver damage is liver transplant. But the availability of donor organ is always a serious problem and is costly. Extracorporeal bioartificial liver (BAL) systems consisting of functioning, viable hepatocytes may provide temporary support for patients with acute hepatic failure and save the lives of patients awaiting orthotopic liver transplantation (OLT). Here bio-artificial liver (BAL) comes into play with the advent of regenerative hepatocyte cells. The significant feature of bio-artificial liver is that it does not permanently replace the liver function but it acts as a supportive device by enhancing the proper regeneration of hepatocytes in the affected liver and it serves as a bridge for patients until a transplant comes evitable. These regenerative cells are capable of secreting adequate hormones and improve live supportive system. Final conclusion of Bio-Artificial Liver (BAL) is that most efforts to date have focused on device design and construction, and more recently on the development of methods to generate a continuous supply of human hepatocyte cell lines.

Keywords : Bio- Artificial Liver (BAL), Hepatocyte, Liver Failure and Transplantation

BT-O-11

INVITRO PRODUCTION OF ANDROGRAPHOLIDE AND SYTNHESIS AND STABILIZING OF SILVER NANOPARTICLES AND CYTOTOXICITY STUDY

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Abstract

The huge number of most important active compounds which includes Flavonoids, Flavones, Flavones glycosides, Chalcones, Chalconesglycosides, Xanthones, Diterpenoids , Dimeric diterpenes and Sterols have been presented in the various parts of *Andrographis Paniculata* (Kalmegh) of family Acanthaceae. Though in traditional siddha and Ayurveda systems of medicine and tribal medicine, in India and some other countries, multiple clinical applications like anti-inflammatory, anti-prolifiratory, anti-hepatic, anti-thrombogenic, anti-snake venom, antipyretic activities, has been indicated for this plant. The main and most interesting biological constituent of A. paniculata herb (aerial part) is a group of diterpene lactones belonging to the ent-labdane class, present in both free and glycosidic forms, and named *Andrographolide*. *Andrographolide* is the bitter principle, a colorless, neutral crystalline substance, it was isolated by from different parts of *Andrographis paniculata.* The compounds that are present in groups in plants produce adverse side effects like gastric upset, headache, bitter taste, and fatigue. But a very few of them isolated the compounds and tested experimentally for the above clinical activity. So in-vitro production of Andrographolide from cell suspension culture give us an impetus to isolate not only that but also synthesis and stabilizing silver nanoparticles in Andrographolide for *A.Paniculata* and tested for antimicrobial and antioxidant activity. The synthesized Ag-NPs can be used for various applications due to its eco-friendliness, non-toxic and compact ability for pharmaceutical and other applications.

Keywords: Andrographolide, silver Nano particle, Cytotoxicity study

BT-O-12

EFFICACY OF MEDICINAL PLANT EXTRACT AGAINST ESBL PRODUCING BACTERIA FROM POULTRY MEAT

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Abstract:

Today the prevalence of Extended Spectrum Beta Lactamase bacteria is increasing in poultry meat which causes infections for the consumers which becomes untreatable by economically available antibiotics. This could be treated with the medicinal plant *Andrographis paniculata.* The bacterial species are isolated from the poultry meat from the local market and their ESBL properties such as resistance with wide range of antibiotics and formation of biofilms are tested. This is then tested for antimicrobial activity of the acetone extract of *Andrographis paniculata* and zone of inhibition is found to be 8, 14, 17, 19 mm for the extract 25, 50, 75, 100µl/mg respectively. Thus a commonly available Indian plant could be used to treat the infections caused by antibiotic resistance bacteria found in poultry meats.

Keywords : Spectrum Beta Lactamase, *Andrographis paniculata*, biofilm and antibiotic resistance bacteria

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BT-O-13

GC-MS ASSAY ON MEDICALLY SIGNIFICANT CRUDE EXTRACT AND INSILICO DOCKING STUDIES AGAINST CLAUDIN COMPACTING KIDNEY STONE

R. Arunazhagi, V. Maithili, V. Yogesh, V.Muthamilselvan and M. Rajadurai*

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Abstract

Kidney stone is one of the most clinical disorder arising nowadays. They are existing due to the depletion of the urine and disproportionate execration of the components such as oxalate, phosphate, uric, cystine, and struvite. Many allopathy medicine are not effectively curable in the case of kidney stone, Consequently people are in need of traditional medicine system. Thus there is a great demand for research on potential inhibitor from natural products for dissolving kidney stone. In this behalf we subjected the crude extract sample to GC-MS process which reveals 210 compounds in 21 different peaks. These compounds are analysed and it was allowed to dock with claudin protein which responsible for formation of stone in kidney, using iGEMDOCK method. The result clearly shows that the compound 1,3-Benzenedicarboxylic acid, 4-methly-,dimethyl ester with the energy level -81.3 as a best confirmation which can be used in further research purpose.

Keywords: kidney stone, crude extract, GCMS analysis, Bioactive compounds

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BT-O-14

IN VITRO ANTI OXIDANT AND ANTI TUBERCULOSIS ACTIVITY ANALYSIS OF *CALOTROPIS GIGANTEA* STEM METHANOLIC EXTRACT (CGSME)

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Abstract

Methanol extract of stem of *Calotropis gigantea* was studied for its anti oxidant and anti tuberculosis activity by *in vitro* methods. When the CGSME was tested for the DPPH free radical scavenging ability, it showed strong radical scavenging activity with inhibition percentage of 196.38 µg/ml where as the reducing power assay showed the inhibition percentage as 505.14 µg/ml. When CGSME was tested for anti tuberculosis activity using MTT assay, CGSME at concentration of 1000µg/ml showed percentage inhibition of 81.99% and hence it is clearly evident that CGSME demonstrates significant anti tuberculosis activity. Purification of each bioactive compound is necessary and this purified form of the compound can be used, which may show increased activity. This analysis gives an idea that the bioactive compounds isolated from CGSME can be used as lead compounds for designing potential anti-inflammatory, tumor and tuberculosis drugs, which can be used for the treatment of diseases such as inflammation, cancer and tuberculosis.

Keywords : *Calotropis gigantean,* DPPH, anti-inflammatory, tumor and tuberculosis

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BT-O-15

STUDIES ON PHYTOCHEMICAL, ANTI SCAVENGING, ANTICANCER ACTIVITY AND MOLECULAR DOCKING OF *ZIZIPHUS JUJUBA* (MILL)

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Abstract

Medicinal plants have curative properties due to presence of various complex chemical substances of different composition which contain secondary metabolites such as alkaloids, flavonoids, terpenoids, saponin and phenolic compounds distributed in different parts of the plant. It strengthens liver function and increases immune system resistance. They help in digestion and blood purification. For the treatment of dyspepsia and fevers, root is used. The powdered root is applied to old ulcers and wounds. Different mechanisms of action of phytochemicals have been suggested. They may inhibit microorganisms, interfere with some metabolic processes or may modulate gene expression and signal transduction pathways. They may be used as chemotherapeutic or chemo preventive agents. In this sense chemo preventive phytochemicals are applicable to cancer therapy. Plant extracts may exhibit different modes of action against bacterial strains. Various solvents will be used to extract different phytoconstituents from the plant parts which are dried immediately either in an artificial environment at low temperature (50-60°C) or dried preferably. This can then be concentrated and used to determine the presence of phytochemical constituents. This work reveals that the *invitro* cytotoxicities of the active compounds extracted from *Z. jujuba* tested for cytotoxic activities and studied the active compound docked with the binding site of the protein domain.

Keywords : *Z. jujube,* alkaloids, flavonoids, terpenoids, saponin and phenolic compounds

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BT-O-16

PRODUCTION, COMPARATIVE AND QUANTITATIVE ANALYSIS OF CITRIC ACID BY *ASPERGILLUS NIGER*USING FOOD WASTE AS A SUBSTRATE

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Abstract:

In this study the main emphasis is given on the techniques by which citric acid can be produced at low cost. The potential of agricultural waste (Apple pomace, carrot waste and pineapple peel) as a substrate was examined for citric acid production by *Aspergillus niger*using Solid State Fermentation technique. The citric acid concentration and biomass was determined during fermentation period. The amount of citric acid was determined by titration using 0.1 N NaOH and biomass was determined by oven drying method. The optimization of three parameters (temperature, Low molecular weight alcohol and nitrogen source) was carried out. The study revealed that these parameters effect citric acid production extremely. The maximum yield was obtained in case of apple pomace followed by pineapple peel and then the carrot waste. In case of alcohol, 4% methanol gives the maximum yield as compared to isopropyl alcohol. In case of carbon and nitrogen source, sucrose 5% and NH_4NO_3 0.25% give more citric acid yield as compared with the glucose 5% and NH_4NO_3 1% respectively. When fermentation media was kept at different temperature the maximum yield was obtained at temperature 30°C as compared with the 4°C. The study has revealed that food waste material can be used for citric acid production by SSF using *Aspergillus niger*. The use of these wastes might represent an efficient method of reducing the environmental problem due to their disposal and also help in the reduction of the substrate cost.

BT-O-17

EFFECT OF PLANT GROWTH PROMOTORS LIKE PANCHAGAVYA AND EFFECTIVE MICROORGANISM ON *Abelmoschus esculents* (BENDI)

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Abstract

Traditional biotechnology plays a vital role in organic farming and sustainable agriculture. Present study is focused on the effect of Panchagavya, Effective Microorganism (EMOs) and Biomixon plant growth & development of *Abelmoschus esculents* (Bendi). Biomix showed productive result on Bendi plant growth and development. Panchagavya showed better result at lower concentration (3%) and negative result at higher concentration (10%). Effective Microorganism showed better performance at higher concentration than lower concentration. All the three growth regulators enhance the plant growth and development of Bendi.

Keywords: Panchagavya, effective microorganisms, sustainable agriculture, plant growth regulators.

BT-O-18

MODIFIED TRADITIONAL BIOTECHNOLOGY IN CROP MANAGEMENT FOR ORGANIC FARMING AND SUSTAINABLE AGRICULTURE

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Abstract

Organic plant growth promotors play a vital role in organic farming and sustainable agriculture. The effect of organic plant growth promoters on agricultural crops were studied by several authors. Present study explores the growth promoting effect of Panchakavya, Humic substances, Effective microorganisms, vermiwash and Biomix on Tomato and Bendi. All growth promotors significantly increased plant height, leaf area, total chlorophyll and protein content, Biomass, yield and growth rate. Based on the first year study, in second year (2016-2017) we selected panchakavya and Biomix for further study. They were treated to Bendi and Tomato in four different combinations. They were panchakavya 2% foliar treatment, Panchakavya 2% foliar treatment with soil treatment, Biomix 10% foliar treatment and Biomix 10% foliar treatment with soil treatment. Compare to control all treatments significantly increased plant height, leaf area, chlorophyll content, protein, plant biomass, plant yield and plant growth rate. Biomix application with leaf and soil treatment showed excellent result in plant growth and development in Bendi and Tomato.

Keywords: Organic farming, Sustainable agriculture, Panchkavya, EMOs, Humic substances and Vermiwash

BT-O-19

ISOLATION AND IDENTIFICATION OF ACTIVE COMPONENTS DERIVED FROM PLANT EXTRACT AND THEIR EFFECT ON *ELYTRARIA ACAULIS*

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Abstract

Medicinal plants have been the mainstay of traditional herbal medicine amongst rural dwellers worldwide since antiquity to date. The aim of the present investigation was isolation and characterization of active components derived from plant of *Elytraria Acaulis.* Plant was extracted with ethanolic solvent. The preliminary phytochemical results revealed that alkaloids, carbohydrates and glycosides, phenolic compounds, saponins, tannins, protein and amino acids, coumarins & flavonoids as active constituents in ethanolic extract of *Elytraria Acaulis.* Plants are one of the important sources for screening active compounds. The structures of the different isolated compounds were characterized by using NMR and Mass spectrophotometric methods. Isolated compounds presented similar activities toward the DPPH, ROS, Nitric oxide and it will produce the maximal inhibitory. Isolated compounds significantly inhibited intracellular ROS and nitric oxide (NO) production and had a strong effect toward DPPH. Furthermore pharmacological activites studies required for the isolated compounds.

Keywords: *Elytraria Acaulis,* Phytochemical, Mass spectrophotometric

BT-O-20

LEAF EXTRACT MEDIATED GREEN SYNTHESIS OF SILVER NANOPARTICLES FROM *CARICA PAPAYA* PLANTS: SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL PROPERTY

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Abstract

In recent years, green synthesis of silver nanoparticles (AgNPs) has gained much interest from chemists and researchers. This study investigates an efficient and sustainable route of AgNP preparation from 1 mM aqueous $AgNO_3$ using leaf extracts of *Carica papaya* well adorned for their wide availability and medicinal property. AgNPs were prepared by the reaction of 1 mM silver nitrate and 5% leaf extract of each type of plant separately. The AgNPs were characterized by UV-visible (vis) spectrophotometer, particle size analyzer (DLS), scanning electron microscopy (SEM), Fourier transform infrared spectrometer (FTIR) analysis was carried out to determine the nature of the capping agents in each of these leaf extracts. AgNPs obtained showed significantly higher antimicrobial activities against *Escherichia coli*and *Bacillus sp*. in comparison to both $AgNO_3$ and raw plant extracts. The AgNPs prepared are safe to be discharged in the environment and possibly utilized in processes of pollution remediation. AgNPs may also be efficiently utilized in agricultural research to obtain better health of crop plants as shown by our study.

BT-O-21

SYNERGISTIC CHEMOPREVENTIVE EFFECT OF EGCG AND DOXORUBICIN ON HUMAN COLORECTAL CANCER (HT-29) CELLS THROUGH MOLECULAR MECHANISM

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Abstract

Epigallocatechingallate (EGCG) is an abundant, naturally occurring flavonoid found in tea product that has been demonstrated to increase the anti-neoplastic activity of certain chemotherapy drugs in multiple tumor types. Doxorubicin characterized by damaging DNA, is widely used in the chemotherapy of malignancies, including lung, breast, colon and myeloid leukemia cancers, etc. This prompted us to investigate the chemo preventive potential of co-treatment with EGCG and Doxorubicin against colon cancers (HT-29). The results showed that EGCG and Doxorubicin in combination synergistically inhibited the cell growth of colon cancer cells than the compounds used alone. The GI_{50} value was found to be 10μM for 24-h exposure. The apoptotic morphological changes such as chromatin condensation and cell shrinkage was observed in Giemsa and PI staining. In addition, co-treatment showed a DNA ladder pattern, which is the hallmark of typical intrinsic apoptotic characterization by molecular DNA fragmentation analysis in HT-29 cells. The early and late apoptotic cells were observed by using Annexin VFITC/PI staining. Thus, the study provides an insight into the potential application of EGCG and Doxorubicin in a combination for the chemoprevention and treatment of colon cancers.

Keywords: EGCG; Doxorubicin; MTT; Annexin VFITC/PI.

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BT-O-22

MULTIFUNCTIONAL CDS QDS SYNTHESIZED FROM *CAMELLIA SINENSIS* LEAVES AND ITS BIOLOGICAL ACTIVITIES

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Abstract

The present study is to investigate the green synthesis of CdS QDs nanoparticles by using mother leaf of *Camellia sinensis*. The *Camellia sinensis* extracts (methanol, ethyl acetate and hexane) act as a stabilizing agent in the formation of CdS quantum dot nanoparticles. From this investigation the methanolic extract showed the potential to produce CdS nanoparticles. The synthesized samples were characterized by UV-visible spectrophotometer, PSA and HR-TEM. Synthesized colloidal solution was characterized by UV – visible spectrophotometer and excitation peak region was observed at 420 nm. The particle size of the nanoparticles was analysed using PSA and average D50 value was found at 20.11 nm. The morphology and size of the particle was analysed by HR-TEM analyzer. The CdS quantum dot nanoparticles ranges from 2 to 8 nm and having spherical in shape. The plant mediated quantum size nanoparticle exhibit in vitro anti-arthritic activity at 80 and 100 µg/ml. Plant mediated CdS quantum dot were highly effective against the dengue vector *Aedesaegypti*, lymphatic filariasis vector *Culexquinquefasciatus*and malarial vector *Anopheles stephensi* with LC_{50} values ranging from 332.35 ppm, 153.72 ppm and 99.703 ppm respectively. Hence, plant mediated CdS quantum dot has beneficial effect to treat arthritis and fight against dengue and malarial vector.

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BT-O-23

PREDOMINANCE OF URINARY TRACT INFECTION AND ASSOCIATED FACTORS AMONG THEPREGNANT WOMEN IN EASTERN ETHIOPIA

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Abstract

A cross sectional study was conducted among *pregnant women (n=186) to revealthe occurrence of* urinary tract infection (UTI).The prevalence of significant bacteriuria was found to be 14%. Gram-negative bacterial isolates were found to be more prevalent (73%). *E.coli* (34.6 %), *Coagulase negative Staphylococcus(CONS)* (19.2 %), *Pseudomonas aeruginosa* (15.4 %), and *Klebsiellapneumoniae*(11.5 %) were the screened bacterial pathogens in the UTI affected pregnant women.In multivariate analysis, the prevalence UTI was significantly associated with those participants with history of UTI AOR= 10.8, 95 CI: 2.008-50.027), family monthly income less than equal to ≤500 birr,(AOR=11.50; 95CI: 1.789-19.397) and 501-1000 birr (AOR=15.454; 95% CI 3.948-26.414), 25-34 age groups (AOR= 5.57; 95 CI: 2.167-19.255)and read and write educational level (AOR= 2.07; 95% CI: 1.008-9.187). Most of bacterial isolates were resistant against Ampicillin, Amoxicillin, Tetracycline, Trimethoprim-sulphamethoxazole and Chloramphenicol. Multi drug resistance (MDR) has been observed in 100 % of the bacterial isolates. However,most of the bacterial isolates were sensitive to Ciprofloxacin, Ceftriaxone, Erythromycin and Gentamicin. This study found number of bacterial isolates with very high resistance to the commonly prescribed drugs from pregnant women with symptomatic and asymptomatic UTI. Therefore early routine detection of causative agent of UTI and determining their drug susceptibility pattern are important for pregnant women for avoiding complications for mother and fetus.Ciprofloxacin, Ceftriaxone, Gentamicin and Erythromycin can be used with great care for empirical treatment of UTI in the study area.

Keywords: Pregnant, Urinary Tract Infections, Antibiotic Resistant, Eastern Ethiopia

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BT-O-24

SYNTHESIS AND CHARACTERIZATION OF SILICA NANOPARTICLES FROM *PEDALIUM MUREX*

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Abstract:

Nanotechnology is rapidly sweeping through all vital fields of science and technology such as electronic, aerospace, defense, medical and dental. Advancement of nanotechnology has led to the production of nano-sized silica which has a major advantages in various fields. Silica nanoparticles are the basis for a great deal of biomedical research due to their stability, low toxicity and ability to be functionalized with a range of molecules and polymers. Silica nanoparticles majorlyapplied as an additive for rubber, plastics and strengthening filler for concrete and other construction composites. The present study deals with the process to synthesis of silica nanoparticles from the plant *Pedalium murex* (natural source)with the mixture of HCL, NaOH, H_2SO_4 and distilled water. The chemical reaction permits the synthesis of silica nanoparticles with the byproduct of Na_2SO_4 and water molecules. The nature of synthesized silica nanoparticles was evaluated by using of FT-IR, PSA and EDX.

Keywords: Silica Nanoparticle, *Pedalium murex,* Nanotechnology, characterization of SiO_2Nanoparticle.

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BT-O-25

CHEMOPROTECTIVE EFFECT OF FOLIOSE LICHENS AGAINST PARACETAMOL INDUCED LIVER DAMAGE IN SPRAGUE DAWLEY RATS

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In this present study, the hepato protective effect of foliose lichens (*Heterodermia boryi*, *Sticta weigelii* and *Dermatocarpon vellereum*) was evaluated. Animals (Sprague Dawley rats) weighing 25-30 g were used. Liver damage in animals was induced with single dose of paracetamol (750 mg/kg body weight) on the first day. Diseased animals were treated with silimarin (100 mg/kg body weight) before and after administration of paracetamol for 5 days and 4 days respectively. In same manner all the three lichens extracts (each extract for 200 mg/kg and 400 mg/kg body weight for each group) were administered for the test groups, before (for 5 days) and after (for 4 days) administration of paracetamol.

Serum samples were subjected to evaluate biochemical parameters including SGOT, SGPT, ALP and total bilirubin. ALP was significantly decreased ($P < 0.01$) in the all the lichens extracts treated groups except for *S. weigelii* (400 mg) when compared to control (441.01 EU/l). *S. weigelii* at 200 mg concentration have shown significant reduction in the level of ALP 404.79 EU/l. and 400 mg have shown slight increase in ALP (467.11 EU/l), whereas *H. boryi* has shown significant reduction ($P < 0.01$) of ALP (432.7 and 185.98 EU/l) at concentrations of 200 mg and 400 mg respectively. *D. vellereum* at 200 and 400 mg have shown 287.9 and 299.38 EU/l respectively. 200 mg of *S. weigelii* shown significant increase (108.9 EU/l; $P < 0.01$) in SGOT and 400 mg shown and show significant decrease ($P < 0.01$) when compared to control (101.01 EU/l), whereas, *H. boryi* (200 mg and 400 mg) shows significantly decreased ($P < 0.01$) SGOT as 57.43 and 58.81 EU/l respectively. *D. vellereum* (200 mg) shown significantly increased ($P < 0.01$; 107.5 EU/l) and a nonsignificant decreased ($P > 0.05$; 39.2 EU/l) for *D. vellereum* at 400 mg when compared to control.

The results have shown that in all the lichen extracts, SGPT activity was found to be less, when compared to control (171.65 IU/l), except, *S. weigelii* (200 mg), where the SGPT activity was significantly increased ($P < 0.01$; 215.8 IU/l). *H. boryi* and *D. vellereum* (200 mg and 500 mg) extracts have shown 83.25, 73.78, 77.45, 156.18 and 36.16 IU/l respectively. Lichen extracts have shown non-significant ($P > 0.05$) variation in the level of total bilirubin

except *S. weigelii* with 200 mg and 400 mg (0.83 mg/dl) have shown significant increase ($P < 0.01$) in bilirubin content. The other two lichen extracts (*H. boryi* and *D. vellereum*) at 200 and 400 mg have shown non-significant variation ($P > 0.05$) and found to be at the normal range of bilirubin (0.46, 0.53, 0.58 and 0.56 mg/dl respectively). Our results explored that the levels of ALP, SGOT, SGPT and total bilirubin contents were remarkably decreased after treatment with lichens extracts when compared to standard indicating the lesser extent of liver damage and high hepatoprotective activity.

Among all the lichen extracts tested, *D. vellereum* (400 mg) have shown good hepatoprotective activity followed by *H. boryi* (200 and 400 mg). Histopathological changes observed in lichens extracts treated animal groups have shown remarkable regeneration of hepatocyte was found in *H. boryi* (200 and 400 mg), whereas, *D. vellereum* and *S. weigelii* have shown good regeneration only in high concentration (400 mg). Hence, when compared to *S. weigelii* and *D. vellereum*, *H. boryi* at low concentration will have a good hepatoprotective activity.

BT-O-26

BIOFABRICATION OF SILVER NANOPARTICLES USING LEAF EXTRACTS OF *ANDROGRAPHIS PANICULATA* FOR ENHANCED ANTIBACTERIAL AND CYTOTOXIC ACTIVITY

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Abstract

The biological method for the synthesis of silver nanoparticles (AgNPs) using *Andrographis paniculata* (Ap) leaf extracts and its antibacterial & cytotoxic activity. The physico-chemical properties of synthesized AgNPs were characterized by Fourier transform infra-red (FTIR) spectroscopy, scanning electron microscopy with energy dispersive X-ray spectroscopy (SEM-EDX), X-ray diffraction (XRD), dynamic light scattering (DLS) and zeta potential analysis. SEM analysis indicated that biosynthesized AgNPs size ranged from 36–65 nm and spherical in shape. The effect of synthesized AgNPs was studied against clinically isolated microbial pathogens *viz., Escherichia coli, Staphylococcus aureus, S. epidermidis, Pseudomonas aeruginosa, Klebsiella pneumoniae* and *Proteus vulgaris*. It is interesting to note that, ApAgNPs showed the maximum zone of growth inhibition (9.3 mm) in *K. pneumoniae* and minimal zone of growth inhibition (6.7 mm) in *P. aeruginosa*. Further, the green synthesized AgNPs exhibited a dose-dependent cytotoxicity against human prostate cancer (PC3), human liver cancer (HepG2) and normal African monkey kidney (Vero) cells. The fifty percentage inhibitory concentration (IC_{50}) for ApAgNPs was found to be 32.15, 27.01 and 70 µg/ml against PC3, HepG2 and Vero cells, respectively. An induction of apoptosis was evidenced by DNA fragmentation, acridine orange/ethidium bromide staining, rhodamine and hoechst staining. Hence, our results suggest that green chemistry approach towards synthesized ApAgNPs could be used as an effective nanodrug for cancer therapy and treatment of various infectious diseases.

Keywords: *Andrographis paniculata*, Silver nanoparticles, bacterial pathogens, PC3 and HepG2 cell lines * Corresponding Author: Venkatachalam; E-mail: pvenkat67@yahoo.com

BT-O-27

PHYTOCHEMICAL ANALYSIS AND *IN VITRO* ANTIOXIDANT ACTIVITY OF AQUEOUS EXTRACT OF LEAVES OF HERBAL PLANT LEAVES

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Abstract

Medicinal plants are an important source of phytochemicals that offer traditional medicinal treatment of various ailments. Medicinal plants are the local heritage with global importance. The objective of this study was to screen the phytochemical constituents and *in vitro* antioxidant activity (1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging assay, 2,2-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid) diammonium salt (ABTS) radical scavenging assay, hydroxyl radical scavenging activity and Ferric Reducing Power Activity) of aqueous extract of herbal product of medicinal plant leaves (*Erthrina varigegata, Tridex procumbens, Phallanthus reticulatus* and *Acalypha indica).* The preliminary phytochemical screening of aqueous extract of the leaves of herbal plants showed the presence of carbohydrates, flavonoids, alkaloids, glycosides, steroids, phytosterols, terpenoids, phenols and saponins. The leaves of herbal plant extract having the highest content of phenolic compounds and strong free radical scavenging effect. The *in vitro* assays indicate that the herbal product was the significant source of natural antioxidant, which might be helpful in preventing the progress of various oxidative stress.

Key Words: Phytochemical analysis, antioxidant, herbal products.

BT-O-28

PHYTOCHEMICAL SCREENING, ANTIOXIDANT AND ANTI-INFLAMMATORY ACTIVITY OF *URGINEA INDICA* LEAVES

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Abstract

This study was undertaken to assess the *in vitro* phytochemical screening, antioxidant activity and anti-inflammatory activity of ethanol extract of *Urginea indica*. The phytochemical screening revealed the presence of carbohydrate, alkaloids, saponin, phenol, tannin, glycosides, terpenoids and flavonoid. The antioxidant properties of ethanol extract of *Urginea indica* was determined by DPPH free radical scavenging assay, ABTS radical scavenging assay and hydroxyl radical scavenging assay. *In vitro* anti-inflamamtory assay was also evaluated by membrane stabilization potential. The highest phenol content shows maximum antioxidant activity. The membrane stabilization effect was maximum which shows good anti-inflammatory activity of ethanol extract of *Urginea indica*. The results clearly indicate that ethanol extract of *Urginea indica* is effective in scavenging free radicals and also has the potential anti-inflammatory activity.

Key words: *Urginea indica*, Phytochemical analysis, Antioxidant and Anti-inflammatory

BT-O-29

ISOLATION, OPTIMIZATION AND PRODUCTION OF PROTEASE - A NOVEL ENZYME BASED DETERGENT "GREEN CHEMICAL"FROM SOILBACTERIA

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Abstract

Enzymes are specialized proteinsgenerated in organisms, which are proficient in catalyzing specific chemical reactions. Enzyme-based detergents also known as 'green chemicals' find an extensiverange of applications in laundry, dishwashing, textile and other industries. The enzyme preparations like proteases, amylases, lipases and celluloses are considered as indispensable ingredients in these detergents. Among different category of enzymes gained from microbial sources, Protease is a vital group of enzyme. Bacteria are the major group of alkaline protease producers and alkaline proteases have various applications such as at commercial, industrial, pharmaceuticals and in biotechnological studies. The present study was to isolate protease producing bacteria from soil sample which was collected from Kuthiraimozhivillage in ThiruchendureTaluk, Tuticorin district, Tamilnadu, India.

The isolation was done by serial dilution and plating methods. All the isolates were screened for proteolytic activity on skim milk agar plate and gelatine hydrolysis method at 37°C for 48 h. Out of 20 bacterial strains screened, maximum protease producing two strains have been selected based on the zone of proteolysis on the medium of casein hydrolysate. Both the isolated strain have been identified as *Bacillus sp* and designated as BP2 and BP8, on the basis of morphological and biochemical characters using Bergey's Manual of Determinative Bacteriology. Estimation of enzyme was studied folin phenol reagent at 660 nm. The growth pattern of the selected protease producing bacteria and the protein degrading activity of purified enzymes were analysed.Over the period of time the bacterial growth and protease activity was maximum in purified enzyme 46µg/ml/minutes compare with crude sample 16µg/ml/minutes.

Optimization of the physiochemical parameters were done by shake flask study. Maximum yield of protease was determined after 48h of incubation at pH 7, 37ºC with the carbon source as starch and nitrogen source as beef extract. SDS PAGE was performed to

identify the molecular mass of the protease enzyme. Bio cleaning and bio washing study was carried out by compare with the various laundry detergent and enzyme-based detergent mixture on stained blood, egg cloths, cleaning optical lenses and surgical instrument fouled by blood protein. Over the period of time the maximum stained removal and cleaning effect was noticed in the enzyme-based detergents mixture when compared to the detergent sample. The bio cleaning and bio washing process of the aforesaid study concluded that the isolated proteases could be used as a promising agent of 'Biocleaner'/'Green chemical' for the removal of stain effectively.

Key Words: *Bacillus* Sp, Proteolytic activity, Casein, Spectrophotometer, SDS-PAGE.

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BT-O-30

STUDIES ON SEAWEED LIQUID FERTILIZER OF *HYPNEA FLAGELLIFORMIS* GREVILLE EX J.AG. (RED SEAWEED) ON *VIGNA RADIATA* (L.) R. WILCZEK.

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Abstract

Seaweeds are primitive group of marine plants therefore they lack true stems, roots and leaves; however, they have a blade that is leaf like, a stripe that is stem like, and a holdfast that resembles roots like terrestrial plants. Seaweeds also contain photosynthetic pigments and use sunlight to produce food and oxygen from carbon dioxide, and the water. Seaweeds are ecologically and commercially important plants to many regions of the world especially in Asian countries. The present study has been made to investigate the effect of Seaweed Liquid Fertilizer of *Hypnea flagelliformis* Greville ex J.Ag. on seed germination, shoot length, root length, biochemicals and pigment content of *Vigna radiata* (L.) R. Wilczek. was studied. The Seaweed Liquid Fertilizer prepared from *Hypnea flagelliformis* Greville ex J.Ag. was observed to have the positive effect on the shoot and root length of *Vigna radiata* (L.) R. Wilczek. The biochemicals such as total carbohydrates, proteins, lipids, phenols, chlorophylls and carotenoids were increased when the *Vigna radiata* (L.) R. Wilczek. treated up to 10% of Seaweed Liquid Fertilizer. The seed germination, shoot length, root length, biochemical and pigment content were maximum at 10% SLF. *Hypnea flagelliformis* Greville ex J.Ag. can be used as biofertilizer for the growth of *Vigna radiata* (L.) R. Wilczek.

Key Words: Seaweed Liquid Fertilizer, *Hypnea flagelliformis*, *Vigna radiata*, Seaweed

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BT-O-31

SCREENING OF ANTI-DENGUE ACTIVITY OF A FEW MEDICINAL PLANTS

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Abstract

Dengue disease regardless of its serotypes is transmitted from person to person by *Aedesaegypti* and *Aedesalbopictus* mosquitoes in the domestic environment. In the recent decade, dengue has re-emerged and with it being endemic in more than 110 countries, it has been the most prevalent arthropod-borne viral diseases in terms of morbidity and mortality. Two fifths of the world populations are at risk, estimating around 100 million of dengue fever infections, 2.1 million cases of dengue hemorrhagic fever and 200 thousand deaths worldwide are caused by dengue every year. Dengue is single stranded RNA virus, has four serotypes i.e. type 1, 2, 3 and 4. There are no approved antiviral agents or vaccine is available for the treatment of this virus which causes increasing the mortality rate all over the world. Dengue fever regardless of its serotypes has been the most prevalent arthropod-borne viral diseases among the world population. The development of a dengue vaccine is complicated by the antibody-dependent enhancement effect. Thus, the development of a plant-based antiviral preparation promises a more potential alternative in combating dengue disease. As there are no synthetic drugs available, now it is need to focus on medicinal plants which are considered to be effective, safer and non-toxic. There are several medicinal plant extracts were found to have anti-dengue activity, but they are not approved for dengue viral treatment. The present article reviews on the medicinal plants available for their anti-dengue activity and also provided the phytochemical constituents present in those medicinal plants.

Keywords: Dengue, Medicinal Plants, RNA Virus.

BT-O-32

EFFECT OF ABIOTIC STRESS ON PLANT GROWTH AND OXIDATIVE DAMAGE OF DAIKON *RAPHANUS SATIVUS VAR. LONGIPINNATUS* (L.)

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Abstract

The effect of salt stress mechanisms is most required to compact the challenges in the current polluted environment. The present study aimed to determine the salt stress, Sodium Chloride (NaCl) responses to antioxidant enzymes and to identify the salt tolerance associated with in the stems and root of Raphanus sativus var. longipinnatus - Daikon (radish), The oxidative damage which are induced by different concentrations of salt, NaCl viz., 0, 60, 120, 240, 480mM. An exhibited level of oxidative damage viz., Hydrogen Peroxide (H_2O_2), Superoxide (O_2^-), Lipid Peroxidation and enzymes activity were measured by spectrophotometer. There are totally 5 radish plants were selected for each concentrations. NaCl induced Radish germination was observed after one week of seedlings than control plants and the seed germination was found only in 60,120,240mM concentrations. The germination was completely absent in 480mM concentrations.

NaCl caused an increase in height with low and medium concentrations and decrease with the height concentration and significant effect was noticed in thickness of the leaf, chlorophyll leaf colour, strengthen of stem and root, auxiliary root system and colouration of plant. Salinity stress induced the lower percentage of fresh and dry weight of the radish plant when compared to control. The length of the plant is decreased in treated seedlings, main and auxiliary root system was completely reduced in treated plants.

Oxidative damage studies viz., H_2O_2, O_2^-, Lipid Per oxidation and enzyme activities are exhibited more significant compared to control. An increase in the protein content in the control and decreased in treated seedlings due to the impact of salinity stress. At finally, a directly proportional relationship was found between control and treated radish plant at different salt concentrations.

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BT-O-33

BIOENGINEERED ZINC AND COPPER OXIDE NANOPARTICLES INDUCED PHYSIOCHEMICAL CHANGES IN SHALLOTS (*ALLIUM CEPA*)

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Abstract

In the present investigation, phycomolecule coated ZnO and CuO nanoparticles were synthesized using green algae (*Caulerpa racemose*) and and characterized by Fourier transform infrared spectroscopy (FTIR), X- ray diffraction (XRD), Scanning electron microscopy (SEM) and Energy dispersive X – ray spectroscopy (EDX) analysis. In order to study the impact of bioengineered nanoparticles, *Allivum cepa* seedlings were exposed to different doses of ZnO NPs as well as CuO NPs (25, 50, 100 and 200 mg/kg soil) along with algae extract (25 mg/kg soil), Zinc oxide (25 mg/kg soil), Copper oxide (25 mg/kg soil) and control was also maintained. After 30 days of exposure, seedlings were collected and used for physiochemical characterization. Results show that the rate of seedlings growth, plant biomass, photosynthetic pigments content level, and antioxidant enzyme activities were increased with increasing the nanoparticles dose when compared with control, ZnO and CuO. Also, the physiochemical parameters were influenced by addition of algae extract in the soil. Interestingly, growth rate, biomass, photosynthetic pigments level was significantly increased in ZnO NPs treated seedlings over other treatments. Present results suggest that ZnO and CuO NPs could be used for enhanced plant growth and biomass of agricultural crops in the future.

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BT-O-34

IN VITRO CLONAL PROPAGATION OF *ENICOSTEMA AXILLARE*-AN IMPORTANT MEDICINAL PLANT

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Abstract

An efficient *in vitro* propagation protocol was developed for production of large scale *Enicostema axillare* plants using shoot tip explants. Various plant growth regulators were tested for optimization of shoot elongation, shoot multiplication and root development. The shoot tip explants were cultured on MS medium supplemented with different concentrations of BAP and KIN (0.1, 0.5, 1.0, 1.5 and 2.0 mg/l) in combinations with 0.1 mg/l NAA and/or IAA for shoot bud induction. The highest percent of shoot regeneration (85.71 %) was observed at 2.0 mg/l BAP and 0.1 mg/l IAA combination. The highest frequency of multiple shoot bud regeneration noticed was 78.56 % on MS medium fortified with the combination of BAP (2.0 mg/l) and KIN (0.5 mg/l). Maximum percent of shoot bud elongation (85.71%) was recorded on MS medium supplemented with 0.1 mg/l $AgNO_3$ and 0.5 mg/l BAP combination. The elongated shoots were transferred to MS medium augmented with different doses of IBA, IAA and NAA (0.1-0.5 mg/l) in combinations with 0.1 mg/l BAP for root initiation. Among the three different auxin combinations tested, maximum percentage of rooting noticed was 92.85 % in a medium containing 0.5 mg/l IBA and 0.1 mg/l BAP combination. The rooted plantlets were successfully transferred into plastic cups containing soil and sand in the ratio of 1:1. Subsequently, they were established in the field conditions with 90 % of survival rate. The *in vitro* propagation protocol developed in this study could be utilized for large scale plant production, conservation of this important medicinal plant species.

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BT-O-35

EXTRACTION, OPTIMIZATION AND CHARACTERIZATION OF BIOPIGMENT FROM *SERRATIA MERCESCENS*

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Abstract

Red pigmented bacterial strain isolated from the soil sample of Yercaud, Salem, Tamil Nadu for the present study. Gram negative bacteria was identified as a *Serratia marcescens* strain by 16s rRNA gene sequencing. *S. marcescens* is a species of rod shaped bacteria in the family enterobacteriaceae. *S. marcenscens* is known to produce a bright red tripyyrole pigment called prodigiosin. Prodigiosin is regarded as a promising drug owing to its reported characteristics of possessing anti-microbial, anti-malarial, anti-cancer, immunosuppressive activity. It was observed at maximum amount of prodigiosin was produced at temperature at 29^{o}C and pH 7.0. Mannitol is a suitable medium for the production of prodigiosin included with peptone, yeast extract. Extraction of pigment was done through TLC butanol: hexane (2:1) ratio as a solvent system. Purified fraction was confirmed as prodigiosin using UV – Spec, FTIR, GC-MS, HPLC, and NMR. This study demonstrates the feasibility using mannitol growth medium for large scale cultivation of prodigiosin using locally isolated *S. marcescens*.

Keywords: *Serratia marcescens*; Bio-pigment; Prodigiosin.

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BT-O-36

PLASTIOLASE

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Abstract

Plastic is well known for sticking around in the environment for many years without breaking down contributing significantly to land fills and plastic is used for the consumer products. Plastic waste cause many problems. This study evaluate to solve the problem by using enzyme which can degrade plastic is known as plastiolase. This enzyme is isolated from the species of worm Eg. Meal worm, wax worm.

BT-O-37

HEPATOPROTECTIVE ACTIVITY OF ETHANOLIC EXTRACT OF *Merremia tridentata* AGAINST CCL4 INDUCED HEPATOTOXICITY IN RATS.

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Abstract

In the current study ethanolic extract of whole plant of *Merremia tridentate* was evaluated for hepatoprotective activity against CCl_4 induced hepatotoxicity in rats. The phytochemical screening was carried out on the extract of *Merremia tridentata* revealed the presence of some active ingredients such as Alkaloids, tannins ,sponginess phenol, glycosides, steroids, terpenoids and flavonoids. Liver toxicity was induced by the administration of Ccl4 orally. Hepatoprotective effect of the extract was assessed by measuring the levels of serum enzymes like SGOT,SGPT,ALP total protein and total bilirubin. The result of our study showed that administration of ethanolic extract of whole plant of *Merremia tridentata* at 400mg/kg between shows the significant(***$p<0.001$) reduction in elevated serum engyme level compared toCcl4 induced toxic group indicating the protective role of *Merremia tridentata* extract against ethanolic induced liver toxicity.

BT-O-38

BOX - BEHNKEN OPTIMIZATION AND CHARACTERIZATION OF ULTRASONIC-ASSISTED EXTRACTION OF C-PHYCOCYANIN FROM *SPIRULINA PLATENSIS*

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Abstract

C-phycocyanin is a natural pigment widely used as food, solar cells, feed additive, cosmetic and pharmaceutical products. The current study investigates the simple, economic and rapid ultrasonic-assisted extraction (UAE) procedure was developed and response surface methodology (RSM) based to optimize C-phycocyanin from *Spirulina platensis*. Several variables that can potentially use to extraction of pigments, namely solid: liquid ratio, ultra-sonication time (h), microwave power and the number of cycles were optimized by means of a RSM approach. The predicted optimal conditions for the highest pigment yield were found at 1:10 (g/mL) solid: liquid ratio, 12.5 min sonication time, 100% microwave power, and 5 cycles. FT-IR spectroscopy analysis used to identify the chemical changes of the before and after pigment extraction. Therefore, this methodology could be used for extracting C-Phycocyanin from algae in a faster and effective manner.

Keywords: *Spirulina platensis*; C-phycocyanin; ultrasonic- assisted extraction; response surface methodology.

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BT-O-39

INVITRO PRODUCTION OF ANDROGRAPHOLIDE AND SYTNHESIS AND STABILIZING OF SILVER NANOPARTICLES AND CYTOTOXICITY STUDY

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Abstract

The huge number of most important active compounds which includes Flavonoids, Flavones, Flavones glycosides, Chalcones, Chalconesglycosides, Xanthones, Diterpenoids , Dimeric diterpenes and Sterols have been presented in the various parts of *Andrographis Paniculata* (Kalmegh) of family Acanthaceae. Though in traditional siddha and Ayurveda systems of medicine and tribal medicine, in India and some other countries, multiple clinical applications like anti-inflammatory, anti-prolifiratory, anti-hepatic, anti-thrombogenic, anti-snake venom, antipyretic activities, has been indicated for this plant. The main and most interesting biological constituent of A. paniculata herb (aerial part) is a group of diterpene lactones belonging to the ent-labdane class, present in both free and glycosidic forms, and named *Andrographolide*. *Andrographolide* is the bitter principle, a colorless, neutral crystalline substance, it was isolated by from different parts of *Andrographis paniculata* The compounds that are present in groups in plants produce adverse side effects like gastric upset, headache, bitter taste, and fatigue. But a very few of them isolated the compounds and tested experimentally for the above clinical activity. So in-vitro production of Andrographolide from cell suspension culture give us an impetus to isolate not only that but also synthesis and stabilizing silver nanoparticles in Andrographolide for *A. Paniculata* and tested for antimicrobial and antioxidant activity. The synthesized Ag-NPs can be used for various applications due to its eco-friendliness, non-toxic and compact ability for pharmaceutical and other applications.

Keywords: Andrographolide, silver Nano particle, Cytotoxicity study.

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BT-O-40

FACILE SYNTHESIS AND CHARACTERIZATION OF SILVER NANOPARTICLES USING *TINOSPORA CORDIFOLIA* AND THEIR ANTIBACTERIAL ACTIVITY

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Abstract

The present study reports an eco-friendly, rapid and easy method for synthesis of silver nanoparticles (AgNPs) using *Tinospora cordifolia* as a reducing and capping agent. The different factor such as silver nitrate ($AgNO_3$) concentration, fresh weight of *T. cordifolia* leaf, incubation time, and pH affecting silver reduction was investigated using Response surface methodology based Box-Behnken design (BBD). The optimum conditions were $AgNO_3$ (1.25 mM), incubation time (15 h), Temperature (45℃) and pH (4.5). T. cordifolia leaf extract can reduces silver ions into AgNPs within 30 min after heating the reaction mixture (60 $^{\circ}$C) as indicated by the developed reddish brown color. The UV-Vis spectrum of AgNPs revealed a characteristic surface plasmon resonance (SPR) peak at 430 nm. AgNPs were characterized X-ray diffraction (XRD) revealed their crystalline nature and their average size of nanoparticles was 30 nm as determined by using Scherrer's equation. Fourier transform infrared (FTIR) spectroscopy affirmed the role of *T. cordifolia* leaf extract as a reducing and capping agent of silver ions. Scanning electron microscope-energy dispersive X-ray spectroscopy (SEM-EDS) showed spherical shaped and confirming presence of elemental silver. In addition, antibacterial activity against *Staphylococcus* sp. (NCBI-Accession: KC688883.1) and *Klebsiella* sp. (NCBI-Accession: KF649832.1), showed maximum zone of inhibition of 14 mm and 12.3 mm, respectively, at 10 mg/mL of AgNPs. From the results it is suggested that the synthesized AgNPs showed antibacterial activity than the plant extract, thus signification of the present study is the production of biomedical products.

Keywords: *Tinospora cordifolia*; Silver nanoparticles; Response surface methodology; Antibacterial activity.

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BT-O-41

CHARACTERIZATION OF DIESEL DEGRADING MICROORGANISM SPECIES FROM CONTAMINATED SOIL

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Abstract

Contamination of the soil by hydrocarbon is the current issue which is threatening the human society and the soil. Studies on the environmental fate of diesel have been performed by many researchers. Diesel also known as the Automotive Gas Oil (AGO) is a complex and common pollutant and it is composed of aliphatic hydrocarbons ranging from C_9 to C_{23} and number of aromatic compounds. The diesel polluted soil leads to reduction of plant growth through direct toxic effect on the plants. It also affects the germination and gives unsatisfactory soil condition due to insufficient aeration of the pore space between the soil particles. The rate of scavenging the hydrocarbon from soil depends on the capacity and concentration of microbes in the soil. The present study was performed by isolating the organisms from polluted land in Krishnagiri district. The isolated microorganism was identified by morphological and biochemical characterization. Gene sequencing was done by Sangers DNA sequencing method and it was confirmed as *Xanothomonas oryzea* and was more significant and the evolutionary determination showed higher frequency 0.009%. The isolated organism present in the soil may maintain the fertility of the soil by degrading the hydrocarbon contaminants in the soil.

BT-O-42

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, Piptides, Purification, anticancer, antihypertensive, anti-inflammatory

BT-O-43

EXTRACTION, CHARACTERIZATION OF BIOACTIVE AND ANTIOXIDANT ACTIVITY FROM *ERYTHRINA INDICA* L. A VALUABLE MEDICINAL PLANT

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Abstract

The objective of this study is to explore the phytochemical and the antioxidant potential of acetone, hexane, diethyl ether and methanolic leaf extract of Erythrina indica which is considered traditionally as an important medicinal plant. The preliminary phytochemical analysis was done to find out the presence of various bioactive compounds. In vitro antioxidant analysis of all solvents leaf extracts was performed by 1,1diphenyl, 2 picryl hydrazyl assay, nitric oxide assay, superoxide dismutase assay, ferric reducing antioxidant power assay. The respective extracts showed the presence of various phytoconstituents such as flavonoids, tannins, terpenoids, saponins, and carbohydrates. Besides it also possess strong antioxidant activity. It was concluded that *Erythrina indica* leaf possessed a wide range of pharmacologically important phytoconstituents which exhibited strong antioxidant activity.

Key words: *Erythrina indica*, phytochemical, bioactive, antioxidant

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BT-O-44

SYNTHESIS AND CHARACTERIZATION OF MAGNETIC NANOPARTICLES AND ITS APPLICATIONS OF CELLULASE IMMOBILIZATION

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Abstract

Magnetic nanoparticles (Fe_3O_4) were synthesized by co-precipitating Fe^{+2} and Fe^{+3} ions in ammonia solution and treated under hydrothermal conditions. Cellulase was immobilized onto Fe_3O_4 magnetic nanoparticles via Glutaraldehyde activation. Response surface methodology based Box–Behnken design (BBD) was used to optimize the variables such as magnetic nanopartcles concentration, glutaraldehyde concentration, enzyme concentration, time course of cross linking. The BBD design analysis showed a reasonable adjustment of the quadratic model with the experimental data. Statistics based contour plots were generated to evaluate the changes in the response surface and to understand the relationship between the nanoparticles and the enzyme activity recovery. The Scanning electron microscopy (SEM), X-ray diffraction (XRD) analysis and Fourier transform infrared (FTIR) spectroscopy, Magnetic measurements (VSM) were studied to characterize size, structure, morphology and binding of enzyme with nanoparticles. The stability and activity of the bound cellulase was analyzed using various parameters like pH, temperature, reusability, and storage ability. The same was compared with the free cellulase for showing its enhanced stability and activity.

Keywords: Magnetic nanoparticles, Cellulase, Response surface methodology.

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BT-O-45

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, the leaf extract of the plant and the silver nanoparticles (AgNPs) were used to produce nano hybrids. The eco-friendly synthesized AgNPs were analyzed using UV–visible spectroscopy at 420nm and Fourier transform infra-red spectroscopy for their functional groups. Transmission electron microscopic analysis revealed that, the synthesized particles are found to be 10-25 nm in size. Mono dispersed 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 synthesized AgNPs were evaluated for its anti diabetic activity against 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. Increase in body weight was found to be the evidence for *P. betel* extract-mediated synthesized AgNPs as a potential anti-diabetic agent against alloxan induced diabetic rats.

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

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BT-O-46

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 (^{0}C). 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 ^{0}C. Response surface methodology was performed to identify the optimal levels of extraction process and the validation of predicted model. Fourier transform infrared spectroscopy (FT-IR) was also confirmed the presence of Quercitin pigment by identifying the major functional groups.

Keywords: Bio-Pigment, Response surface methodology, FT-IR

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BT-O-47

ANTIMICROBIAL ACTIVITY OF *GLYCYRRHIZA GLABRA, MORINGA OLEIFERA AND JASMINUM SAMBAC* AGAINST STAPHYLOCOCCUS AUREUS

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Abstract

Methicilin resistant Staphylococcus aureus being the most acquired pathogen which has proved resistance to many antibiotics. Three different plant samples (*Glycyrrhiza glabra* stem , *Moringa oleifera* seeds and *Jasminum sambac* leaves) were extracted with ethanol, methanol and distilled water. The extracts were assessed for antimicrobial activity against the wounds isolates of Methicilin resistant *Staphylococcus aureus*. *Glycyrrhiza glabra* stem ethanol and methanol extract have shown high antimicrobial activity followed by *Moringa oleifera* seeds methanol and cold aqueous extracts shown some antimicrobial activity, but *Jasminum sambac* extract shown negative results from all extracts towards Methicilin *Staphylococcus aureus* (MRSA).

Key words: Antimicrobial activity, *Glycyrrhiza glabra, Moringa oleifera, Jasminum sambac*

BT-O-48

ISOLATION OF CHROMIUM RESISTANT *BACILLUS CEREUS* RM. FROM TANNERY EFFLUENT

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Abstract

Hexavalent chromium (Cr (VI)) is highly toxic, carcinogenic metal to man and other living things on the earth. Some microorganisms have the ability to reduce toxic Cr(VI) to non-toxic Cr(III). Therefore, the present study deals with the isolation, identification and characterization of a bacterium competent of effective reduction of chromium from tannery effluent. Based on the biochemical identification and 16S rDNA gene sequences, this bacterium was identified as *Bacillus cereus* (MG230318). The bacterium exhibited 75% of chromium reduction at 500 mg/L concentration of Cr(VI). The strain could tolerate up to 700 mg/L of Cr(VI) and reduce 55% within 48 h under aerobic condition. The higher percentage of Cr(VI) reduction by the bacterium can be used as a potential agent for the effective bioremediation Cr(VI) contaminated tannery effluents.

Key Words : Hexavalent chromium, Tannery effluent, Bacillus cereus

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BT-O-49

FUTURE OF FERNS *(DRYNARIA QUERCIFOLIA)* IN MODERN THERAPEUTICS AGAINST IBS – A PHARMACOLOGICAL STUDY.

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Abstract:

Irritable Bowel Syndrome (IBS) is a worse gastrointestinal condition among public due to the altered food habits and high level of stress condition. The current situation is, there is no medication is available for the permanent curing of IBS. *Drynaria quecifolia* is a well known fern in South Asia. Present study has done to prove the efficiency of this pteridophyte to cure the IBS by using living model (Mice) system. An HPTLC profiling proved the richness in the polyphenolic content of this plant. The high level zone formation in *invitro* Antimicrobial screening showed the supreme efficacy of this plant extract against the "Entero pathogenic Escherichia coli (*EPEC E. coli*). EPEC *E.coli* used to induce IBS in mice and the final result (Histogram) showed the future chance of *D. quericifolia* to develop as a drug material for the treatment of IBS.

Keywords : *Drynaria quecifolia* , EPEC *E.coli*, HPTLC, IBS

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BT-O-50

PHENOTYPIC AND GENOTYPIC CHARECTERISATION OF STAPHYLOCUCCUS AUREUS 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.

Keywords : *Staphylococcus aureus,* MRSA isolates, Septicaemia, Endocarditis

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BT-O-51

PRODUCTION OF BIOENERGY FROM BIOSOLIDS (COFFEE WASTE) DEGRADATION: A BIOTECHNOLOGICAL APPROACH TO REDUCE THE EMISSION OF GREENHOUSE GASES

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Abstract

Global warming has serious implications for all aspects of human life. It is due to the green house gas emissions in the atmosphere by the human activities such as industrial processes, fossil fuel combustion and the natural degradation of organic solid wastes. The biotechnological approach for methane gas and microbial metabolites production from organic wastes is the energy recovery methodology and also mitigate the direct emissions of green house gases. In India, the coffee pulp obtained from coffee processing industries. The land filling of the coffee pulp waste disposal is the major impact for emissions of green house gases in the environment. These coffee pulp waste subjected with co-digestion of cow dung at 1:3 ratio showed maximum biogas yield of 2590 ml after 96 hours. The methane content in the biogas was analyzed by GC-MS. The rate of energy conversion from the organic waste coffee pulp to rate of methane gas emission was calculated by using Bushwell's equation. The field trial was done to recover energy (Biogas) for the production of kitchen gas by using portable "Shakthi Surabi" digester system. From this above findings, organic solid waste (coffee pulp) is also a one of the efficient substrate for the production of renewable energy such as biogas and microbial metabolites. This conventional move towards the use of agricultural by-products in the environment is to recover the energy and mitigate the direct emissions of green house gases in the environment.

Keywords : Bioenergy, Coffee pulp, GC-MS and organic solid waste.

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BT-O-52

COMPARATIVE PHYSIOLOGICAL AND PROTEOMIC ANALYSIS REVEALS THE LEAF RESPONSE TO LEAD-INDUCED STRESS IN *VIGNA RADIATA* L.

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Abstract

Excess amount of heavy metals are the major environmental pollutants with significant ecological and nutritional effects. Lead (Pb) is a prior concern because of its widespread occurrence and high toxicity. The present study was performed to explore Pb-induced morpho-physiological alterations and their potential associated mechanisms in *Vigna radiata* leaves at the protein level. Ten-day-old *Vigna radiata* seedlings were exposed to different concentrations (0, 100, and 150 μM) of Pb and different morpho-physiological responses were recorded. The effects of Pb exposure on protein expression patterns in *Vigna radiata* were investigated using two-dimensional gel electrophoresis (2-DE) for both control and Pb-treated seedlings. The observed morphological changes revealed that the plants treated with Pb displayed dramatic alteration in shoot lengths, fresh weights and relative water content. In addition, the concentration of Pb was markedly increased by treatment with Pb, and the amount of Pb taken up by the shoots was significantly and directly correlated with the applied concentration of Pb. Using the 2-DE method, a total of 30 differentially expressed protein spots were analyzed using MALDI-TOF/TOF MS. Of these, treatment with Pb resulted in significant increase in 12 proteins and decrease in 18 proteins. Major changes were absorbed in the levels of proteins known to be involved in carbohydrate metabolism, transcriptional regulation, translation and stress responses. Proteomic results revealed that Pb stress had an inhibitory effect on carbon fixation, ATP production and the regulation of protein synthesis.

Keywords: Heavy metal, *Vigna radiate,* MALDI-TOF/TOF MS

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BT-O-53

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, azodyes constitute about 70% of all known dye stuffs 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, biological techniques are preferable because of economical advantages and low possibility of 'by products' production. At present, a number of studies 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 characterization done 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 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 photocatalytic degradation of two dyes was found, the degradation efficiency still higher than 70%.

Keywords: Multi Walled Carbon nanotubes (MWCNT), CVD, Azo dyes. Textile Dye

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BT-O-54

EVALUATION OF PHYTOCHEMICAL AND ANTIFUNGAL ACTIVITY OF *CYPERUS ROTUNDUS*.

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Abstract:

Medicinal plants have been the main stay of traditional treatment system worldwide. Phytochemicals are extensively found at different levels in many medicinal plants. The present study is aimed to evaluate the antifungal activity of *Cyperus rotundus.* This plant is an important medicinal herb in India and China. *C. rotundus* used to treat cough, bronchial asthma and fever. The plant samples were collected from medicinal garden of Bharathidasan College of Arts and Science, Erode. Crude extracts of the dried samples were made using solvents such as ethanol and aqueous. The antifungal activity is performed by both agar well diffusion and serial dilution method. Further investigation is required to find out the potentiality of pure compound in treating various human ailments.

Keywords: Phytochemical, Antifungal, *Cyperus rotundus.*

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BT-O-55

ANTIDIABETIC ACTIVITY OF AQUEOUS EXTRACT OF *PIPER BETLE* LEAVES IN ALLOXAN INDUCED RATS

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Abstract

Leaves of *Piper betle* (Piperaceae) possess numerous bioactivities and are used in traditional Indian medicinal systems. The aim of this study therefore, was to investigate the antidiabetic activity of *P. betle* leaves. This was tested in normoglycaemic and alloxan (2, 4, 5, 6-pyrimidinetetrone) induced diabetic rats using oral administration of *P. betle* extract. In normoglycaemic rats, the extract significantly lowered the blood glucose level in a dose-dependent manner. In glucose tolerance test, extract markedly reduced the external glucose load. The extract was found to be non-toxic and well tolerated after following chronic oral administration (no overt signs of toxicity). Based on the obtained results we concluded that *P. betle* leaves possess safe and strong antidiabetic activity.

Keywords: *Piper betle*, Antidiabetic, Alloxan, Glucose Glycaemic.

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BT-O-56

HEME PEROXIDASES: A TYPICAL REACTION PROFILE AND REDOX MODULATION BY ADDITIVES UNDER VARYING CONDITIONS

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Abstract

Heme peroxidases (HPs) are well-known oxidoreductases present ubiquitously in almost all living organisms ranging from complex plants to microbes. HPs are versatile enzymes containing heme as a prosthetic group coordinated to the protein either through tyrosine (tyrosylate), histidine (histidylate) or cysteine (thiolate), which act as axial ligands in the hexacoordinate system. Azide (Azd), aknown type-II binding inhibitor of HPs, was found to unexpectedly activate the reactions through a mechanism involving diffusible reduced oxygen species (DROS). UV-vis spectra showed no evidence for type-II bindingAzd–induced red shifts of the soret band, except at supra-mM concentrations. DROS produced via activation of H_2O_2 can attack a substrate in the solution or bound anywhere on the enzyme. Active-site binding of substrates is not mandatory for HPs. The fates of a reaction are governed by a chemoenzymatic network of multiple competing reactions occurring in the milieu; the outcome (either activation/inhibition) is dependent on a number of physicochemical factors - a) chemical nature of the substrate, enzyme and additiveb) pH c) concentrations of the various participants in the reaction network, etc., to name a few aspects. A new mechaism involving DROS has been postulated.

Keywords : Heme peroxidase, Azide , DROS and UV-vis spectra.

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BT-O-57

COMBINED BIOLOGICAL-PHOTOCATALYTIC PROCESS FOR THE TREATMENT OF TEXTILE DYE WASTEWATER

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Abstract

Studies were carried out on the decolourization and detoxification of nineteen commonly used textile dyes in a successive biological and advanced oxidation process (AOP) involving autochthonous bacteria *Aeromonas hydrophila SK16* and hydrogen peroxide (H_2O_2) induced visible-light (solar) driven photocatalytic process. The novel bacterium *Aeromonas hydrophila SK16*, isolated from the wastewater contaminated site in a textile industry. Decolourization was quantitatively analysed using UV–Vis analyses, whereas biodegradation was monitored by FTIR, HPLC and GC-MS analysis. The colourless bacterial biomass after decolourization (analysed through phase contrast and scanning electron microscope) suggested that decolourization was due to biodegradation, rather than inactive surface adsorption. Results demonstrated that the decolourization of dyes was strongly influenced by operational parameters such as intensity of solar light, concentration of H_2O_2, initial dye concentration and time. The phytotoxicity analysis in *Brassica nigra L*. (mustard) revealed that the treatment process (Biological, AOP and Combined process) produced nontoxic metabolites which were evident through germination percentage. Subsequently, the effect of treatment process was also tested for toxicity in fish model (*Cyprinus carpio).* The results demonstrating significant mortality of fishes exposed to the biologically treated dye wastewater. Whereas oxidation process with optimal aeration proved non-toxic for fishes. The foregoing result increases the applicability of the combined process for the treatment of dye containing textile wastewater.

Keywords : *Aeromonas hydrophila,* FTIR, HPLC and GC-MS

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BT-O-58

MOLLUSCS PEPTIDE TARGETING THERAPEUTIC EFFECT ON HORMONE DEPENDENT HPV ASSOCIATED CERVICAL CANCER

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Abstract

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. Among the mollusks, the venom of the predatory cone snails and sepia that are rich in pharmacogically active peptides can serve as a potential source for the discovery of novel drugs. The approved analgesic drug made up of conotoxin 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. Further, the screened bioactive peptides will be evaluated as hormone dependent HPV associated cervical cancer. We propose to develop an innovative post-genomic approach devoted to identify and develop novel bioactive peptides screened from Molluscs species for anti-HPV therapeutic applications, followed by bioactive compounds of venoms by mass spectrometry (MS), the number of disulfide bridges in the native and reduced forms of these venoms will be analyzed by HPLC, MALDI-TOF-MS and X-ray analysis to resolve the structural features of these peptides. Experimental evidence suggested a link between steroid hormones, HPV, and cervical cancer. Patterns of steroid hormone receptor expression are reported to be altered in HPV-associated lesions. In this regard, marine derived natural bioactive compounds and their derivatives are great sources for the development of new generation anti-HPV therapeutics, which is more effective without side effects.

Keywords : HPV, HPLC, MALDI-TOF-MS and X-ray

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BT-O-59

IN-VITRO IRRIGANT EFFICACY OF *GARCINI IMBERTI* BOURD METHANOL EXTRACT AND IT'S AGNPS ON *ENTEROCOCCUS FAECALIS* S09 AND *STAPHYLOCOCCUS SCIURI* S11 IN ROOT CANAL

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Abstract

Sodium hypochlorite and chlorohexidine have been the routinely used as irrigant for treating root canal infections which have often causing toxicity, tissue necrosis and reducing the hardness and structural stability of the dentin within the root canal. To overcome this issue, in this study, the *In-vitro* irrigant efficacy of *Garcini imberti* Bourd methanol extract and it's AgNPs on *Enterococcus faecalis* S09 and *Staphylococcus sciuri* S11 in root canal was evaluated. Results of the study revealed that, the chlorohexidine gel (2%) was found to be effective irrigant, nonetheless AgNps synthesized from *Garcinia imberti* Bourd was gradually reduces the growth of *E. faecalis* and *S. sciuri* (CFU) than that of the results yielded by methanolic extract of *G. imberti* Bourd. The AgNPs has been proven that it does not have cytotoxic effect, merits of this character confirming that the AgNPs can be used as a better endodontic irrigant with non toxic and safe during endodontic treatment.

Keywords - *Garcini imberti, Staphylococcus sciuri* S11, *E. faecalis* and AgNPs

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BT-O-60

PURIFICATION AND CHARACTERIZATION OF CELLUALSE ENZYME FROM THERMOPHILIC *BACILLUS LICHINIFORMIS* NCIM 5556

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Abstract

Crude cellulase enzyme was prepared from *Bacillus licheniformis* NCIM 5556 (96 hrs of fermentation), and it was purified by ammonium sulphate (60-70% saturation level) precipitation, dialysis, and weak anion and hydrophobic interaction chromatography. The purified protein was increased upto 34.86 fold with higher specific activity (2498.72 U/mg) and protein recovery (21.48%). Molecular weight of the purified protein was 60 kDA and cellulolytic activity which was confirmed by Native PAGE and zymograph. The optimum pH and temperature of the purified protein was 6 and 50°C respectively. Cellulase protein was highly active with 0.1% of surfactants like PEG, SDS, Triton X 100 and Tween 20. Enzyme incubated BME and EDTA showed enhancement of the activity whereas urea, IAA incubated enzyme showed reduced in their activity. Purified protein was efficiently hydrolyzed various substrates like carboxymethyl cellulose, avicel, cellobiose, filter paper, xylan. The above said salient properties of purified cellulase enzyme could be stable in the harsh conditions such as broad range of pH, high temperature, presence of surfactant, inhibitor and solvents which gives positive signs of its potential use in industries.

Keywords : pH, Crude cellulose, BME and EDTA

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BT-O-61

PHOTOCATALYTIC DEGRADATION OF AZO DYE BY USING CHARACTRIZED BIMETALLIC CU-ZN NANOPARTICLES SYNTHESIZED FROM *AEGLE MARMELOS*

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Abstract

In the present study, green synthesis of bimetallic Cu-Zn nanoparticles (Cu-Zn NPs) was successfully synthesized by biological method using an aqueous leaf extract of *Aegle marmelos*. The Cu-Zn NPs were characterized by a UV visible spectrum which shows an absorption band at 360 nm. FTIR spectra analysis confirmed the functional groups involved in the Cu-Zn NPs formation. Powder XRD pattern reveals the spherical structure and size ranges (10 - 30 nm) of bimetallic Cu-Zn NPs. The SEM analysis indicates that the particles have spherical like structure with porous surfaces and average crystallite size in the range of 20nm. Photo catalytic degradation of three azo dyes was optimized using Response Surface Methodology (RSM) with bimetallic Cu-Zn NPs under UV light environment. The maximum azo dye degradation efficiency was achieved at the optimum operational condition which was retrieved from RSM tool.

Keywords: Cu-Zn Nanoparticles (Cu-Zn NPs), *Aegle marmelos*, Optimization, Photo degradation and Azo dye

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BT-O-62

OPTIMIZATION OF BIMETALLIC Ag-Cu NANOPARTICLES SYNTHESIS FROM *CRATEVA ADANSONII* DC: CHARACTERIZATION AND THEIR APPLICATION FOR ANTICANCER ACTIVITY

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Abstract

In the present investigation, green synthesis of Ag-Cu bimetallic nanoparticles (Ag-Cu NPs) was optimized using Response Surface Methodology (RSM) tool. Optimization of factors (Concentration of $AgNO_3$, Concentration of $CuNO_3$ and pH) involved in green synthesis of bimetallic Ag-Cu nanoparticle was achieved through RSM tool. Bimetallic Ag-Cu naoparticles were synthesized at optimal condition using an aqueous leaf extract of *Crateva adansonii* act as reducing agent by biological method. The synthesized bimetallic nanoparticles were confirmed and characterized by a UV visible spectrophotometer, FTIR spectra analysis, Powder XRD pattern, SEM-EDX analysis. The SEM images show that the particles have spherical like structure and average crystallite size in the range of 40nm. Characterized bimetallic Ag-Cu nanoparticles screened for its *In vitro* anti-oxidant and anticancer activity and it was found that Ag-Cu nanoparticle from *Crateva adansonii* possess significant anticancer activity which could be served as potential drug candidate to treat various cancer conditions.

Keywords: Ag-Cu Nanoparticles (Ag-Cu NPs), *Crateva adansonii*, *In vitro* and Anticancer.

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BT-O-63

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 signaling between bacterial cells, in bacteria, chemical communication involves producing, releasing, detecting, and responding to small hormone-like molecules termed auto inducers. 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-64

MOLECULAR DOCKING STUDIES ON POTENT ADSORBED RECEPTOR OF THRH PROTEIN: A NEW TARGET FOR BIODEGRADATION OF ACID YELLOW DYE

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Abstract

Laccases are multicopper-oxidase enzymes that catalyze one-electron oxidation of phenolic compounds, and other electron-rich substrates with the concomitant reduction of O_2 to H_2O. One of the most important applications of these enzymes can be found in bioremediation processes, for which the search for enzymes derived from Bacillus organisms can be considered strategic due to the physicochemical characteristics of contaminated effluents. In this study, a comparative molecular docking analysis was made considering the behavior of putative laccases of dye and terrestrial origin against two industrial dyes. Using sequences retrieved from NCBI and Uniprot databases, three-dimensional structures were obtained and validated by computational methods. These models were used for docking studies with the dyes Acid Yellow. The results showed an outstanding behavior of the putative laccase from dye effluent bacteria, which showed the best affinity interaction with the dyes Acid Yellow. Likewise, the putative laccase from dye effluent bacteria Bacillus sps showed the best affinity interaction with the dyes Acid Yellow 10, and Remazol Black B. The findings obtained in the present study demonstrate the potential of microbial enzymes that can be found in textile dye effluent, and establish that specific sequences might be used for further construction of synthetic genes in experimental evaluations.

Keywords : Acid yellow domain, *ThrH* protein, Induced fit docking (IFD); Schrodinger program

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BT-O-65

GENOME ORGANIZATION OF YOLK PROTEIN GENE ASSOCIATED POLYMORPHISM IN SELECTED SILKWORM RACES OF *BOMBYX MORI* (L.) USING EXPRESSION SEQUENCE TAQ STUDIES ASSOCIATED WITH RFLP

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Abstract

Sericulture is an important rural agro-industrial practice in India. Among the different races and hybrids of the monophagous silkworm, *Bombyx mori* produce the major portion of silk in India. Germplasm characterization is important for conservation and utilization of genetic resources. DNA markers allow researchers to identify accessions at the taxonomic level, assess the relative diversity within and among species, and locate diverse accessions for breeding purposes. An investigation was carried out in the present study is to identify the Yolk protein gene related Restriction fragment length polymorphism using Expression sequence Tag (EST) polymerase chain reaction of silkworm *Bombyx mori* were used to differentiate high and low yolk yielding silkworm strains. Three restriction enzymes viz., Hinf I, EcoR I, Tag I were screened on EST-PCR product of yolk protein DNA of ten different silkworm races possessing contrasting silk and Yolk yield. The restriction fragment length polymorphism patterns were polymorphic in these races and were used to score a phylogenetic tree. The restriction fragments were used for trait specific character of silk yield. The high silk yielding silkworm races were clustered together and remaining low silk yielding races were formed a unique cluster. The RFLP-PCR technique is flexible with regard to different environmental conditions as DNA is more stable. Using this study different silkworm strains were characterized and through restriction pattern and grouped together based on silk yield. The technique is rapid and inexpensive, enabling silkworm to be characterized in short periods.

BT-O-66

COMPARATIVE STUDIES OF VERMICOMPOST AND PITCOMPOST AND GARDEN SOIL AND NPK FERTILIZERS ON *AMARANTHUS DUPIUS*

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Abstract

Changing the life style and increase in population has increased the waste load in the environment and as a result the existing waste dumping sites are full beyond capacity, which leads to population of water resources spreading communicable disease foul smell etc, Vermi composting is better option to tackle all these problems it helps in degradation of solid wastes and it is also low cost effective technique. Vermi composting is a bio oxidative process, which involves earthworms for this mainly *Eisenia fetida* species of earthworms are used. The present study was carried out recycling of organic wastes like market vegetable waste and cow dung etc. Moisture content and temperature was maintained. The parameter such as pH, nitrogen and protein are measured during specific interval of time in which result showed that the nutrient content was increased. The process of vermi composting promotes plant growth, improves soil quality and helpful managing different kinds of agricultural, industrial and domestic wastes compared with NPK fertilizers. Therefore, vermi composting is highly nutritive organic fertilizers which retains soil nutrients for long time.

Keywords: Vermicompost, *Eisenia fetida, and* organic fertilizers

BT-O-67

PHYTOCHEMICAL, *IN-VITRO* ANTIOXIDANT, ANTI-DIABETIC ACTIVITY OF *IONIDIUM SUFFRUTICOSUM* GING

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Abstract

This study was undertaken to assess the phytochemical screening, *in vitro* antioxidant activity and anti-diabetic activity of ethanol extract of leaves of *Ionidium suffruticosum*. The preliminary phytochemical screening of ethanol extract of *Ionidium suffruticosum* was carried out using Harbone method. The potential antioxidant properties of ethanol extract of *Ionidium suffruticosum* was determined by 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging assay, 2,2-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid) diammonium salt (ABTS) radical scavenging assay, Superoxide Radical Scavenging Activity and Ferric Reducing Antioxidant Power (FRAP) Assay. *In vitro* anti-diabetic assay was also evaluated by Alpha Amylase Inhibition and Glucose Adsorption Capacity. The phyto chemical screening revealed the presence of alkaloids, flavonoid, terpenoids, phenol, tannin and saponin. The highest phenol content of ethanol extract of *Ionidium suffruticosum* shows maximum antioxidant activity. The Alpha Amylase Inhibition and Glucose Adsorption Capacity was maximum which shows good anti-diabetic activity of ethanol extract of *Ionidium suffruticosum*, thus justifying the use of the plant by traditional medicine practitioners for the treatment of diabetes mellitus. However, further in depth investigations must be carried out to evaluate the possible mechanism of action and to identify the active molecule.

BT-O-68

IN VIVO ANTIDIABETIC ACTIVITY OF THE ETHANOL LEAF EXTRACT OF *IPOMOEA STAPHYLINA* IN STREPTOZOTOCIN INDUCED IN RATS

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Diabetes mellitus is a clinical syndrome and it is characterized by a deficiency in insulin production. This study highlights the most popular medicinal plants with potential anti diabetic significance, and their modes of action together with their biological activity assessed by in vitro bioassays. The present study determines the *invivo* hypoglycemic activity of ethanol extracts of this plant in rats. Ethanol leaf extract of Ipomoea *Staphylina* was intraperitoneally administered to Streptozotocin induced diabetic rats at different doses of depend on bodyweight and the effects on blood glucose levels was investigated. The treatments effects were compared with three parameter controls normal, diabetic and diabetic treated with a standard drug (Glibenclamide). The effects of the leaf extract were comparable with the conventional drugs. However, the glucose lowering potency of this plant extract was dose independent. Further studies will be helpful to investigate the mechanism of action for hypoglycemic activity for these plant species should be done in order to explore possibilities of developing a drug. In conclusion, the ethanol extract of *Ipomoea Staphylina* demonstrates both anti-hyperglycemic and insulin-sensitizing activity.

Keywords: *Ipomoea Staphylina,* Glibenclamide, hypoglycemic, Diabetic

BT-O-69

SCREENING FOR BIOACTIVE COMPOUNDS FROM THE ANTIDIABETICS TRADITIONAL FORMULATION- "ARKHAMEGARI CHOORAM" AN *IN VITRO* MODEL APPROACH

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Abstract

India is well known for the richness of medicinal herbs and its traditional usage against various human ailments since many decades. The global acceptance of such many traditional formulation, become very limit due to the lack of its proper scientific documentation. Here its comes the importance of current study **"ARKHAMEHARI CHOORAM"** is a traditional folklore for formulation. Which is using against diabetic problem. Thousands of people gained the positive result of this drug only with the trust on folklore people. This the 1st time documentation study that includes the preliminary phytochemical screening, major invitro antioxidants assay and antimicrobial profiling. All the results showed the high level efficiency of drug.

BT-O-70

VERMICOMPOSTING OF VEGETABLE MARKET WASTE USING *LAMPITO MAURITII* EARTHWORMS AT LOCAL CITY

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Abstract

Vegetable-market waste is produced in millions of tones in urban areas and creates a problem of safe disposal. The aim of this study was to convert vegetable waste (VW) amended with cow dung (CD) into vermicompost using earthworm *Lampito mauritii*. The vegetable wastes are collected from uzhavar market nearby nammakkal district, such as carrot, brinjal, cabbage, tomato, potato, cauliflower and ladies finger. Earthworm of *Lampito mauritii* cultured in plastic trays (45 x 30 x 30 cm) containing control (without worms) (T1), Experiment (with worms) (T2), for 60 days. The experiment was set up triplicate with control. The vermicomposting caused a decrease in organic C (14.5–22%) and C:N ratio (41.3–56.3%), while increase in total N (52.3–74.3%), available P (40.8–107.1%), and exchangeable K (33.0–76.2%) contents. Nutrient values were determined from the compost and compared with that of the control. From these results, it was found that NPK values were maximum in compost obtained from vegetable waste with the use of cow dung. The results indicated that vermicomposting can be an efficient technology to convert negligible vegetable-market wastes into nutrient-rich biofertilizer.

BT-O-71

SUBLETHAL TOXIC EFFECTS OF SILVER NITRATE EXPOSED TO INDIAN MAJOR CARP*LABEO ROHITA*:GILL NA^+ /K^+-ATPASE, PLASMA ELECTROLYTES AND BIOCHEMICAL RESPONSES

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Abstract

Extensive usage of silver in several applications resulting in discharges into the freshwater compartment and affects the health status of aquatic organisms. In the present investigation, fingerlings of Indian major carp *Labeo rohita* exposed (35 days) to sub lethal concentration of silver nitrate and the alterations of the membrane-bound enzyme (Gill Na^+/K^+-ATPase), plasma electrolytes and biochemical alterations were evaluated. Initially, median lethal concentration (LC_{50}) of silver nitrate to the fish *Labeo rohita* for 96 h was assessed and was found to be 0.035 mg L^{-1}. $1/10^{th}$ of LC_{50} (0.0035 mg L^{-1}) was chosen for sublethal toxicity assessment. During the sublethal exposure, the membrane-bound enzyme activity was inhibited throughout the study period when compared with the control group. A plasma electrolyte like Na^+ level was decreased at the end of 7 and 14 days and the activity increased during the rest of the study period. In contrast, the K^+ and Cl^- level increased throughout the study period. Regarding the biochemical parameters, noticeablyraised the level of glucose activity was estimated during the experimental period. Moreover, declining of protein activity was assessed throughout the study period. The obtained results in the present study revealed that the alterations in membrane-boundgill ATPase activity, plasma electrolytes, and biochemical parameters of fish could be useful for environmental bio monitoring assessment and health condition of fish in freshwater ecosystem tainted with silver.

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BT-O-72

PRODUCTION AND PURIFICATION OF LACCASE AND ITS DOCKING STUDIES ON LACCASE WITH AZO DYE (MEGANDA)

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Abstract

Laccases, a group of multicopper oxidases, catalyzes oxidation of wide variety of naturally occurring as well as synthetic compounds like phenolic, diamines and aromatic amine compounds. Laccases are widely distributed among plants, insects, fungi and bacteria. In present study bacteria capable of producing laccase enzyme was isolated and screened from dye effluent and sediment samples. Among these bacterial strains with maximum laccase production of 3.21 U/ml after partial purification using both biochemical and molecular approaches. It was found to produce maximum laccase activity at 0.69 % of carbon and nitrogen sourece 37 °C, and pH 6.5. Further nitrogen sulfate and maltose showed a maximum laccase production. In order to understand the affinity of binding and interaction between toxic dyes and bacterial laccase, homology models were generated. The resulted models were further validated and used for docking studies with commonly used industrial dyes. Molecular docking using homolog software gave a good score with all the textile dyes. This soft-ware showed a good binding energy of −98.14, −99.00, −101,34, with commercial dyes, i.e., meganda and acid yellow respectively. Experimental data showed a maximum decolorization with meganda (77.23 %) and acid yellow (70.34 %), which validate the molsoft ICM results, i.e., −98.14and −101,34, respectively.

Keywords : Laccase .meganda Dye-decolorization. APTS Guaiacol .Homology modeling

BT-O-73

NEW APPROACHES ON IMMOBILIZED LACCASES FROM *BACILLUS SPS* ON MALACHITE GREEN DECOLORIZATION

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Abstract

Laccases is multi copper enzymes belonging to the group of blue oxidases. Structurally, laccase belongs to the multi-copper oxidase (MCOS) that have three domain structures and usually contain four copper atoms. A great number of dyes are used in textile industry. Among all the dyestuff, the azo dye malachite green is mostly used in textile industry, representing 73% of total dyes produced per year. Our present work focuses on screening of laccase producing organism, optimizing the process parameters to achieve the maximum production of extracellular laccases and application of laccase on malachite green decolourization. APTS as well as giaiacol was used as substrate for screening of laccase activity. The optimization study revealed that the laccase activity was highest when operated at the following conditions, 24 to 96 h incubation, 40 °C temperature, Ph -7, 2% glucose as carbon source and 2% sodium peptone as nitrogen source in the production medium. Percentage of decolourization was observed to be 54 % of congo red dye at 96 h. Laccase enzyme produced by Pseudomonas fluorescents is capable of decolourizing malachite green dye and can be used in controlling environmental pollution.

Keywords: Laccase, *Bacillus* sps, Enzyme Activity, Malachite green Decolourization

BT-O-74

INVITRO ANTIMICROBIAL SCREENING AND MORPOLOGICAL CHARACTERIZATION OF *MOMORDICA CHARANTIA* SILVER NANOPARTICLES

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Abstract

Momordica charantia is a well known culinary herb with rich iron content and health boosters. Current study has designed to check the antimicrobial efficiency of *Momordica Charantia* along with the silver nanoparticles (MC SNPs) by drip method. The size, structure and morphological characterization of MC SNPs was done by using XRD, SEM and TEM. Results showed the exact formation of nano hybrids with the size ranges from 50 to 100 nm. Antimicrobial assay proved the high level efficiency of MCSNPs against test organisms (*staphylococcus aureus, pseudomonas aeruginosa*). It was observed than the antibiotic (Streptomycin) action in resisting the pathogenic microorganisms.

Key Words: Nanoparticle, *Momordica Charantia*, Antimicrobial, XRD, SEM, TEM

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BT-O-75

TREATMENT OF SEWAGE AND INDUSTRY EFFLUENT USING IMMOBILIZED *Oscillatoria* species.

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Abstract

Biodiversity and its application of cyanobacteria for the treatment of domestic and industrial effluents have received more attention during the recent years. Cyanobacteria have the capacity to utilize nitrogenous compounds, ammonia and phosphates; in addition, they accumulate metal ions such as Cr, Co, Cu and Zn very effectively. It has been observed that immobilized cyanobacteria have greater potential than its counterparts, i.e., free cells. The present study showed that the potential degradation of sewage and industrial effluents by environmental species of *Oscillatoria*. *Oscillatoria* species collected from coastal regions of Rameswaram, south east coast of India. Biodegradation and biosorption capacity of some potential Oscillatoria species: *Oscillatoria subsalsa, Oscillatoriaflos-aquae, Oscillatoria salina and Oscillatoria amphigranulata*. The occurrence of *Oscillatoria* species in the sewage and industry effluent was due to favorable contents of organic matter, rich calcium and nutrients such as nitrates and phosphates with less dissolved oxygen. Removal efficiencies of the different organic, inorganic metal and non-metallic elements were evaluated and compared.

Keywords: Cyanobacteria, *Oscillatoria*, Sewage,Industry Effluent

BT-O-76

BIOENGINEERED ZINC AND COPPER OXIDE NANOPARTICLES INDUCED PHYSIOCHEMICAL CHANGES IN SHALLOTS (*ALLIUM CEPA*)

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Abstract

In the present investigation, phycomolecule coated ZnO and CuO nanoparticles were synthesized using green algae (*Caulerpa racemose*) and and characterized by Fourier transform infrared spectroscopy (FTIR), X- ray diffraction (XRD), Scanning electron microscopy (SEM) and Energy dispersive X – ray spectroscopy (EDX) analysis. In order to study the impact of bioengineered nanoparticles, *Allivum cepa* seedlings were exposed to different doses of ZnO NPs as well as CuO NPs (25, 50, 100 and 200 mg/kg soil) along with algae extract (25 mg/kg soil), Zinc oxide (25 mg/kg soil), Copper oxide (25 mg/kg soil) and control was also maintained. After 30 days of exposure, seedlings were collected and used for physiochemical characterization. Results show that the rate of seedlings growth, plant biomass, photosynthetic pigments content level, and antioxidant enzyme activities were increased with increasing the nanoparticles dose when compared with control, ZnO and CuO. Also, the physiochemical parameters were influenced by addition of algae extract in the soil. Interestingly, growth rate, biomass, photosynthetic pigments level was significantly increased in ZnO NPs treated seedlings over other treatments. Present results suggest that ZnO and CuO NPs could be used for enhanced plant growth and biomass of agricultural crops in the future.

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BT-O-77

IN VITRO CLONAL PROPAGATION OF *ENICOSTEMA AXILLARE*-AN IMPORTANT MEDICINAL PLANT

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Abstract

An efficient *in vitro* propagation protocol was developed for production of large scale *Enicostema axillare* plants using shoot tip explants. Various plant growth regulators were tested for optimization of shoot elongation, shoot multiplication and root development. The shoot tip explants were cultured on MS medium supplemented with different concentrations of BAP and KIN (0.1, 0.5, 1.0, 1.5 and 2.0 mg/l) in combinations with 0.1 mg/l NAA and/or IAA for shoot bud induction. The highest percent of shoot regeneration (85.71 %) was observed at 2.0 mg/l BAP and 0.1 mg/l IAA combination. The highest frequency of multiple shoot bud regeneration noticed was 78.56 % on MS medium fortified with the combination of BAP (2.0 mg/l) and KIN (0.5 mg/l). Maximum percent of shoot bud elongation (85.71%) was recorded on MS medium supplemented with 0.1 mg/l $AgNO_3$ and 0.5 mg/l BAP combination. The elongated shoots were transferred to MS medium augmented with different doses of IBA, IAA and NAA (0.1-0.5 mg/l) in combinations with 0.1 mg/l BAP for root initiation. Among the three different auxin combinations tested, maximum percentage of rooting noticed was 92.85 % in a medium containing 0.5 mg/l IBA and 0.1 mg/l BAP combination. The rooted plantlets were successfully transferred into plastic cups containing soil and sand in the ratio of 1:1. Subsequently, they were established in the field conditions with 90 % of survival rate. The *in vitro* propagation protocol developed in this study could be utilized for large scale plant production, conservation of this important medicinal plant species.

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BT-O-78

PRODUCTION, OPTIMIZATION AND CHARACTERIZATION OF POLY β HYDROXYBUTYRATE BY *BACILLUS* SP., AN05

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Abstract

The poly β hydroxybutyrate (PHB) is biodegradable polymer, which accumulates in the form of intracellular granules by a large verity of bacteria .Poly β hydroxybutyrate (PHB)is a thermoplastics material that has attracted much attention due to such properties as bio compatability and biodegradability. The purpose of this work is to produce PHB by bacteria which were isolated from activated sludge. The strains were selected based on their morphological characteristics. PHB production by *Bacillus* species can be used for industrial level production. The organism was provided with nitrogen limited medium for influencing the production of PHB. Polyhydroxyalkanoates (PHAs) are bacterial polymers that are formed as naturally occurring storage poly ester by a wide range of microorganisms. Biodegradable and biocompatible poly (3-hydroxybutyrate) PHB and its copolymer with 3-hydroxyvalerate (PHBV) are the best known representative of PHA family. The screening was performed with endospore staining and colony viable assay .The nucleotide sequences of 16s rRNA was identified as *Bacillus* spp. PHB positive was further taken for molecular identification and the effect of temperature ,time and different types of carbon ,nitrogen source were optimized. As PHB is an alternative for plastics, it would be more useful if it is synthesized in higher concentration. The addition of new species to the existing list of PHB producing microorganisms will provide new ways for the production of cost –effective biodegradable plastics.

Key words: PHB, PHA, Endospore staining, Optimization, Screening.

BT-O-79

MICROPROPAGATION OF TRIBULUS TERRESTRIS L. AN IMPORTANT MEDICINAL PLANT OF TRADITIONAL MEDICINE.

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Tribulus terrestris L. is an annual creeping herb. In India, it is used as a medicine against impotency and cardiovascular disease. *T. terrestris* commonly known as Caltrops or Devil's thorn, is a small ascending and prostrate herb of the family Zygophyllaceae. Plants and dried spiny fruits are used in decoctions or infusion in cases of spermatorrhoea , phosphaturia , and diseases of genito-urinary systems and renal disorders. The apparent over exploitation of this species may cause a serious threat to its existence. Additionally, its seed germination is only 25%. Therefore, tissue culturing of medicinal plants is widely used to produce active compounds for herbal and pharmaceutical industries and conservation of genetic material of many threatened medicinal plants also involves culturing techniques. This work reviews rapid multiplication of this important drug yielding plant has become imperative. *T terrestris* was successfully micro propagated using nodal segments as explants. Multiple shoots were obtained by culturing the explants on MS medium supplemented with various concentrations of cytokinins viz., BAP and Kn alone or in combination with auxins (IAA/NAA). Rooting was induced by transferring the obtained multiple shoots to the medium supplemented with various auxins (IAA/NAA/IBA) at different concentrations. The effect of strength of MS medium on root induction was also observed. The in vitro developed rooted plantlets were acclimatized successfully and transferred to soil.

Key words: *Tribulus terrestris*, Zygophyllaceae, Micropropagation, cytokinins, auxins

BT-O-80

EARTHWORMS ROLE IN VERMICOMPOST AND ITS APPLICATIONS IN AGRICULTURE

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Abstract

Earthworms plays a vital role in soil fertility. Vermicomposting is the process of using worms and micro-organisms to turn kitchen waste into nutrient-rich humus that can improve soil fertility and plant growth. The present study is to investigate the novel findings of earthworm role in vermicomposting and for enrichment of soil fertility. In this method, a conversion of solid organic waste into an environmentally-friendly, useful and valuable resource, is an accelerated process that involves bio-oxidation and stabilization of the waste as a result of the interactions between some species of earthworms and microorganisms. Although microorganisms are the main agents for biochemical decomposition of organic matter, earthworms are critical in the process of vermicomposting. Complex interactions among the organic matter, microorganisms, earthworms and other soil invertebrates result in the fragmentation, bio-oxidation and stabilization of the organic matter which enriches the soil fertility. This study focuses the earthworm utility in agriculture is a safer for environment and also to retain the soil fertility for long time.

BT-O-81

GREEN SYNTHESIS OF COPPER OXIDE NANOPARTICLES USING *CORALLOCARBUS EPIGAEUS* RHIZOME EXTRACT AND THEIR BIOACTIVE PROPERTIES

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Abstract

The present study is aimed to the green synthesis of copper oxide nanoparticles (CuO NPs) using *Corallocarbus epigaeus* rhizome extract by the environment-friendly approach. The structural and morphological characters of green synthesized CuO NPs were investigated using ultraviolet-visible spectroscopy, Fourier transform-Infrared spectroscopy (FT-IR), X-ray diffraction (XRD), transmission electron microscopy (TEM), scanning electron microscopy with energy dispersive X-ray spectroscopy (SEM-EDX). The images from TEM investigation revealed that the particles are spherical in shape with an average diameter of 40 nm. The CuO NPs found good antioxidant activity and also exhibit significant bactericidal activity against multidrug-resistant (MDR) bacteria.

Keywords: CuO NPs, *Corallocarbus epigaeus* rhizome, characterization, bioactive potential

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BT-O-82

GREEN SYNTHESIS AND CHARACTERIZATION OF GOLD NANOPARTICLES USING AQUEOUS EXTRACT OF *ANNONA MURICATA*

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Abstract

In this study, we report a novel method of gold nanoparticle (AuNP) synthesis using aqueous leaf extract of *Annona muricata*. The phytochemicals present in the fruit extract act as an effective reducing and capping agent to synthesize AuNPs. The synthesized AuNPs were characterized by spectrophotometry, transmission electron microscopy (TEM), x-ray diffraction (XRD), and Fourier transform infrared (FTIR) spectroscopy. TEM studies revealed the particles of various sizes and mainly spherical in shape. The XRD patterns showed peaks at (111), (200), (220) which exhibited preferential orientation of the AuNPs as face-centered cubic crystal. FTIR measurements confirmed the coating of phenolic compounds on the AuNPs indicating a possible role of biomolecules for the capping and efficient stabilization of the AuNPs. The antibacterial activity of synthesized AuNPs was evaluated against the clinical isolates *Staphylococcus aureus* and *Escherichia coli* and it was found that bacterial growth was significantly inhibited in a dose dependent manner. The results suggest that the AuNPs from *Annona muricata* leaf extract could be used as a potential antibacterial agent for commercial application.

Keywords: *Annona muricata*; Gold nanoparticles; Antibacterial activity.

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BT-O- 83

ISOLATION AND CHARACTERIZATION OF COLLAGEN FROM MARINE FISH (*THUNNUS OBESUS*)

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Abstract

In the present study, we isolated collagen from *Thunnus obesus* bone, which was physiochemically characterized. Two different kinds of methods were used to isolate the collagen; they are the Acid Soluble Collagen (ASC) and Acid Soluble Enzyme Collagen (ASEC) methods. The isolated collagen was characterized with Fourier Transform Infrared Spectroscopy (FT-IR), SDS-polyacrylamide gel electrophoresis (SDS-PAGE), Optical Microscopy (OM) and Scanning Electron Microscopy (SEM). FT-IR results revealed the presence of collagen. SEM and OM results depicted that collagen was in the form of fiber sponge-like scaffolds. The isolated collagen scaffold was checked with pre-osteoblast (MC3T3-E1) cell line for biocompatibility. The *in vitro* results revealed that the collagen scaffolds were highly biocompatible and nontoxic in nature. Herewith, we are suggesting that marine fish-derived collagen will be an excellent material for leather, film industry, pharmaceutical, cosmetics, biomedical and food applications.

Keywords: Marine biomaterials marine protein artificial bone sea processing waste

BT-O-84

PRODUCTION OF LACCASE FROM *BACILLUS CEREUS* PS USING PEARL MILLET AND FINGER MILLET WASTE AS A SUBSTRATE UNDER SOLID-STATE FERMENTATION

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Abstract

The present study describes the production of laccase enzyme under solid-state fermentation by *Bacillus cereus* PS has been studied using pearl millet and finger millet waste as a substrates were saturated individually in 1% NaOH and 1% H_2SO_4, solution at the ratio of 1:10 (solid : liquid) for 2h. The substrates were analysis FT-IR, SEM, and XRD. Response surface methodology (RSM) was used to optimize laccase production using four different variables like pH, incubation time, pearl millet and finger millet waste. The optimized process conditions found were pH 7, incubation time 36 h, pearl millet 3 g, finger millet waste 2g, under which laccase activity reached 105 U/mL. 3D plots showed high interaction between the variables, pH, incubation time, substrate concentration in the medium.

Key words: Laccase, *Bacillus cereus* PS, Pretreatment, Response surface methodology.

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BT-O-85

PRODUCTION, PURIFICATION AND CHARACTERIZATION OF LACCASE FROM *BACILLUS* SP. PS.

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Abstract

In the present study production of bacterial laccase isolated from dye contaminated soil sample. The laccase producing strain screening was performed using nutrient agar with addition of 0.1% of guiacol as an inducer. The 16S RNA sequencing to confirm the strain identified as *Bacillus* sp. PS and submitted in NCBI (Gen Bank: MF957300). Fermentation conditions such as temperature, pH, carbon source, nitrogen source were optimized for maximum enzyme production from *Bacillus* sp. PS. The maximum production (100 U/ml) was achieved at pH 7 and the temperature 37 ºC (96 h of incubation). The enzyme was partially purified by ammonium sulfate precipitation method and it was purified by dialysis. The molecular weight was determined at 40kDa through SDS-PAGE. The enzyme was stable over a large range of pH (4.5–8.0) and at temperatures up to 50 °C.

Keywords: Laccase, *Bacillus* sp., purification, SDS-PAGE.

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BT-O-86

PRELIMINARY PHYTOCHEMICAL SCREENING, ANTIMICROBIAL ACTIVITY AND INHIBITION STUDIES OF *CHAETOMORPHA ANTENNINA* ON BRASS CORROSION IN PHOSPHORIC ACID

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Abstract

Ethanolic extracts of marine alga *Chaetomorpha antennina* (CA) have been investigated as non toxic corrosion inhibitor for brass in 0.1 N H_3PO_4. Corrosion rates were evaluated at 30 ^oC using the weight loss, electrochemical impedance spectroscopy and potentiodynamic polarization techniques. CA extract was found to inhibit brass corrosion in acidic media via adsorption of the extract organic matter on the metal/solution interface. Polarization 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 alkaloids, **s**terpenoids, terpenes, monosaccarides, flavanoids type of compounds in the extract. The identified corrosion inhibitors from *Cheatomorpha antennina* was evaluated for their anti-microbial activity against the virulence factors of *Pseudomonas aeruginosa* and *Klebsiella pneumonia*. The binding affinities between the virulence proteins and the corrosion inhibitors were determined by molecular docking, which significantly reveals that the compounds identified to possess corrosion inhibitory activity also possess anti-microbial activity. Thus these coating the brass vessels with this marine algae extracts 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 03 software with -31G (d, p) basis sets on B3LYP method to predict the molecular structure and vibrational wave numbers. The frontier orbitals (HOMO and LUMO) analyses were paid much attention as they play significant role in determining the stability of the compounds. Establishment of difference in the energies of the HOMO and LUMO and their band gap in eV envisages that compounds excitement which fascinates the compounds capability as potential corrosion inhibitor.

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BT-O-87

OPTIMIZATION OF LACCASE BY RESPONSE SURFACE METHODOLOGY FOR THE REMOVAL OF TEXTILE DYE

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Abstract

Laccase is a copper containing polyphenol oxidase that acts on wide range of substrates. Laccase has many potential applications including textile dye de colorization, delignification of pulp and effluent detoxification. In the present study, *Bacillus sps and pseudomonas* were screened for laccase production and dye de colorization potential of laccase enzyme was investigated. Maximum laccase production was found on 7^{th} day. Optimization of laccase were analyzed by response surface methodology(RSM) Laccase activity of studied strains was found in the range of 23.2 to 30 mU/ml. Under normal condition various strains of *Bacillus sp* showed low laccase activity but in addition of inducer (guaiacol) it was increased to (46-76%). The laccase enzyme produced by *Bacillus sps* revealed promising result in decolorization of synthetic dyes. About 58 % of Acid yellow was effectively decolorized by using laccase enzyme and Bromophenol blue (43.42%) tryphan blue (40%) in 96 hrs of incubation. Our findings clearly revealed decolourization of Azodyes by the laccase enzyme produced by *Bacillus sps* isolated form dye effluent water. This first ever report will provide a solution to solve environmental pollution to be caused by azo dyes of dyeing industries.

Keywords : laccase enzyme Acid yellow, Dyeing industries, Decolorization.

BT-O-88

GREEN SYNTHESIS AND EVALUATION OF ANTIMICROBIAL ACTIVITY OF APPLE FRUIT AND ORANGE PEEL EXTRACTS

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Abstract

Silver nanoparticles are most commonly used nanomaterial in research laboratories and many advanced technologies. Silver nanoparticles has vast application in various sectors such as electronics, engineering, environmental and medical. In medical field, it plays an integral part in surgical and nonsurgical equipments such as wound dressing, bandages, catheters and so on due to its antimicrobial activity. These nanoparticles can be synthesized by different physical and chemical methods that are extensively affected due to high pressure, temperature, energy and toxicity of chemicals used. In this work, nanoparticles were synthesized by green method using the plant materials of *Malus domestica* (red apple) fruit and peel of *Citrus sinensis* (orange) in aqueous silver nitrate solution. The synthesized silver nanoparticles were then analyzed for their antimicrobial activity against different human pathogens (*S. aureus, E. coli* and *B. substilis*). The observation revealed strong antibacterial activity especially in orange peel extract against *S. aureus* with considerably high zone of inhibition.

BT-O-89

COMPARATIVE STUDIES OF VERMICOMPOST, PIT COMPOST, GARDEN SOIL AND THEIR EFFECT ON THE GROWTHOF A VEGETATIVE CROP

Coriandrum sativum L

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Abstract

In the present study the fertility of soil and growth of plant has been standardized for the significance of compost as a source of humus and nutrients to increase the fertility of soil. Vermicompost obtain with help of earthworms has many benefits to soil, plant and environment. Different composts (vermicompost and pit compost) and garden soil(control) be taken first for chemical analysis and then to find the effect of these compost on growth of vegetative crop *'Coriandrum sativumL*'. It was found that vermicompost was rich in nutrient like Potassium, Nitrogen, Phosphorus and pH. It have the potential for improving plant growth than pit compost,NPK fertilizer and garden soil (control). Maximum growth in this study conducted for a period of 30 days in pot of vermicompost. In this study the assessment of nutrient and effect of plant growth was done. The result showed distinct differences between vermicompost, pit compost, and garden soil (control).

Keywords: Humus, *'Coriandrum sativumL'* pit compost, vermicompost.

BT-O-90

ETHNOBOTANICAL STUDY OF TRADITIONAL MEDICINAL PLANTS USED BY INDIGENOUS PEOPLE OF PACHAMALAI HILLS TIRUCHIRAPPALLI DISTRICT, TAMIL NADU

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Investigation and documentation of the status of medicinal plants and associated knowledge was conducted in Pachamalai Hills Tiruchirappalli District, Tamil Nadu. Data was collected and evaluated with a questionnaire survey, semi-structured interviews, field observations, direct matrix ranking, preference ranking, abundance scores, and vegetation surveys. Sixty-eight medicinal plant species used to treat 50 different ailments (in humans and livestock) were recorded. Leaves are the most commonly collected plant parts for medicinal purposes. Much of the ethno-medicinal knowledge is concentrated in elderly members of the community. The medicinal plants are facing threats from agricultural expansion, wood extraction and overgrazing. Consequently, abundance of medicinal plant resources is declining with time. Furthermore, effort to conserve and cultivate medicinal plants is virtually non-existent. Thus, participation of the local people and awareness creation on sustainable utilization and management of these resources is vital.

Keywords: Ethnobotanical Study, Traditional Medicinal Plants, Pachamalai Hills

ABSTRACTS

POSTER PRESENTATION

BT-P-01

EFFECT OF PLANT GROWTH PROMOTERS LIKE VERMIWASH AND HUMIC SUBSTANCE ON *Solanum lycopersicum* TOMATO

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Abstract

The present study is focused on the growth promoting effect of Vermiwash, Humic substances and Biomix on tomato. Biomix showed excellant result on tomato growth and yield where as Vermiwash and Humic substances showed good performance at lower concentration (3%) and at higher concentration (10%) this showed negative performance on plant growth and development.

Keywords: Vermiwash, Humic substances, Biomix, Growth promotor.

BT-P-02

A STUDY ON BIO-METHANE PRODUCTION FROM ORGANIC WASTES

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Abstract

The exhaustion of fossil fuels and the global warning situation are strong motivating factors for alternating fuels research. Anaerobic digestion of organic waste can address both energy recovery and pollution control. A variety of agricultural, industrial and domestic wastes can be an aerobically digested as they contain easily biodegradable material. In the anaerobic digestion of organic waste, the final product is biogas which is a mixture of methane (55-75 vol %) and carbon dioxide (25-45 vol %)that can be used for heating, upgrading to natural gas quality or co-generation of electricity and heat. The main pathway for methane production during methanogenesis is summarized.

Key Words: methane, anaerobic digestion, domestic wastes.

BT-P-03

MEDICINAL PLANTS AND ITS IMPACTS IN ENVIRONMENT

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Abstract

Skin diseases are numerous and causes health related issues for all ages from the neonates to the elderly and cause harm in number of ways. Maintaining healthy skin is challenging task for fitness. Many people may develop skin diseases due to abiotic and biotic factors that affect the skin, including cancer, herpes and cellulitis. Some wild plants and their parts are frequently used to treat these diseases. Natural treatment is cheap and claimed to be safe. Hence the present review will focuses on use of traditional plants viz., *Achyranthes aspera, Aloe vera, Bauhinia variegata, Calendula officinalis, Daucus carota, Lavendula officinalis, Lycopersicon esculentum, Lawsonia inermis.* Herbals are a rich source of active ingredients and can be safer and cost effective treatment for skin diseases ranging from rashes to dreadful skin cancer when compared to allopathy. More than 50% of plant species useful for treatment of skin diseases appear to be restricted to forests, so activities such as deforestation, habitat destruction, urbanization etc., may pose a serious threat to these species. Herbal Conservations with the help of local participation and carrying out of extensive research in this respect to broaden the prospects of herbal drugs in skin disease treatment.

BT-P-04

BIOETHANOL FROM WASTE POTATOES

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Abstract

This research reveals the production of bioethanol from waste potato. Bioethanol is an excellent alternative motor fuel for petrol engine. We get bioethanol production from sugarcane, corn, potato, etc.. But potato is one of the method to produce ethanol, because the production of potatoes in both season is found to be 1,607,296 tones/year. First we take a waste potato and crushing it ,we can get sucrose juice and biogas it use waste for make heat. Sucrose juice is extraction of sucrose and we get sucrose molasse. Again add acid for kill bacteria, molasses transferred into fermentation chamber for ferment. Further add yeast *Saccharomyces cerevisiae* for production of ethanol ,we get ethanol 10-14% and remaining water 86-90%.Distillation process is occur 97% ethanol is produce. Further dehydration we get 100% of ethanol.

Key words: Waste potato - Bio ethanol- Fermentation- Distillation - Dehydation.

BT-P-05

CANAVAN DISEASE

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Abstract

Canavan disease, also called Canavan – van Bogaert-Bertrand Disease, is an autosomal recessive degenerative disorder that causes progressive damage to nerve cells in the brain, and is one of the most common degenerative cerebral diseases of infancy. It is caused by a deficiency of the enzyme aminoacyclase, and is one of a group of genetic diseases referred as leukodystrophies. It is characterized by degeneration of myelin in the phospholipid layer insulating the axon of a neuron and is associated with a gene located on human chromosome 17. The symptoms of this disease typically appear in early months of age. Canavan disease then progresses rapidly from that stage, with typical cases involving intellectual disability, loss of previously acquired motor skills, feeding difficulties, abnormal muscle tome (floppiness or stiffness; hypotonia), poor head control and megalocephaly. Paralysis blindness or seizures may also occur. The diagnosis of neonatal canavan disease relies on demonstration of very high concentration of N-acetylaspartic acid (NAA) in the urine. In mild/juvenile canavan disease NAA may only be slightly elevated; thus, the diagnosis relies on molecular genetic testing of ASPA, the gene encoding the enzyme aspartoacylase. Research involving triacetin supplementation has shown promise in a rat model. Triacetin, which can be enzymatically cleaved to form acetate, enters the brain more rapidly than the negatively charged acetate. The defective enzyme in Canavan disease, aspartoacylase, converts N-acetylaspartate into aspartate and acetate. Mutations in the gene for aspartoacylase prevent the breakdown of N-acetylaspartate, and reduce brain acetate availability during brain development. Acetate supplemdentation using Triacetin in meant to provide the missing acetate so that brain development can continue normally.

BT-P-06

ULTRASOUND APPROACH TRACKS GUT MICROBES

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Abstract

In this research determine the location of microbes in gut by using ultrasound. Some medical approaches currently in use, for the treatment of gut disease. So this ultrasound technique might be adapted for clinical use to determine whether such cells have reached the desired location of bacterial cells. Ultrasound imaging has so far mainly been used to access tissue, but we reveal the efficient track population of bacterial cells. Gas vesicles scatter sound waves and organisms containing them can be monitored using ultrasound. Pressure pluses above a certain level cause gas-vesicle collapse.

Keywords: Gut; Microbes; Ultrasound; Gas-vesicles; Sound waves.

BT-P-07

BACK TO NATURE

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Abstract

Soaps are detergents are essential to personal and public health. They safely remove germs darts and other impurities it helps us to stay healthy and make our surrounding more pleasant. Soap is a combination of animal fat or plant oil and caustic soda. When dissolved in water, it breaks dirt away from surfaces. The manufacturing of soaps and detergents is a complex process. When triglycerides in fat/oil react with aqueous NaOH or KOH, they are converted into soap and glycerol. This is called alkaline hydrolysis of eaters. Since this reaction leads to the formation of soap; It is called the saponification process. Many people have sensitive skin that doesn't respond well to chemically laden soap. By organic soaps, we can able to avoid or at least reduce the skin problem. Organic soap contains of ingredients that are not produced with herbicides or fertilizer.

BT-P-08

LIQUID DNA BIOSPSIS COULD BE USED FOR CANCER SCREENING

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Abstract

The study evaluated the presence of fragments of tumor dna (cfdna) in the blood of 200 patients with colorectal breast ,lung, and ovarian cancers compared to a control group of 44 healthy donars .It has also been suggested that direct secretion of cfdna into the plasma is possible. Previous studies using liquid biospies have been used to detect cancer relapse or to determine whether treatments are working .In those cases the specific mutation in a particular patients cancer are known and can be targeted. Liquid biospy is used to help find cancer at an early stage. It may also be used to help plan treatment or to find how well treatment is working or if cancer has comeback.

Keywords: Cfdna, Biospies, Mutation, Liquid biospy, Cancer relapse.