

PROCEEDINGS OF THE
International Conference on Life Sciences:
Emerging Trends and Future Perspectives
(ICLS-ETFP-2024)

27th & 28th March 2024



Organized by

Department of Botany & Zoology
Sri Vidya Mandir Arts & Science College (Autonomous)
Katteri, Uthangarai, Krishnagiri - 636 902
Tamil Nadu, India.

In Collaboration With

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Tiruchirappalli - 620 002, Tamil Nadu, India.



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Dr. V. Chinnadurai & Dr. M. Murali

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Patron : **Dr. N. Gunasekaran**

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**Katteri – 636 902, Uthangarai (Tk), Krishnagiri (Dt),
Tamil Nadu, India**

Thiru. V. CHANDRASEKARAN
Founder & Secretary

Date: 25-03-2024



Message

I am delighted to note that the PG Department of Botany and Zoology, Sri Vidya Mandir Arts & Science College (Autonomous), Katteri in association with St. Joseph's College (Autonomous), Tiruchirappalli is organizing A two day **“International Conference on Life Sciences Emerging Trends in Future Perspectives – ICLS ETFP- 2024”** on 27th & 28th March, 2024.

The conference will intend to disseminate information to the researchers and to represent their ideas for future strategies. I hope the participants will be highly benefited, with its reach and depth of expertise speakers.

I wish the International Conference a grand success.

Thiru. V. Chandrasekaran
Chief - Patron, ICLS-ETFP-2024



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Tamil Nadu, India

Dr. N. Gunasekaran, M.A. M.Phil., Ph.D.

Date: 25-03-2024

Principal

It is my great pleasure to know that the PG Department of Botany & Zoology Sri Vidya Mandir Arts & Science College (Autonomous), Katteri in association with St. Joseph College (Autonomous), Trichy organising the “**International Conference on Life Sciences Emerging Trends In Future Perspectives (ICLS-ETFP-2024)**”, 27th & 28th March 2024.

Life science is one of the important platforms to know about the biological aspects of life. Biology is the study of life. It is developed to study living organisms. It is an exceedingly broad and diverse subject which helps us to understand the life process and reveals the secret of life. The basic information about life science will reflect the soul of life. The still yet dynamic state of the field may be what motivates and excites researchers of multidisciplinary backgrounds working in the applied biology area. The changing environments of the present day are posing great challenges to sustaining agricultural productivity. The division of life science has been playing an essential role in deciphering functions and aspects of plants and animals that can cope with the changing adverse environment.

The proposed program of the conference will provide a platform for discussion on recent advances, identification of research gaps and preparation of the road of life sciences in different fields.

I hope that the “**International Conference on Life Sciences Emerging Trends In Future Perspectives (ICLS-ETFP-2024)**” will provide new directions for translating knowledge of life sciences into improving research.

My best wishes for a great success of the International Conference.

Chairman, ICLS-ETFP-2024



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CONVENERS

It is my pleasure to be a part of the organizing committee of “**International Conference on Life Sciences Emerging Trends In Future Perspectives (ICLS- ETFP 2024)**” Organized by the PG Department of Botany & Zoology in Collaboration with St. Joseph College (Autonomous), Trichy, on 27th and 28th March 2024. This International conference focuses on different fields of biological sciences and their applications towards the improvement of sustainable agriculture.

This International Conference will bring together scientists, researchers, academicians, and industrial experts across the nation to share their knowledge, expertise, and research findings in their various fields of life sciences through excellent presentations. I am indeed pleased to host this international conference bringing the recent developments in the field of life sciences. I hope that the deliberations and recommendations of the conference will certainly have a significant impact on the exploration of research in biological sciences towards their potential applications.

I am sure that the presentations by the eminent scientists and subsequent brainstorming technical sessions on different aspects of the themes proposed for this conference will enlighten the young researchers and participants. I wish the international conference a great success.

Dr. V. Chinnadurai

Dr. M. Murali

Dr. Senthil Kumar



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Tamil Nadu, India**

ORGANISING SECRETARIES

We are delighted and honoured to welcome you to the “**International Conference on Life Sciences Emerging Trends In Future Perspectives (ICLS-ETFP-2024)**” organized by Organized by the PG Department of Botany & Zoology in Collaboration with St. Joseph College (Autonomous), Trichy, on 27th and 28th March 2024. We believe we have chosen a theme that is most needed for the hour and has challenges to deal with.

ICLS ETFP 2024 provides a wonderful opportunity for you to revive your knowledge base and explore the novelties in biological sciences. We hope that this conferences will offer plenty of networking opportunities, providing you with an opportunity to meet and collaborate with leading scientist and researchers throughout the world.

Various sessions of this conference include manifold with the keynote address five invited lectures and around sixty conceptual papers separated into oral and poster presentations for both days. We solace that you all will escalate us to bring eminent and proficient scientists throughout the country and the invite talks of the resource person.

The success of this conference depends on the hard work of every committee member and the active participation of the delegates. As organizing of this conference, we thank all the members of the committee, authorities of the institutions for their simultaneous support and all the participants who are going to make the occasion a great success. We fell grateful to the eminent scientists who are going to share their knowledge and expertise in this event.

With best wishes

Dr. P. Vino

Dr. S. Saravanan

Dr. S. Sahaya Sathish

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INTERNATIONAL CONFERENCE ON LIFE SCIENCES: EMERGING TRENDS AND FUTURE PERSPECTIVES (ICLS-ETFP-2024)

Organized by

PG DEPARTMENT OF BOTANY & ZOOLOGY PROGRAM SCHEDULE

DAY- I (27.03.2024)

TIME	PROGRAM
10AM-3.30 PM	INAUGURAL FUNCTION
	Lightening the Kuthuvilakku & Prayer Song
Welcome Address	Dr. M. MURALI , Convener & Head, (ICLS-ETFP-2024), Department of Zoology, Sri Vidya Mandir Arts & Science College, Uthangarai, Tamil Nadu.
Presidential Address	Thiru. V. CHANDRASEKARAN , Chief Patron, (ICLS-ETFP-2024), Sri Vidya Mandir Educational Institutions, Uthangarai, Tamil Nadu.
Felicitations	Dr. N. GUNASEKARAN , Principal, (ICLS-ETFP-2024), Sri Vidya Mandir Arts & Science College, Uthangarai, Tamil Nadu.
	Dr. D. KAVITHA , Vice Principal, (ICLS-ETFP-2024), Sri Vidya Mandir Arts & Science College, Uthangarai, Tamil Nadu.
	Dr. V. CHINNADURAI , Convener & Head, (ICLS – ETFP – 2024), Department of Botany, Sri Vidya Mandir Arts & Science College, Uthangarai, Tamil Nadu.
Theme of the Conference	Dr. P. VINO , Organizing Secretary (ICLS-ETFP-2024), Department of Botany, Sri Vidya Mandir Arts & Science College, Uthangarai, Tamil Nadu.
Keynote address	Prof. Dr. K. SELVAM , Professor and Head, Department of Botany, School of Life Sciences, Periyar University, Salem, Tamil Nadu. Topic: Life Science Scope
	SESSION – I
11.15 AM.12.10 PM	Dr. A. MARUTHUPANDIAN , Assistant Professor, Department of Botany, School of Life Sciences, Periyar University, Salem -11. Topic: Seaweeds: A Promising Source for Nutrition
12.15-1.00 PM	LUNCH BREAK
	SESSION – II
1.10 PM -2.10PM	Dr.YUWALEE UNPAPROM , Associate Director of Academic Administration and Development, Maejo University, Chiang Mai, Thailand. Topic: Biotechnological Frontiers in Plant Conservation: Strategies for Endemic Species and Sustainable Use
2.10 PM – 2.30PM	EVENING BREAK
2.30 PM -3.40 PM	Oral Presentation

DAY- II (28.03.2024)

TIME	SESSION – III
10.00AM-11.00 AM	Prof. Dr. S. KANNAN , Professor and Head, School of Life Sciences, Department of Zoology, Periyar University, Salem-11. Topic: Nanocomposite for Alzheimer Disease
11.00AM- 11.20AM	TEA BREAK
	SESSION – IV
11.20AM–12.30PM	Dr. G. MALARVANNAN , Research Scientist, Toxicological Center, University of Antwerp, Belgium. Topic: Sustainable Development & Environmental Conservation
12.00PM–1.30PM	LUNCH BREAK
	SESSION – V
01.30PM–02.00PM	Dr. S. SAHAYA SATHISH , Associate Professor, Department of Botany, St. Joseph’s College, Tiruchirapalli Topic: Bryonanotechnology - in the development of novel functional phytodrugs
2.00PM – 3.40PM	VALEDICTORY FUNCTION
Felicitation	Dr. N. GUNASEKARAN , Principal, (ICLS-ETFP-2024), Sri Vidya Mandir Arts & Science College, Uthangarai, Tamilnadu
	Dr. D. KAVITHA , Vice Principal, (ICLS-ETFP-2024), Sri Vidya Mandir Arts & Science College, Uthangarai, Tamil Nadu
Report of Conference	Dr. V. CHINNADURAI , Convener & Head, (ICLS-ETFP-2024), Department of Botany, Sri Vidya Mandir Arts & Science College, Uthangarai, Tamil Nadu.
3.10 PM	CERTIFICATE DISTRIBUTION
3.25 PM	FEEDBACK
Vote of Thanks	Dr. S. SARAVANAN , Organizing Secretary (ICLS-ETFP-2024), PG Department of Zoology, Sri Vidya Mandir Arts & Science College, Uthangarai, Tamil Nadu.
NATIONAL ANTHEM	

PLENARY LECTURES

Abstract No	Name	Title
PL. 1	Prof. Dr. K. SELVAM	LIFE SCIENCE SCOPE
PL. 2	Dr. A. MARUTHUPANDIAN	SEAWEEDES: A PROMISING SOURCE FOR NUTRITION
PL. 3	Dr. YUWALEE UNPAPROM	BIOTECHNOLOGICAL FRONTIERS IN PLANT CONSERVATION: STRATEGIES FOR ENDEMIC SPECIES AND SUSTAINABLE USE
PL. 4	Prof. Dr. S. KANNAN	NANOCOMPOSITE FOR ALZHEIMER DISEASE
PL. 5	Dr. G. MALARVANNAN	SUSTAINABLE DEVELOPMENT & ENVIRONMENTAL CONSERVATION
PL. 6	Dr. S. SAHAYA SATHISH	BRYONANOTECHNOLOGY - IN THE DEVELOPMENT OF NOVEL FUNCTIONAL PHYTODRUGS'

LIFESCIENCES SCOPE

Prof. Dr. K. SELVEM

Professor and Head, Department of Botany, School of Life Sciences,
Periyar University, Salem - 636 011, Tamil Nadu, India

Abstract

Nanoparticles (NPs) have unique properties that make them highly valuable. They can pass through biological barriers and accumulate in diseased tissues, enabling targeted detection and treatment of single diseased cells. Zinc oxide nanoparticles (ZnONPs) are currently being studied for their potential in various biological and environmental applications. This study focused on the biosynthesis of ZnONPs using a medicinal plant extract and evaluated their properties and effects. The biosynthesis of ZnO nanoparticles was carried out using a medicinal plant extract. The presence of the plant extract in the synthesized ZnO nanoparticles was confirmed by the colour shift of the precipitates from green to pale white. The synthesized ZnO nanoparticles structure, as confirmed by X-ray diffraction (XRD) analysis. Scanning electron microscopy (SEM) with energy-dispersive X-ray spectroscopy (EDAX) and transmission electron microscopy (TEM) showed the morphology of the ZnO nanoparticles. The antimicrobial activity of the biosynthesized ZnO nanoparticles was evaluated using the disc diffusion method. The results showed that ZnO nanoparticles efficiently restricted the growth of both Gram-negative bacteria (*Pseudomonas aeruginosa*, *Escherichia coli*) and Gram-positive bacteria (*Staphylococcus aureus*, *Enterococcus faecalis*). Furthermore, the antifungal activity of ZnO nanoparticles was demonstrated against *Candida albicans* and *Aspergillus niger* fungal strains, showing good activity against both strains. The antioxidant properties of the biosynthesized ZnO nanoparticles were determined using DPPH and ABTS radical scavenging activity assays. The anti-inflammatory effect of the biosynthesized ZnO nanoparticles was evaluated through in-vitro human red blood cell (HRBC) membrane stabilization and albumin denaturation inhibition assays. The anti-diabetic nature of the biosynthesized ZnO nanoparticles was assessed using an alpha-amylase and alpha-glucosidase inhibitory assay. The results showed encouraging inhibitory effects on the alpha-amylase enzyme, which is involved in the breakdown of complex carbohydrates. In summary, the biosynthesized ZnO nanoparticles exhibited antimicrobial, antioxidant, anti-inflammatory and anti-diabetic properties. Further research is needed to explore their specific mechanisms of action and optimize their synthesis and application.

Keywords: Medicinal Plants, Antioxidant, Anti-Inflammatory, Anti-Diabetic, Applications

SEAWEEDS: A PROMISING SOURCE FOR NUTRITION

Dr. A. MARUTHUPANDIAN

Assistant Professor, Department of Botany

Co-ordinator, Centre for Biodiversity and Forest Studies

Periyar University

Salem - 636 011, Tamil Nadu, India

Abstract

Many types of ecosystems rely on primary productivity from green plants, such as marine ecosystems. In these ecosystems, macro algae or seaweed act as potential primary producers of energy-rich compounds, forming the basis of the food cycle for phytoplankton and zooplankton. Seaweeds have unique bioactive compounds that are not found in terrestrial plants. People in China, Japan, Korea, Singapore, Malaysia, Thailand, Cambodia, Indonesia, and Vietnam have been using seaweed for food and supplements for centuries. Around the world, 145 species of red, brown, and green seaweeds are used for food. Seaweeds absorb carbon dioxide at a higher rate than terrestrial plants and are a source of food, medicine, cosmetics, fertilizer, feed, and bioenergy. The nutritional composition of seaweeds varies based on seasonal variation (physiological and ecological conditions). Seaweeds have high amounts of iodine compared to terrestrial plants. They are also an excellent source of fiber which promotes gut health. Seaweeds contain zero-calorie fibers that can slow stomach emptying and delay hunger. Moreover, seaweed can help reduce blood cholesterol levels, blood sugar levels, and the risk of developing certain types of cancer. Seaweeds play a vital role in human health and various industrial applications. Due to consumer awareness of their health benefits, research into seaweeds and their biological importance has increased rapidly. Seaweeds are a natural resource present in our environment, and it is our responsibility to conserve their biodiversity.

Key words: Seaweed, Macroalgae, Nutrition, Food, Iodine, Bacteria

BIOTECHNOLOGICAL FRONTIERS IN PLANT CONSERVATION: STRATEGIES FOR ENDEMIC SPECIES AND SUSTAINABLE USE



Dr. Yuwalee Unpaprom

Associate Director of Academic Administration and Development,
Senate Council member of Maejo University,
Head of Dept. of Biotechnology (PhD program), Maejo University, Chiang Mai,
Thailand.
Co-Chair, the APEC Research Center of Thailand Chiang Mai Branch, Thailand.

Abstract

Thailand's vast and varied landscape, extending 1800 km from the mainland into the peninsular areas of Southeast Asia, supports a rich tapestry of life, with over 12,000 identified plant species, making it a critical biodiversity hub. This ecological wealth spans diverse ecosystems, including pine forests, mangroves, and more. However, this biodiversity is at risk due to economic activities leading to habitat loss from urban expansion, industrialization, and tourism development. In response, Thailand has strategically protected 18% of its territory as conservation areas, such as national parks and wildlife sanctuaries, under the stewardship of the Ministry of Agriculture and Cooperatives through the Royal Forest Department. These efforts are augmented by pioneering biotechnological initiatives to preserve the nation's rare and endangered flora. Among these, temporary immersion bioreactors for clonal propagation stands out, enabling the swift multiplication of plant propagules, enhancing conservation practices, and ensuring sustainable usage of these vital resources. Furthermore, these biotechnological solutions foster community involvement in conservation efforts, seamlessly integrating the cultivation and application of these botanical resources into the everyday lives of local populations. Through such innovative approaches, Thailand is safeguarding its unique plant species and setting a precedent for biodiversity conservation and sustainable resource utilization, ensuring the longevity of its rich natural heritage.

Keywords: Biodiversity, Conservation, Biotechnological methods, Economic growth, Natural heritage

ORAL AND POSTER PRESENTATION

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**SURVEY OF ENDANGERED SPECIES IN RED DATA BOOK A PART
SOUTHERN REGION**

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Abstract

Red data book is a valuable resource that records endangered and rare species of plants, animals, fungi, and local subspecies within a specific region. The flora of India is very rich in plant diversity with an estimated 50,000 species of which about 15,000 flowering plants of these 5000 species are endemic to India, while several hundred species are threatened. Tamil Nadu accounts for nearly one - third of the total flora of India. Among these 46 species are classified as endangered, 14 critically endangered and 72 as vulnerable. Among these species here I expressed about five species which are currently faced endangered in our Tamil Nadu. It's includes Annonaceae, Malvaceae, Hypericaceae, Dilleniaceae and Flacourtiaceae. These species are under endangered and rare species due to their habitat destruction. Conservation measure taken for these species are none so for but, this were included in threatened plant list. It can be conserved by relocating area and protected. Also to be introduced in botanical garden.

Keywords: Annonaceae, Conservation, Endangered Species, Red data Book, Protect

FLORISTIC SURVEY OF VELLAKOVIL, TIRUPPUR DISTRICT, TAMIL NADU AND PHYTOCHEMICAL SCREENING OF CHLOROFORM EXTRACT OF *CEROPEGIA JUNCEA* ROXB.

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Abstract

Nature surroundings were amusing with many medicinal plants, which contain several phytochemicals used to prepare traditional medicines. Many medicinal plants were found in and around the Vellakovil, Tiruppur District, Tamil Nadu. This survey includes plant habits like tree, shrubs, herbs, climbers and twinnings. One of the therapeutically potential endemic plant species namely *Ceropegia juncea* Roxb. Chloroform extract was carried out. Qualitative phytochemical screening exhibits the presence of secondary metabolites such as flavonoids, phenols, tannins, carbohydrates, proteins, Amino acids, glycosides, steroids, terpenoids, anthraquinones, quinones, fatty acids, coumarins and lipids. The results suggest that the phytochemical properties for curing various ailments and possess potential anti-inflammatory, antimicrobial, antioxidant, anticancer, antiurolithiatic and leads to the isolation of new and novel compounds.

Keywords: Vellakovil, *Ceropegia juncea* Roxb., chloroform extract, Phytochemical Screening and Secondary metabolites.

CYTOTOXIC ACTIVITY OF NARAVELIA ZEYLANICA AGAINST HUMAN BREAST CANCER CELL LINE (MCF-7)

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Abstract

Breast Cancer is the second most common cancer in women after skin cancer. Clinically current treatments are usually expensive and also cause side effects. Thus, Certain phytochemicals have potential chemotherapeutic options. Phytochemical plant based nano-drug delivery system has increased drug stability and enhance anticancer activity. The study focused to determine the cytotoxicity of *Naravelia zeylanica* against MCF 7 breast cancer cell line. The plant was collected from Kolli hills, Namakkal District, Tamilnadu. The extraction process was done by Soxhlet apparatus. Human Breast Cancer cell MCF-7 was obtained from National Center for Cell Science (NCCS), Pune, India. The cytotoxicity of ethanol extract evaluated by different concentrations from 100 – 1000 µg/ml. The viable cells are determined by MTT assay. The mode of cell death was analyzed by different techniques viz., AO/EB staining technique, Comet assay, Hoechst assay and Jc1 staining technique. The ethanol extract of *N. zeylanica* induces apoptosis in MCF-7 cell line and express potent cytotoxicity at the dose of 150 µg/ml. The ethanol extract of *N. zeylanica* has the notable signs of apoptosis such as cell shrinkage, nuclei DNA fragmentation. From the results it is concluded that the ethanolic extract of *N. zeylanica* having prominent anti- cancer activity against MCF7 cell line and it could be a good therapeutic agent for further studies.

Keywords : Breast Cancer, *Cell Line*, DNA fragmentation, Kolli hills, *N. zeylanica*

ENHANCEMENT OF SKIN MUCUS IMMUNITY, CAROTENOID CONTENT, SEXUAL PARAMETERS, AND GROWTH RESPONSE IN GUPPY FISH (POECILIA RETICULATA) FED WITH GREEN ALGAE (CHAETOMORPHA AEREA) DIETS

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Abstract

The research aimed to analyze the influences of adding marine green algae *Chaetomorpha aerea* to the diet of guppy fish (*Poecilia reticulata*) on growth, immunological responses in skin mucus, total carotenoid content, and sexual characteristics. A total of 450 fish, with a mean body weight of 0.19 ± 0.1 g and 30 fish per tank (triplicate), were randomly fed into 15 experimental tanks, each containing 50 L. Five different diets with 0, 1, 2, 4, 8, and 10% of *C. aerea* g/kg diets were fed to *P. reticulata* for 30 days. After 30 days, growth, immunological responses in skin mucus, total carotenoid content, and sexual characteristics were investigated. The results observed that the feed conversion rate and fry output were significantly ($p > 0.05$) decreased in experimental groups compared to the control group. The results revealed that the dietary inclusion of *C. aerea* algal significantly increased ($p < 0.05$) in mucosal immunological parameters containing lysozyme activity, myeloperoxidase activity, total immunoglobulins, and alternative complement activity, which were the highest in the group with 4% of *C. aerea* g/kg. Additionally, lateral skin and the caudal fin of fish had higher total carotenoid levels from the dietary *C. aerea* algae diet than the control group, which were the highest in the groups with 4%. Among them, 4 and 8% of *C. aerea* g/kg diet resulted in better growth performance and feed conversion ratio. Thus, the study suggested that 4% of *C. aerea* g/kg diet has enrichment of immunity, total carotenoid concentrations, and skin mucus immunity of *P. reticulata*.

Keywords: ornamental fish; growth performance; green algae; reproduction; skin immunity

PURIFICATION OF BIO ACTIVE COMPOUND SAPONIN FROM ROOT OF ARGEMONE MEXICANA L. AND EVALUATION OF IT'S ANTIOXIDANT, ANTIINFLAMMATORY AND ANTIMICROBIAL PROPERTIES

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Abstract

The people of irulartribles in Dharmapuri have used plants as traditional medicine for long time. Our study aims to understand plants used in traditional medicine by the irular tribes. There is a need to validate their medicinal value and identify powerful anti-oxidant, anti-inflammatory and antimicrobial herbs. Argemone Mexicana L. a member of Papaveraceae family is distributed widely in India and is used medicinally by irular tribes. Its latex is a vivid yellow colour and rich in saponin. This saponins has great promise for medicinal use. In the present study, saponin was isolated and purified for A. Mexicana roots and were evaluated for its antioxidant, antrimicrobial and antiinflamatory properties. A variety of methods are in usage to study antioxidant potential of medicinal plants. There is variation in their mode of actions, so more than one assay was tested for evaluation of antioxidant activity (DPPH, ABTS, H₂O₂) it has good antioxidant property. Anti-inflammatory quality was assessed by reducing power assay. According to the current study's findings, *A. mexicana* L. saponin has outstanding antioxidant capacity and could be applied for the treatment of inflammation to reduce the incidence of mortality of different type of infection and inflammations. Infectious diseases caused by pathogenic and opportunistic microorganisms remain a major threat to public health, in-spite of tremendous progress in antimicrobial drug discovery. Indiscriminate use of antibiotics havelead to the emergence of multidrug resistant pathogens that are progressing towards final line of antibiotic defence. Two gram positive and two gram negative and two fungal pathogens were evaluated and the results were promising.

Keywords: Saponin, Antioxidant, Antimicrobial, Antiinflammatory

**CHANGES IN ANTIOXIDANT METABOLISM OF SOLANUM TUBEROSUM
BY TRIAZOLE UNDER DROUGHT STRESS**

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Abstract:

In the present study, a pot culture experiment was conducted to estimate the ameliorating effect of drought stress and drought with triazole compounds response on antioxidant contents and enzyme activities of *Solanum tuberosum* (potato). From 30 days after sowing (DAS), the plants were subjected to 4 days interval drought stress and drought with triazole compounds and daily irrigation kept as a control. The plant samples were collected on 40, 50, and 60 DAS. The plants were separated into tuber, stem and leaf for estimating the antioxidant contents and activities of antioxidant enzymes. Individual and combined drought stress and triazole treatments increased ascorbic acid contents, superoxide dismutase, ascorbate peroxidase, catalase and polyphenol oxidase activities when compared to control. Triazole treatment mitigated the adverse effects drought stress by increasing the antioxidant potentials and there by paved the way for overcoming drought stress in potato plants.

Keywords: *Antioxidant, drought stress, Solanum sp, catalase*

**INVESTIGATION OF ANTIMICROBIAL ACTIVITY OF ECOFRIENDLY
DYE FROM *TECTONA GRANDIS* L.F. LEAVES**

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ABSTRACT:

Tectona grandis is a perennial deciduous tree belonging to Verbenaceae family. It is commercially planted for its valuable wood. The leaf of this tree is not economically important and the tree sheds leaves annually. The “best from the waste” of environmental friendly and non-toxic biological resources have recently gained much attention due to the social awareness of environmental and health has increased. Plant leaf dyes are cheap, ecofriendly and free from harmful toxin and allergens which are present in synthetic dye. Natural dyes are one such product which has received application not only in industry like textile but also in cosmetics, food and pharmaceuticals. Our previous works have shown that dyes extracted from *Tectona grandis* leaves are promising colorants for cotton and silk fabrics with various natural mordants and can be commercially utilized. There is a steady change from fashion to functional and healthy lifestyles in textile industry. In tropical countries, cotton is the most preferred natural fiber for textile industry and healthy life style. But the drawbacks of cotton fibers are its inherent poor bacterial and UV resistance. The natural dyes have high phytochemicals contents like flavanoids, anthraquinones, phenolic compounds, tannins and alkaloids which gives desirable finishing to the textiles. As an additive perk, if these phytochemicals have antimicrobial property, it will be an additive significance in organic dyeing. The present study was taken to investigate the antimicrobial properties of *T. grandis* dyes for its additional value as safe to skin dye. Four bacterial human pathogen strains viz., *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli* and *Salmonella typhi* and two fungal strains *Candida albicans* and *C. tropicalis* were tested by *in vitro* well diffusion method. The result showed the dye having good inhibition for all the microbes tested and hence has antimicrobial potential.

Keywords: *Tectona grandis*, Antimicrobial, Natural Dyes, Natural Mordants, Phytochemicals

AMELIORATION OF SODIUM CHLORIDE STRESS BY TRIAZOLE IN BIOCHEMICAL CONTENT AND ENZYME ACTIVITIES OF CHICK PEA

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Abstract

Soil salinity is one of the major environmental problem affecting agricultural production in arid and semi-arid regions of the world a pot culture experiment was conducted to estimate the effect on NaCl stressed *Cicer arietinum* (Chick pea) plant belongs to family Fabaceae, is a sub tropical crop, grown worldwide particularly in south Asia for edible and fodder purposes, while little is known about its salinity tolerance. A pot culture experiment was conducted to estimate the stress ameliorating ability of paclobutrazol, a triazole fungicide in *Cicer arietinum* plants. Treatments were given as 80 mM NaCl, 80 mM NaCl + 15 mg l⁻¹ paclobutrazol and 15 mg l⁻¹ paclobutrazol alone on 30, 40 and 50 days after sowing. The samples were collected on 40, 50 and 60 days after sowing. NaCl stress inhibited the protein, starch and total sugar contents and antioxidant enzymes like ascorbate peroxidase, superoxide dismutase, catalase and polyphenol oxidase activities. Plants treated with NaCl with paclobutrazol increased these parameters to a larger extent when compared to NaCl stressed plants. The results showed that the paclobutrazol significantly ameliorated the adverse effects of NaCl stress in *Cicer arietinum* plants.

Keywords: *Nacl*, paclobutrazol, *Cicer arietinum*, Stress

**CYTOTOXIC EFFECT OF PISUM SATIVUM AGAINST HUMAN BREAST
CANCER CELL LINE (MCF-7)**

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Abstract

Breast cancer is the second most common cause of death from cancer in women. Chemotherapy, Radiotherapy or the combination of the both is currently used for the treatment of many types of cancer. However, these treatments have several drawbacks which include unwanted side effects. Nowadays, phytochemicals or their derived compounds are being increasingly recognized as potentially potent alternative drug for the treatment of cancer. This study focused to antibreast cancer activity of phytochemicals present in Ethylacetate extract of *Pisum sativum* seeds against MCF 7 breast cancer cell line. The human breast cancer cell MCF-7 was collected from National Center for Cell Science (NCCS), Pune, India. The cytotoxicity of ethylacetate extract was evaluated by dose dependent manner by MTT assay. Mode of cell death was studied by AO/EB staining technique, Jc1 staining method and Comet assay. The ethylacetate extract of *Pisum sativum* induces apoptosis in MCF-7 cell line and express prominent cytotoxicity at the dose of 3.0mg/ml. The ethyl acetate of *Pisum sativum* has the significant signs of apoptosis. From the results it is concluded that the ethyl acetate extract of *Pisum sativum* is a promising drug for the treatment of breast cancer.

Keywords: breast cancer, cytotoxicity, Ethylacetate extract, *Pisum sativum*

ISOLATION, CHARACTERIZATION AND ANTIBACTERIAL ACTIVITY OF ACTINOMYCETES FROM THE SOIL OF MANGROVE ECOSYSTEM

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Abstract:

The actinomycetes used in the study were isolated from the soil collected from the mangrove ecosystem of T.S. Pettai. The present study was carried out to isolate, characterize and to check the antibacterial activity of actinomycetes from mangrove ecosystem. In the first part of the study the collected soil samples were isolate by serial dilution method. Then isolate actinomycetes were grown on SCA,ISP2 and AIA medium. The second part of the study was gram staining and biochemical characterization of the isolated actinomycetes. The isolate were gram-positive actinobacteria. one isolate(AC-1) was selected for preliminary antibacterial activity. AC-1 showed good antibacterial activity against staphylococcus aureus and less activity against *Escherichia coli*. The result of the present study reveals the mangrove ecosystem soil samples have potential nutrient and actinomycetes with rich bioactive compounds.

Keywords: SCA, ISP2, AIA medium, AC-1

SYNTHESIS, CHARACTERIZATION, AND MOLECULAR DOCKING STUDY OF SCHIFF-BASED COMPOUND (NMS): TOWARDS IDENTIFYING LEAD CHEMICALS FOR ESTROGEN RECEPTOR INTERACTION

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Abstract

The Schiff based compound (naphthalen-6-yl)methylene)semicarbazide (NMS) synthesized and characterised using FT-IR, ¹H NMR and ¹³C NMR spectrum methods. A molecular docking experiment was utilised to determine the ADME properties of symmetrical azines and forecast their interactions with the oestrogen receptor in order to identify the lead chemical (2IOK). In the Ultra-Violet absorption spectrum, the substance exhibits absorption at 396 nm. Density Functional Theory was used to compute the electronic states and molecular characteristics of the molecule.

Keywords: Schiff base, Auto Dock, DFT.

NUTRITIONAL AND PHYCOCHEMICAL EVALUATION OF *PADINA GYMNOSPORA* (KUTZING) SONDER. TUTICORIN COAST, GULF OF MANNAR, TAMIL NADU

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Abstract:

The biochemical composition, Phytochemical Screening and antibacterial activity of *Padina gymnospora* (Brown Seaweed) collected from Harbour beach, Tuticorin coast, Tamil Nadu, India. Three solvent extract (Acetone, ethanol and water) of *Padina gymnospora* were contains active secondary metabolites like saponnins, flavonoids, terpenoids, cardioglycosides, phlobatannins, phenols, amino acids and proteins. Among these three solvents ethanol extracts of *P. gymnospora* exhibited maximum activity against four bacterial pathogens such as *Bacillus subtilis*, *Escherichia coli*, *Staphylococcus aureus* and *Klebsiella pneumoniae*. The result of nutritional composition of *P. gymnospora* has been recorded as maximum value of protein (15.2%), carbohydrate (24.3%), lipid (8.2%), fiber (19.1%) and ash content (27.4%). The study concludes *Padina gymnospora* has significant nutritional value and it may be used as nutritional for food in human diet with necessary further research.

Keywords: *Padina gymnospora* (Brown seaweed), biochemical, phycochemical screening and antibacterial activity

A GREENER SYNTHESIS OF BENZIMIDAZOLE DERIVATIVES USING CU-SCHIFF-BASE COMPLEX-1,10-PHENANTHROLINE BASED MIXED LIGANDSON MCM-41 AS A HETEROGENEOUS CATALYST UNDER ULTRASONIC IRRADIATION

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Abstract

A new Cu-Schiff-Base Complex-phen on MCM-41 was prepared. The prepared compound has been extensively characterized by FT-IR, Small angle-XRD, SEM-EDX, N₂ adsorption and desorption, ICP-OES, TEM and H¹-NMR. Synthesis of Benzimidazole derivatives was carried out using Cu-Complex-phen-MCM-41 as an efficient catalyst in the oxidative condensation reaction of an aromatic aldehyde with o-phenylenediamine under ultrasonic irradiation with ethanol solvent. Ultrasonic energy was employed to obtain the desired products in excellent yields (~95 %). Notably, Catalyst was recovered by simple filtration method and reused upto four cycles without any significant loss in the yield. Whereas the yields of the products were much better than pure MCM-41 and Cu-Complex.

Keywords MCM-41, Cu-Schiff base complex-phen, Benzimidazole, Ultrasonic irradiation,

FACILE GREEN SYNTHESIS OF NILGIRIANTHUS CILIATUS MEDIATED ZINC OXIDE NANOPARTICLES FOR MOSQUITOES PATHOGENIC MICROBE INACTIVATION

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Abstract

The study underscores the importance of effectively handling mosquito vectors in order to manage arbovirus diseases on a global scale. Evaluating disease transmission risk and strategically planning control measures heavily relies on understanding the primary vector, *Aedes aegypti*. The primary goal of this research is to harness nanoparticles for mosquito control. Additionally, the study aimed to create affordable, environmentally friendly metal nanoparticles (NPs) through the use of *Nilgiriantthusciliatus* plant extract as both reducing and capping agent, eliminating the need for hazardous substances. This investigation involved the synthesis of zinc oxide (ZnO) nanoparticles using an aqueous leaf extract of *N. ciliatus*. The nanoparticles were subsequently characterized using various techniques including UV-visible spectroscopy, FT-IR, XRD, SEM, and DLS analyses. Furthermore, the nanoparticles were used as insecticidal agent against the dengue vector, *Ae. aegypti* and the store grain pest, *Sitophilusoryzea*. The mechanistic action of the nanoparticles on the dengue vector was revealed through histopathological analysis that showed severe tissue damage in the epithelial and goblet cells in the larval midgut region. In addition, the antimicrobial study showed efficiency of nanoparticles in controlling bacteria and fungi. ZnO nanoparticles also inhibited the biofilm formation of *Staphylococcus aureus* and *Escherichia coli*. The antioxidant activity demonstrated the potential ability of free radical scavenging by ZnO nanoparticles. Finally, ZnO nanoparticles proved to exhibit photocatalytic degradation of Crystal Violet (CV). The results of the present study suggest that *N. Ciliates* mediated ZnO nanoparticles has a wide range of biomedical applications.

Keywords: Bioreducers, stable nanoparticles, nano-insecticides, bactericide, fungicide.

ANTICANCER ACTIVITY OF BARK ETHANOL EXTRACT OF *VENTILAGO MADERASPATANA* ON HUMAN LUNG CANCER CELL LINE (A549)

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Abstract

Cancer is one of the leading causes of mortality in the world next to the cardiovascular disorders. Cancer is defined as an uncontrolled growth of cells and is considered as one of the most life threatening diseases. The World Cancer Society implies this disease can cause by plenty of factors. Commercially available synthetic drugs in the market are failed to fulfil the permanent safe and cure of cancer. Thus, the scientists made an effort to find out a novel drug towards the treatment of breast cancer without or less side effect. The present study was investigated to find a naturally existed novel compounds from the medicinal plant *Ventilagomaderaspatana* and their anti-lung cancer activity (A549). Preliminary phytochemical screening of ethanol bark extract of *V. maderaspatana* was done by using standard methods. Anti lung cancer activity of ethanol bark extract of *V. maderaspatana* was evaluated against Human lung Cancer Cell line (A549) by MTT assay. The cytotoxic activity of *V. maderaspatana* bark extract was showed dose dependent activity. High concentration (250 µg/ml) of bark ethanol extract of *V. maderaspatana* showed maximum (67.9 ± 1.73) inhibition against A 549 cell line. From this study it is concluded that the bark ethanol extract of *V. maderaspatana* showed good cytotoxic activity against human lung cancer cell line (A549). Moreover, this plant would used for the treatment of cancer further detailed study.

Keywords: Cancer, Lung cancer, Natural drug, Phytochemistry, *V. maderaspatana* and anti cancer activity.

IN SILICO ANTIDIABETIC EVALUATION OF VENTILONE B FROM VENTILAGO MADERASPATANA AGAINST INSULIN RECEPTOR TYROSINE KINASE

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ABSTRACT

Insulin receptor is belongs to the class of tyrosine kinase receptor. Resistant to the insulin receptor led to inactivation of insulin and to diabetic condition. Thus, the present study was made an attempt to study the interaction between the ventilone B from *Ventilagomaderaspatana* and active site amino acid residues of insulin receptor tyrosine kinase. In this study, ligand ventilone B was isolated from the root of *Ventilagomaderaspatana* and docked with diabetic target insulin receptor tyrosine kinase (PDB ID: 1IR3). The activated amino acids residues of target protein were identified from Q- site finder. AutoDock version 4.0 was used for docking study. From this study, docking results revealed that the compound ventilone B strongly bound with insulin receptor protein tyrosine kinase with minimum binding energy. Moreover, active site Leu (1062) possessed high minimum binding energy (-8.50 Kcal/Mol) than the other active sites. Thus, the ligand ventilone B had potential for the treatment of diabetes mellitus by activating target protein insulin receptor tyrosine kinase.

Keywords: Diabetes Mellitus, *In Silico*; *Ventilagomaderaspatana*; Ventilone B; Insulin receptor Tyrosine kinase; molecular docking.

A LOW COST, WELL-DESIGNED CATALYTIC SYSTEM DERIVED FROM HOUSEHOLD WASTE “EGG SHELL”: SYNTHESIS OF QUINOXALINE DERIVATIVE UNDER GREEN PATH

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Abstract

An eco-friendly and efficient green protocol is developed for the synthesis of quinoxaline derivatives by using inexpensive biodegradable eggshell powder (ESP) as a heterogeneous catalyst under ultrasonic irradiation. This environmentally benign method provides several advantages such as mild reaction conditions, short reaction time, excellent yield upto 83 %, operational simplicity, catalyst stability, heterogeneous nature and easy retrievable of the catalyst by filtration. The catalyst can be reused upto four cycles without significant deterioration in catalytic activity. The catalyst was characterized by different analytical techniques such as FT-IR, TGA, BET, SEM and EDX.

Keywords: Heterogeneous catalyst, eggshell powder, quinoxaline, green synthesis, ultrasonic irradiation.

SPATIAL DISTRIBUTION OF DENGUE VECTOR, *Aedes aegypti*

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Abstract

The investigation of the importance of mosquito vectors for the control of arboviruses diseases worldwide, and detailed evidence on the distribution of their main vector, *Aedes aegypti* is essential for assessing disease transmission risk and for better planning of control interventions. The main objective of this study is to assess the changes in seasonal abundance and distribution of mosquito vectors in relation to climate factor such as rainfall, temperature and humidity. Consequently, this study was directed to determine the breeding habitats and presence of *Ae. aegypti*, the only *Aedes* species identified in the sequence of the survey carried out from January 2016 to December 2016 in four taluks namely (Salem, Omalur, Mettur and Idappadi). *Ae.aegypti*immatures were found together in 76 larval habitats. The presence of such a large immature population may indicate an imminent outbreak of dengue fever (DF) in the near future unless proper implementation of control and elimination measures is taken.

Keywords: Distribution modeling, abundance, influencing factors, environmental variables.

**IN VITRO ANTICANCER ACTIVITY OF VENTILAGO MADERASPATANA
AGAINST HUMAN BREAST CANCER CELL LINE (MCF-7)**

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Abstract

Cancer is one of the severe disease burdens in all parts of the world. Synthetic drugs in market failed to fulfil the permanent safe cure of cancer. Therefore an effort was taken to find a novel drug towards the treatment of breast cancer without side effects. Thus, the present study was focused to evaluate the naturally existed novel compounds from *Ventilagomaderaspatana* and their anti-Breast cancer activity against human breast cancer cell line (MCF-7). Preliminary phytochemical screening of ethanol bark extract of *V. maderaspatana* was evaluated to find out the Phytochemicals present in the study plant. Cytotoxic study of ethanol bark extract of *V. maderaspatana* was study against Human breast Cancer Cell line (MCF-7) by MTT assay. From this study, the cytotoxic activity of *V. maderaspatana* bark extract was showed dose dependent activity. Ethanol bark extract of *V. maderaspatana* showed cancer cell growth inhibition at dose dependent manner. The maximum percentage of growth inhibition value obtained for bark ethanol extract of *V. maderaspatana* was 73.3 ± 2.02 % at higher concentration (250 μ g/ml). The minimum percentage (19.4 ± 1.31 %) of cell inhibition was recorded at 50 μ g/ml concentration. From this study it is concluded that the bark ethanol extract of *V. maderaspatana* showed good cytotoxic activity against human breast cancer cell line (MCF-7). Moreover, this plant would used for the treatment of cancer further detailed study.

Keywords: Breast Cancer, Phytochemical, MCF-7, Anticancer activity and *V. maderaspatana*

**ZINC OXIDE NANOPARTICLES GREEN SYNTHESIZED USING
NILGIRIANTHUS CILIATE: BIOPHYSICAL
CHARACTERIZATION AND POTENTIAL AGAINST DENGUE VECTOR
AND PATHOGEN**

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Abstract

Mosquitoes (Diptera: Culicidae) are a key threat for millions of people worldwide, since they act as vectors for devastating parasites and pathogens. Similarly, Pathogenic bacteria both Gram-positive and Gram-negative bacterial strains are thought to present a major public health problem. *Aedes aegypti* a dipteran insect spreads Dengue, a viral infection that occurs in major parts of the world and *Staphylococcus aureus* a pathogenic bacteria one among the major cause of nosocomial infections and skin infections. Controlling these pests and pathogens rely on synthetic chemical that pose dangerous to everyone surrounding including the earth. Biogenic nanoparticles can replace the synthetic pesticides overcoming the above said issues. In this study, *Nilgirianthus ciliate* a medicinally important plant with high potassium content and a special compound called lupeol is used to synthesize ZnO nanoparticles. Further they were characterized by UV–Vis absorption spectroscopy, X-ray Diffraction (XRD), (FT-IR), and (SEM), DLS and Zeta Potential analysis. In bioassay, the biosynthesized ZnO NPs showed higher toxicity against *A. aegypti* with 24hrs/48hrs LC50 values of 18.33, 49.50, 71.05, 106.89 ppm/mL and 5.02, 17.13, 48.72, 163.08 ppm/mL respectively. The present study was carried out to establish the larvicidal properties and histopathological effect on 4th instar larvae of the *Aedes aegypti*. Histopathological changes in ZnO NPs treated larvae were observed only in the midgut and caeca. In ZnO NPs treated larvae the epithelial layer is disorganized, most of the cells have disappeared and the peritrophic membrane is broken. Significant antibacterial activity of ZnO NPs on *Staphylococcus aureus* was noted in the study. ZnO NPs could be a best all-rounder and alternative to few synthetic chemicals used as drugs and pathogens in future.

Keywords: *Nilgirianthus ciliates*, Zinc Oxide nanoparticles, *Aedes aegypti*, *Staphylococcus aureus*.

INFLUENCES OF ISOLATED GUT PROBIOTIC *BACILLUS LICHENIFORMIS* IN THE WATER QUALITY PARAMETERS OF THE FRESH WATER FISH *CYPRINUS CARPIO*

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Abstract:

Aquaculture is an important food producing sector for ever increasing global population. Probiotics can be defined as live microbes, utilized either as a nourishment partner or ingredient in water. Present study was conducted for seventy five days in cement fish tanks. The probiotic bacterial strain was isolated from Indian major carp *Labeorohita* and isolated, identified based on biochemical test and 16s rRNA profile (GATTGGGGTGAAGTCGTAACAAGGTAGCCGTATCGGAAGGTGCG) (Seq .id.NR.118996.1) mass cultured and mixed with supplementary fish feed. The probiotic mixed feed was given to the fresh water fish *C. carpio* (3% body weight of fish) and the water quality was analyzed on 15th, 30th, 45th, 60th and 75th day of the experimental period. Three bacterial strains were isolated from the gut of *Labeorohita*, identified probiotic bacterial strain *Bacillus licheniformis* based on biochemical test and 16s rRNA profile. Increased dissolved oxygen, electrical conductivity and decreased ammonia level was recorded. Water pH was ranged from 7.43 to 7.68. Present study result reveals that the isolated gut probiotic bacteria *Bacillus licheniformis* improved the water quality suitable for the fish culture.

Keywords: Isolation, *Bacillus licheniformis*, pH, dissolved oxygen, ammonia, Electrical conductivity

LARVICIDAL AND PUPICIDAL ACTIVITY OF ETHYL ACETATE LEAF EXTRACT OF *SPATHODEA CAMPANULATA* TABEAUV. (BIGNONIACEAE) AGAINST DENGUE AND CHIKUNGUNIA VIRUS VECTOR *AEDESAEGYPTI* (DIPTERA: CULICIDAE).

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Abstract

Mosquitoes are medically important insects closely related to the life of human beings. The harm of mosquitoes to human beings is not only because of the harassment and blood feeding habits, but also due to their transmission of various diseases. Most females of *Ae. aegypti* may spend their lifetime in or around the houses where they emerge as adults. *Ae. aegypti* is known to transmit dengue virus, yellow fever virus, chikungunya virus, and Zika virus. It has been suggested as a potential vector of Venezuelan Equine Encephalitis virus. Botanical insecticides may serve as suitable alternatives to synthetic ones in future, as they are relatively effective and safe to environment, human, and animal life. There is no information available on the mosquitocidal effects of the *S. campanulata* leaf extract prepared using ethyl acetate. Qualitative phytochemical compounds such as ascarbo hydrates, tannins, flavonoids, alkaloids, phenols, coumarins, phytosteroids are present in the ethyl acetate leaf extract of *S. campanulata*. Gas Chromatography- Mass spectrometry (GC-MS) analysis of ethylacetate leaf extract of *S. campanulata* is 5-(Hydroxymethyl)-2-(1-methyl-2-imidazolyl)-1 H-benzimidazole, 13- Docosenamide, (Z)-, 5-Isopropyl-4-(trifluoromethyl)-1H-pyrimidin-2-one, 1-Hexadecanol, 1- Octadecene (CAS). LC₅₀/24,48 hours and LC₉₀/24,48 hours values of ethyl acetate leaf extracts of *S. campanulata* to I instar larvae were 0.017, 0.030 and 0.012, 0.010 % : LC₅₀/24,48 hours, LC₉₀/24,48 hours value for pupae were (0.034, 0.050 and 0.025, 0.020%); Considerably low LC₅₀, LC₉₀/24,48 hours values of ethyl acetate leaf extract of *S. campanulata* against different instar (I, II, III, IV and pupae) stages of *Ae. aegypti* obtained during the present study proved the larvicidal, pupicidal property of the plant. The highest larval and pupal mortality (LC₅₀, LC₉₀ /24,48 hours) observed in the ethyl acetate leaf extract of *S. campanulata*. Young larvae were found to be relatively more susceptible than the older ones.

Keywords: Qualitative phytochemical compounds, Gas Chromatography-Mass spectrometry (GC-MS), Larvicidal, Pupicidal activity.

EFFECTS OF OUR COMMERCIAL ENVIRONMENT CLIMATE CHANGES

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Abstract

In the period since in 1800 the climate change is made by human being through a green houses gasses , industrial revolution from the burning fossils, deforestation , coal mine and etc, By the observation the changes in climate include in the changes in rainfall, more flood , drought, changes in heat waves. The magnitude of climate change beyond the next few decades will happen to depend primarily on the amount of more greenhouse gases emitted globally and on the remaining uncertainty in the sensitivity of the this earth's climate to those emissions. The action taken regarding to the climate change is slow so we want to triggers a new social movement through a society about a prevention of climate changes to save our future environment. Climate change is caused by a temperature and weather pattern by a natural way and humans .Ocean eruption ,volcanic eruption , green house gasses , industrial process are the main causes of climate change. As the result the impact is very high change rainfall, more flood, change in heat waves, drought. The impact causes not only an environment but also a human and animals. The impact result on the human as a diseases like lung and skin diseases and etc, the prevention to climate change is renewable energies, recycle, moving away from the fossil fuel.

Key words: Deforestation, Rainfall, Greenhouses, Ocean, and etc.,

A REVIEW ON THE THERAPEUTIC POTENTIAL OF MEDICINAL PLANTS USED FOR THE TREATMENT OF BLOOD CANCER

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Abstract

Cancer is a large group of diseases that can start in almost any tissues or organ of the body when abnormal cells grow uncontrollably beyond their usual boundaries to invade and joining parts of the body and spread to other organ. The later process is called metastasizing and is a major cause of death from cancer. Normal cells divides only when they receives as set of appropriate signals where as cancer cells divide themselves despite absence of those signals, and they are resistant to the signal telling them to self destruct, known as apoptosis programmed cell death. Cancer cells can evade our immune system which normally eliminates abnormal or invading cells and tend to enhance the uncontrolled cell multiplication. Blood cancer is a type of cancer that affects blood cells such as Leukaemia, lymphoma and Myeloma or some of the most common type of blood cancer. These are also called MPNs and MDs. It is caused by changes (mutation) in the DNA within blood cells. This causes the blood cells to start behaving abnormally. Present treatment of blood cancer was not supported to permanent cure and also caused unwanted side effects. Herbal remedies are the best alternative way to discover the natural drugs for many diseases including blood cancer. Thus the present study was reviewed medicinal plants used for the treatment of blood cancer. In this review there were 20 medicinal plants belonging to the 17 families used for the treatment of blood cancer including leukaemia, lymphoma and myeloma. Moreover, maximum number (*Xanthium strumarium*, *Vernania amygdalina*, *Achillea fragrantissima* and *Arctium lappa*) of plants was under the family of Asteraceae. Various parts like leaves, seed, flower and bark of the plants were used to treat the blood cancer. The anticancer mechanism of plants was due to the presence of phytochemicals such as flavonoids, alkaloids, Phenolic compounds, tannins, saponins etc. These plants can cause the apoptosis to the cancer cell by arresting cell cycle, DNA damage and any other possible way. Mechanism of action of these plants was under the investigation. Thus the present review summarizes the literature published so far regarding herbal medicine used as remedies for the treatment of blood cancer.

Keyword:Cancer, blood cancer, leukaemia, Natural medicine, herbal medicine and phytochemistry.

LEAF EXTRACT OF CRYPTOSTEGIA GRANDIFLORA USING AQUEOUS EXTRACT AGAINST A549 LUNG CANCER

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Abstract

Traditional medication has been harnessing an intervention of plants for medicinal use since decades. Most of the medicinal plants mentioned on the ancient literature lack of scientific evidence. The reports as the use of plant source in the traditional medication for the cancer curative properties. Even if the general properties of the such plants have been studied; specific investigations to include its target chemotherapeutic properties of lacking. The *cryptostegia grandiflora* plant commonly called as the rubber vine, its woody-perennial vine that is native to south-west madagascar. The plant belong to the apocynaceae and commonly known as garudapalai Tamil. It has been *cryptostegia grandiflora* plant extract is used to against the A549 lung cancer disease. The study aimed at cytotoxic properties of aqueous extract of *cryptostegia grandiflora*. The compound could have possibly find in therapeutic drugs against lung cancer disease. They are grown and maintained in vitro, their high proliferation rate and cultured by media. They are sensitive range of cancer-related treatments, such as, chemotherapy, radiotherapy, immunotherapy, and targeted therapy. This current studies shows that aqueous extraction of the *cryptostegia grandiflora* could be more effective on lung cancer cells (A549) compared to maceration.

Keywords: Cancer, Medicinal plant, Treatment.

GREEN SYNTHESIS OF COPPER NANOPARTICLES FROM ONION AND GARLIC PEEL EXTRACTS: A SUSTAINABLE APPROACH

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Abstract

The demand for environmentally friendly methods of nanoparticle synthesis has spurred research into utilizing natural sources as reducing and stabilizing agents. This study investigates the green synthesis of copper nanoparticles (CuNPs) using extracts derived from onion and garlic peel, abundant agricultural waste materials. The onion and garlic peel extracts, rich in bioactive compounds such as flavonoids and phenolic compounds, serve as both reducing and capping agents in the synthesis process. Various parameters including extract concentration, reaction time, and pH were optimized to control the size and morphology of the synthesized CuNPs. Characterization techniques such as UV-Vis spectroscopy, Fourier-transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), and transmission electron microscopy (TEM) were employed to analyze the physicochemical properties of the synthesized nanoparticles. The results revealed the successful synthesis of stable CuNPs with well-defined crystalline structures and narrow size distributions. The potential applications of these green-synthesized CuNPs in fields such as catalysis, biomedicine, and agriculture underscore the significance of this sustainable approach in nanomaterial synthesis.

Keywords : Nanoparticles, Characterization, Green synthesis, Agriculture, Sustainable

INFLUENCE OF AGRICULTURE FERTILIZER FOR THE ENHANCED GROWTH AND ASTAXANTHIN PRODUCTION FROM *HAEMATOCOCCUS LACUSTRIS* RRGK ISOLATED FROM HIMACHAL PRADESH INDIA

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Abstract

In the present attempt, *Haematococcus lacustris* HPI-001 isolated from Himachal Pradesh in India and another strain *H. lacustris* SAG-19a obtained from Gottingen Culture Collection in Germany were studied for assessment on growth and astaxanthin production. The latter was used as the control strain. Both the strains were grown in mixotrophic and heterotrophic modes in Bold Basal medium in which three different carbon sources namely sodium acetate (CH₃COONa), Glucose (C₆H₁₂O₆), and sucrose (C₁₂H₂₂O₁₁) were added and its effect on the growth, photosynthetic pigments such as Chlorophylls, total carotenoids, and astaxanthin content were investigated. In mixotrophic condition, the *H. lacustris* HPI-001 showed maximum cell number of 40×10⁴cells/mL and 17.80 mg/L astaxanthin in 0.5 mM CH₃COONa, 30×10⁴cells/mL and 12.86 mg/L astaxanthin in 0.5 mM C₆H₁₂O₆, and 35×10⁴cells/mL and 15.81 mg/L astaxanthin in 0.100 mM C₁₂H₂₂O₁₁. While in heterotrophic condition, *H. lacustris* HPI-001 showed maximum cell number of 45×10⁴cells/mL and 25.85 mg/L astaxanthin in 0.5 mM CH₃COONa, 35×10⁴cells/mL and 15.74 mg/L astaxanthin in 0.5 mM C₆H₁₂O₆, and 41×10⁴cells/mL and 21.81 astaxanthin in 0.100 mM C₁₂H₂₂O₁₁. These results indicate that the sodium acetate could be valuable sources of carbon for enhancing the growth as well as the astaxanthin content of two strains of *H. lacustris*.

Keywords: *Haematococcus lacustris*, Astaxanthin, Sodium acetate, D-glucose, Sucrose

**ROLE OF THE PGPR (PLANT GROWTH PROMOTING RHIZOBACTERIA)
IN HEAVY METAL UPTAKE BY PLANTS**

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Abstract

Heavy metals in soil are increased as a major pollution in environment nowadays. Despite natural existence, various anthropomorphic sources have contributed to an unusually high concentration of heavy metals in the environment. Bioremediation is a biological process for cleanup of pollutants from the environment. A contaminated soil with heavy metals is a widespread environmental issue resulting from global industrialization. Conventional techniques for reclamation of contaminated soils are expensive and environmental non-friendly. PGPR, are accepted to play an important role to promote the plant growth and remediate soils from metal pollutants by various mechanisms. The growth performance photosynthetic pigments, heavy metal uptake were presented in green gram cultivated in the soil of under the green house conditions. Results showed that the application of PGPR as to green gram that helped the plant to ignore the toxic effects of heavy metals and enhanced the plant growth characters. Application of PGPR processing metal detoxifying traits along with plant beneficial properties is a cost effective and environmental friendly metal bioremediation approach.

Keywords: Environment, Remediation, Heavy metals, Plants.

IN VITRO NEUROPROTECTIVE POTENTIAL EFFECT OF *CONVOLVULUS PLURICAULIS* EXTRACT AGAINST OXIDATIVE STRESS INDUCED CYTOTOXICITY BY H₂O₂ AND DJ-1 PROTEIN EXPRESSION ANALYSIS IN SH-SY5Y CELLS

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Abstract:

This study aims to investigate the protective effects and mechanisms of *Convolvulus pluricaulis* whole plant extracted compound Shankupushpine against oxidative stress by hydrogen peroxide (H₂O₂)-induced cell damage in SH-SY5Y cells. The phytochemical constituents in *C.pluricaulis* extracts were determined by GC-MS method. Neurodegenerative diseases-such as Alzheimer's disease, Parkinson's disease-are potentially associated with oxidative stress, which causes excessive production of reactive oxygen species (ROS) that damage DNA and proteins in neuronal cells. The results of this study demonstrate that can scavenge hydroxyl radicals (OH) in a concentration-dependent manner. Moreover, Shankupushpine significantly increased cell viability while reducing ROS production in the control group. Their cytotoxic activity was evaluated against human cell lines SH-SY5Y (nerve), by MTT method and both the DNA strand breaks and its repairs in cells were measured by single-cell gel electrophoresis (SCGE). The cell morphology was visualized using DAPI, FITC, Rhodamine stains in confocal microscope. Certain mutation in protein L166P which leads to recessive Parkinson's disease was sequenced using PCR. These findings suggest that Shankupushpine has the potential to be used as a plant material for functional foods to be applied in the treatment of neurodegenerative diseases, such as Alzheimer's disease, Parkinson's disease by mitigating oxidative stress-induced damage to neuronal cells.

“DIVERSITY OF ARBUSCULAR MYCORRHIZAL FUNGI IN THE RHIZOSPHERE SOIL OF COFFEE FROM YERCAUD AND KOLLI HILLS”

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Abstract :

The aim of this study is to explore the diversity and distribution of AM fungi in the coffee rhizosphere soil at various sites in Yercaud and Kolli hills. Between two hills, the results showed that there were differences in the AM spore population, root colonization, and the number of AM fungal species. The spore population and number of AM fungal species were higher in Yercaud, while the minimum was lowest in Kolli Hill. We identified various AM fungal species belonging to four genera, specifically Glomus, Gigaspora, Acaulospora, and Scutellospora, in the rhizosphere soil of coffee.

Keywords : Yercaud, Kolli Hills, Acaulospora, Scutellospora, Gigaspora.

AN REVIEW ON ANTI-CANCER ACTIVITY OF MEDICINAL PLANTS

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Abstract:

Globally cancer is a disease which severely effects the human population. There is a constant demand for new therapies to treat and prevent this life-threatening disease. Scientific and research interest is drawing its attention towards naturally-derived compounds as they are considered to have less toxic side effects compared to current treatments such as chemotherapy. The Plant Kingdom produces naturally occurring secondary metabolites which are being investigated for their anticancer activities leading to the development of new clinical drugs. With the success of these compounds that have been developed into staple drugs for cancer treatment new technologies are emerging to develop the area further. New technologies include nanoparticles for nano-medicines which aim to enhance anticancer activities of plant-derived drugs by controlling the release of the compound and investigating new methods for administration. This review discusses the demand for naturally-derived compounds from medicinal plants and their properties which make them targets for potential anticancer treatments.

Keywords: anticancer, secondary metabolites, cytotoxicity, epigenetics

APPLICATION OF CHITOSAN ON PLANT RESPONSES WITH SPECIAL REFERENCE TO DROUGHT STRESS

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Abstract:

Chitosan is a natural biopolymer modified from chitins which act as a potential biostimulant and elicitor in agriculture. It is non-toxic, biodegradable and biocompatible which favors potentially broad application. It enhances the physiological response and mitigates the adverse effect of drought stress through stress transduction pathway via secondary messenger(s). Chitosan treatment stimulates photosynthetic rate, stomatal closure through ABA synthesis; enhances antioxidant enzymes via nitric oxide and hydrogen peroxide signaling pathways, and induces production of organic acids, sugars, amino acids and other metabolites which are required for the osmotic adjustment, stress signaling, and energy metabolism under stresses. It is also known to form complexes with heavy metals and used as tool for phytoremediation and bioremediation of soil. Besides, this is used as antitranspirant compound through foliar application in many plants thus reducing water use and ensures protection from other negative effects. Based on such beneficial properties, chitosan is utilized in sustainable agricultural practices owing to changing climates. Our review gathers the recent information on chitosan centered upon the drought stress responses which could be useful in future crop improvement.

Keywords :biostimulant, Biopolymer, Chitosan, Crop, Drought stress

**APPLICATION OF NANO - BIOTECHNOLOGY IN DROUGHT STRESS
MANAGEMENT - A REVIEW**

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Abstract:

Climate change is leading to more extreme weather, which affects agriculture in various ways. In semi-arid regions of the world and even in part of India, drought stress is becoming more and more frequent. Prolonged drought periods lead to severe damages on cultivated plants, which again impacts water and food resources. This review overviews how drought stress impacts plants and but also how different management practices can be applied to reduce the negative effects. A special attention is given to nano-farming where application of nanomaterials may ameliorate drought stress. Drought stress is a complexed problem that affects all living organisms, and where a quick fix is not possible but where mankind needs to collaborate and work for a better future for all.

Keywords: Climate change, Drought, Nanotechnology, management, water

**A REVIEW - SEAWEED EXTRACT BIOSTIMULANT MITIGATES
DROUGHT STRESS TOLERANCE IN CROPS**

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Abstract

Drought is one of the most important abiotic stresses responsible for reduced crop yields. Drought stress induces morphological and physiological changes in plants and severely impacts plant metabolism due to cellular oxidative stress in crops. Seaweed extract is widely used in sustainable agricultural management and can promote plant growth and development even under water deficit conditions. Seaweed extract-based biostimulants can mitigate negative plant responses caused by drought stress. However, the effects of foliar application of such biostimulants on crops exposed to drought stress, particularly on plant metabolism, yields. In this review overviews how drought stress impacts crops. Furthermore, seaweed extracts how to can promote growth, physiological changes, and improve the water use efficiency, thus improving drought resistance in various crops.

Keywords: *Biostimulants, Crops, Drought, Seaweed extract, Water use efficiency*

BIO FERTILIZERS: FOUNDATION FOR THE NEXT REVOLUTION IN AGRICULTURE

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Abstract :

Feeding the world's population will require nutrient use efficient crops and efficient soil biota for food grain production. Agricultural production has been doubled by green revolution, further, increase is limited due to soil degradation. A variety of soil factors are known to increase nutrient availability and plant productivity. The most influential factor is organisms, comprising the soil microbial community of the rhizosphere, which is surrounding the roots of plants in soil where complex interactions occur between the roots, soil, and microorganisms. Improving the soil through enhanced soil biological activity has been proposed as a method of increasing the capacity of the soil to produce crops. Soil biological maintain biological processes that contribute positively to the physical and chemical state of the soil. As the science of soil biology advances, insights about the role of soil biology on soil and plant health including nutrient status and ways to manipulate soil biology for better yields, environmental quality and economic viability appears possible. The cycling of nutrients is a critical function that is essential to life on earth. Adding beneficial microorganisms to the soil can maximize plant nutrient uptake, increase plant growth, confer resistance to abiotic stress, and suppress disease. Application of bio fertilizers will build up the Soil biological fertility to produce healthy soil and productive plants.

Keywords: *Bio fertilizers, Organisms, Nutrient availability, Plant productivity*

A REVIEW - STUDY OF PICHAVARAM MANGROVE BIODIVERSITY FOREST, TAMIL NADU

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Abstract

We studied a tropical mangrove ecosystem, situated at pichavaram, Southeast India. We Found 13 species of mangrove trees, with *Avicennia marina* and *Rhizophora* species predominant, besides 73 spp. of other plants, 52 spp. of bacteria, 23 spp. of fungi, 82 spp. of phytoplankton, 22 spp. of fish and 200 spp. of birds. The bacteria performed activities like photosynthesis, methanogenesis, magnetic behaviour, human pathogens and production of antibiotics and enzymes (arysulphatase, L-glutaminase, chitinase, L-asparaginase, cellulase, protease, phosphatase). The micro zooplankton included tintinnids, *Tintinopsis* spp. alone accounted for 90% of abundance. The macro zooplankton consisted of 95% of copepods and coelenterates. The meiofauna was rich with nematodes (50-70% of the components), followed by foraminifera. The macro fauna included polychaetes, bivalves, gastropods, tanaids, isopods, amphipods, cirripedes, crabs, hermit crab and shrimps. The mangrove harboured a large number of juvenile fishes, especially during summer and post-monsoon. The water was fertile and productive in having several fold-higher levels of nutrients, microbes, plankton and other biological resources, than the adjoining estuarine, backwater and neritic environment. The gross primary production was $8 \text{ g cm}^{-3} \text{ d}^{-1}$; about 21% of which was contributed by phytoplankton of 5-10 μm size. Unfortunately, 90% of the mangrove cover in the study area was degraded. Possible factors that cause degradation are detailed and remedial measures suggested. Techniques for regeneration of the degraded areas are proposed.

Keywords : *Mangrove forest, Pichavaram, Phytoplankton, Conservation*

**GAMMA RAYS AND EMS INDUCED CHANGES ON CYTOLOGY OF
LITTLE MILLET**

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Abstract

Mutation breeding in crop plants such as little millet (*Panicum sumatrense* Roth. Ex Roemer And Schultes) is a successful approach in change of product having narrow genetic base. In the present study to determine the effect of physical mutagen such as gamma rays and chemical mutagens such as Ethyl methane sulphonate (EMS) were used. The seeds were treated with different doses/concentration of Gamma irradiation (10KR, 20KR, 30KR, 40KR and 50KR), EMS (10mM, 20mM, 30mM, 40mM and 50mM) for six hours were applied to 500 seed sample of each concentration and one respective control on little millet. Plants of four generations viz., M1, M2, M3 and M4. The cytological analysis, for example, chromosomal number was watched and recorded for images. The maximum changes of chromosome were observed in 50 KR of gamma rays and 40mM of EMS treatments than the other physical and chemical mutagens. The length and shape of chromosome varied in treated plants than the untreated plants.

Keywords: Little Millet, Gamma rays, Mutagen, Chromosome.

SEAWEED LIQUID FERTILIZER AND THEIR ROLE IN PLANT GROWTH UNDER ABIOTIC STRESS - A REVIEW

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Abstract

Abiotic stresses like drought, cold, salinity, and heavymetal are major factors resulting in crop yield losses and soil degradation worldwide. To meet increasing food demands, we must improve crop productivity, especially under increasing abiotic stresses due to climate change. Recent studies suggest that seaweedbased biostimulants could be asolution to this problem. Here, we summarize the current findings of using these biostimulants and highlight current knowledge gaps. Seaweed liquid fertilizers contain several active compounds, for example, polysaccharides, polyphenols and phytohormones. Although some of these compounds have growthpromoting properties on plants, the molecular mechanisms that underly seaweed extract action remains understudied. In this paper, we review the role of these extracts and their bioactive compounds as plant biostimulants. The targeted application of seaweed extract to improve crop performance and protein accumulation is also discussed.

Keywords: Abiotic stress, SLF, Biostimulants, plant growth

**BIOLOGICAL POTENTIAL OF *GONIOTHALAMUS CARDIOPETALUS*– AN
OVERVIEW**

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Abstract

Goniothalamuscardiopetalus (Annonaceae) are widely used in folk medicine of several countries. The species contains diverse bioactive compounds which are act against various diseases. The two bioactive compounds were identified from that species; acetogenins and styryllactones which are possess complex stereochemistry and appear in different stereoisomeric forms with varying levels of cytotoxicity towards several human tumor cell lines. Cardiopetalolactone a novel styryllactone enormously present this species. That bioactive compound exhibits multiple biological activities against various organisms. Because of this interest, the present review emphasize the biological activities of *Goniothalamuscardiopetalus*.

Keywords: *G. cardiopetalus*, bioactive compounds and cytotoxicity.

AN ASSESSMENT OF PHYTOCHEMICALS IN SELECTED SEaweEDS OF GULF OF MANNAR, TAMILNADU

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Abstract

Seaweeds are marine macroscopic algae they are primitive non flowering plants without root,stem, and leaves. They contain different vitamins, minerals. In the present study the phytochemical screening and determination of antioxidants of seaweeds showed the presence of multiple compounds given below. The study concluded that different extracts of brown seaweeds (*padinatetrastromatica*Hauck) and green seaweeds like (*Caulerparacemosavar*, *Sargassumwrightii*Greville) Possess several chemical compounds including tannins, phenols. Extraction solvents have an effect on yield of total phenolics and total tannins from the selected three seaweeds. The phytochemical screening and pharmacognostical analysis of seaweeds suggested their antioxidant and phytochemical potential. Collected seaweeds and utilized effectively in product preparation for the beneficial of mankind. Thus, the investigation brings out the phytochemical constituent and the antioxidants potential of the seaweeds.

Keywords: seaweeds, phytochemical, antioxidants,*sargassumwrightill*, *caulerparacemosa*.

**AEDES MOSQUITOES IN ARBOVIRAL EPIDEMIC PRONE AREA
(DIPTERA: CULICIDAE) OF BOMMIDI TOWN, DHARMAPURI DISTRICT,
TAMIL NADU, INDIA**

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Abstract

Mosquito borne disease, especially Dengue fever (DF), Dengue hemorrhagic fever (DHF) and Dengue shock syndrome (DSS) caused major public health problems in the Dharmapuri district of Tamil Nadu, India. Mosquito control manages the population of mosquitoes to reduce their damage to human health and environmental pollution. *Aedes aegypti* is the principle epidemic vector of dengue virus. Dengue is transmitted by the mosquitoes namely, *Ae.aegypti*, *Ae. albopictus*, *Ae.polynesiensis* of *Ae.vittatus*, *Ae (Finlaya) niveus*. The present study investigates the diversity, seasonal prevalence, distribution and larval habitat of *Aedes* mosquito species in epidemic prone area of Bommidi town, Dharmapuri district, Tamilnadu, India.

Keywords: Mosquitoes, *Aedes*, Arbovirus, Dengue, Dengue shock syndrome.

A REVIEW ON BIOLOGICAL ACTIVITY OF SEAGRASS *THALASSIA*

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Abstract

Seagrass meadows serve as breeding and feeding areas for a variety of shellfish, finfish, and other animal species. There has been evidence of a global loss in seagrass meadows, with tropical regions reporting the greatest diversity of seagrass species. Man-made activities that harm the seagrass beds in the Indian Ocean region include increasing urbanization, coastal pollution, industrial expansion, port development, boat traffic, and unsustainable tourism growth. A number of secondary metabolites created by marine life have the potential to be transformed into fresh substances that might be used to treat a variety of illnesses. Pharmacologically active components of marine seagrass secondary metabolites have recently been identified through a number of investigations. The two medicinally valuable species of *Thalassia*, a marine seagrass genus in the Hydrocharitaceae family, are *Thalassiatestudinum* and *Thalassiahemprichii*. The phytochemical present in the *Thalassia* species showed a variety of chemical compounds with proven therapeutic application, such as alkaloids, glycosides, tannins, phenols sterols, flavonoids, sulphates. In India, there are very few and heavily biased studies on the ecology, management, and conservation of seagrasses. Approximately 74% of Scholarly publications on seagrass have come from palk and bay and the Gulf of Mannar in tamilnadu, despite the fact that seagrass is distributed over varied geographic regions in india. In an effort to deal with the effects of urban development with relation to seagrasses, this paper compiles the data provided by writers from various nations.

Keywords: seagrass, pharmacologically, *Thalassiahemprichii*, phytochemical, diversity.

EXTRACTION, CHARACTERISTICS AND ANTIBACTERIAL ACTIVITY OF FUCOIDAN FROM BROWN SEAWEED (*Sargassum wightii* Greville)

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Abstract

Marine seaweeds or macroalgae play a vital role in conventional medicine and nutrition since the period of prehistory. Among them, the class Phaeophyceae is the most explored type of seaweeds. Fucoidans are sulfated polysaccharides present in the cell walls of the Phaeophyceae (brown seaweeds). Usually fucose (Fuc) is the main monosaccharide component. Other monosaccharides that may be present in varying amounts include galactose (Gal), xylose (Xyl), mannose (Man), rhamnose (Rha), and/or glucuronic acid. In this study, fucoidan was isolated from *Sargassum wightii* Greville by adopting a successive extraction method. The percentage yield of isolated crude fucoidan was found to be in the range of 7.7–8%. The crude polysaccharide was subjected to FTIR analysis to confirm the functional groups. The presence of major functional groups was confirmed by the FTIR analysis. Antimicrobial activity of the fucoidan extract was investigated against *Bacillus cereus*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Salmonella typhi* using agar disc diffusion technique. The isolated crude fucoidan had shown the best antibacterial activity against human pathogens such as *Staphylococcus aureus* and *Salmonella typhi*. Therefore, this study supports the application of fucoidan as an antibacterial agent.

Keywords: Antibacterial, Fucoidan , Polysaccharide, Pathogens, Seaweeds.

**TO STUDY CONTROL OF MOSQUITO WITH THE HELP OF PLANT
EXTRACTS AS A SOURCE OF BIO-INSECTICIDE**

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Abstract

Mosquitoes are considered one of the most dangerous species on the planet because they have the ability to spread many deadly diseases. Mosquito biting behaviours is important for designing and evaluating protection methods against nuisance biting and mosquito-borne diseases (e.g. Zika virus, West Nile virus, and chikungunya virus infections, dengue fever, and malaria). Almost 700 million people contract a mosquito-borne illness every year resulting in greater than one million deaths. The United State Centers for Disease Control and Prevention (CDC) reported that mosquitoes kill more than one million people a year just from the transmission of malaria. This work reviewed the adulticidal activities of some plants extracts Tulsi plant (*Ocimumtenuiflorum*) and Neem (*Azadirachta indica*) leaves extracted with different solvents and were established as effective bio-insecticide against different genus and species of mosquitoes which can be used as an alternative means of controlling the population of mosquito vectors that would be environmentally safe and support the ecosystem. According to the established results reviewed in this work, different solvent extracts of Tulsi plant (*Ocimumtenuiflorum*) and Neem (*Azadirachta indica*) were observed to possess high adulticidal activities against different species of mosquitoes.

Keywords: Plant extracts, Adulticidal, Mosquito and Public health

**A CONCISE REVIEW ON MEDICINAL PLANT *Pentatropis capensis*:
TRADITIONAL USE, AND PHARMACOLOGICAL ACTIVITIES**

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Abstract:

Numerous natural compounds may be found in abundance in plants. Most of which have been widely used for traditional purposes in India's human health care systems, including Unani, Siddha, and Ayurveda. Folklorists use the majority of these pharmacopoeial unknown medications to treat a wide range of illnesses. *Pentatropis capensis* is one such plant that traditional healers utilise as nasal drops to treat headache, runny nose, and body aches under the name Kukka bachchataay. Cooling and changing qualities are associated with *Pentatropis capensis*. "The Wealth of India" attested to its effectiveness in treating skin conditions and its analgesic, antifungal, antiseptic, and keratolytic qualities. *Pentatropiscapensis's* antifungal, antiseptic, and keratolytic qualities are also listed in the "Compendium of Indian Medicinal Plants." The use of ground material and root infusion was discovered in "Flora of Saurashtra." It explained how folk healers used it for rheumatism, hydrocele, and fevers. *Pentatropis capensis* is listed as an alterative, antifungal, antiseptic, and cooling in "Medicinal Plants of Gujarat," where it is also claimed that it is used to treat skin conditions.

PHYTOCHEMICAL SCREENING AND EVALUATION OF THE ANTIOXIDANT AND ANTIBACTERIAL POTENTIAL OF *IPOMOEA HEDERIFOLIA* L. EXTRACTS

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Abstract

A potential medicinal plant *Ipomoea hederifolia* L., a plant of the Convolvulaceae family, popularly known as morning glory, possesses numerous medicinal values. The present study aimed to explore the bioactive compounds, antioxidant activity and antibacterial activity of *I. hederifolia* stems (IHS). The IHS was extracted in Soxhlet method using different solvents. These IHS extract, using various tests. Antioxidant activity was determined using DPPH and ABTS methods. The antibacterial activity was determined using disc diffusion method using various pathogens. The phytochemical screenings revealed that IHS extract possesses carbohydrates, tannins, flavonoids, phenols, saponins, alkaloids, steroids, and cardiac glycosides. The antioxidant activity of IHS extract in DPPH and ABTS was moderate results in comparison with standards depending on increasing order of dose. The plant extract exhibited high antibacterial activity effect on different pathogens. Based on the findings of this investigation, we can conclude that IHS extract possesses various bioactive compounds high antibacterial activity and moderate antioxidant potentials, which may be a path to the discovery of traditional medicines and remedies for many critical diseases.

Keywords: *Ipomoea hederifolia*, phytochemical screening, Antibacterial activity, Antioxidant activity, DPPH, ABTS.

**INSILCO ANTICANCER ACTIVITY OF BIOACTIVE COMPOUND
CATECHIN ISOLATED FROM *TERMINALIA CATAPPA* AGAINST TARGET
PROTEIN ONCOGENE (5P21)**

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Abstract

Oncogenes are a structurally and functionally heterogeneous group of genes, whose protein products act pleiotropically and affect multiple complex regulatory cascades within the cell. They regulate cell proliferation, growth, and differentiation, as well as control of the cell cycle and apoptosis. A **proto-oncogene** is a healthy gene found in the cell. There are many proto-oncogenes and each one is responsible for making a protein involved in cell growth, division, and other processes. Mutation occurs in a proto-oncogene, the gene can become turned into a malfunctioning gene called an **oncogene**. Thus, the present study was made an attempt to study the interaction between bioactive compound catechin against the target protein oncogene. Oncogene protein (PDB ID-5P21) was retrieved from protein data bank and protein optimization was done by using autodock 4.2. Ligand catechin was isolated from *Terminalia catappa* and docking with target oncogene protein (5P21) using autodock 4.2. After docking the highest negative binding energy (-9.09) was obtained with active site gly 13. From this study it is concluded that the bioactive compound Catechin bound with target protein oncogene protein and suppress the activity of particular gene. Thus, the bioactive compound might be useful for the treatment of various cancer further validations.

Key words: Cancer, Oncogene Protein, Anticancer Drugs, Molecular Docking, and Autodock.

**MEDICINAL PLANTS DIVERSITY ON SYED AMMAL ARTS AND
SCIENCE COLLEGE CAMPUS**

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Abstract

The aim of the present study was to identify medicinal plants in our college campus. These medicines are safe and environment friendly. According to WHO about 80% of the world's population relies on traditional medicine for their primary health care problems. Medicinal plants play an important role in preventing and treating of human diseases. In my finding most of plants cure the various diseases like, diabetes, bone fractures, skin infection, ulcers, cancer, dysentery, snake and insect bite, cough, cold, fever, asthma, wound healing, kidney stones and cardiovascular disease etc. This study revealed most of the medicinal plants used by the various parts of the plant like fruits, seeds, leaves, stem and rhizome. Among them, 12 trees, 8 Shrubs, and 10 Herbs were recorded.

Keywords: Medicinal plants, Human diseases, Traditional medicine, Health care.

BOTANICAL ILLUSTRATION –A METHOD OF PRSERVATION OF PLANT SPECIMENS

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Abstract

Botanical illustration is the accurate pictorial of plant and plant traits for a scientific purpose as opposed to flower painting which has no further purpose than to admire. Botanical illustration always a true and life like representation of plant it should high light a plant particular distinguishing features which enable botanists to tell one plant from another. The fundamental factor is scientific quality of a botanical illustration is not the medium the artist chooses to uses or the technology used for its representation but the artist understanding of plant morphology. Botanical illustration mainly based on observation of living plant material, inspiration of plant features using a microscope, identification of the key features of the plant. Its original purpose was to aid in plant identification for medicinal and culinary uses. Over the centuries, as the discipline developed, botanical illustration has proven itself invaluable in identifying newly discovered plants.

Keywords: *Botanical illustration, key feature, plant morphology*

A REVIEW ON SILVER NANOPARTICLES SYNTHESIS AND APPLICATIONS

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Abstract

Over the past few decades, nanoparticles of noble metals such as silver exhibited significantly distinct physical, chemical and biological properties from their bulk counterparts. Nano-size particles of less than 100 nm in diameter are currently attracting increasing attention for the wide range of new applications in various fields of industry. Such powders can exhibit properties that differ substantially from those of bulk materials, as a result of small particle dimension, high surface area, quantum confinement and other effects. Most of the unique properties of nanoparticles require not only the particles to be of nano-sized, but also the particles be dispersed without agglomeration. Discoveries in the past decade have clearly demonstrated that the electromagnetic, optical and catalytic properties of silver nanoparticles are strongly influenced by shape, size and size distribution, which are often varied by varying the synthetic methods, reducing agents and stabilizers. Accordingly, this review presents different methods of preparation silver nanoparticles and application of these nanoparticles in different fields.

Keywords:nanoparticles, silver, synthesis, applications

**PHYTOCHEMICAL AND MEDICINAL USES OF *WITHANIA SOMNIFERA*
(L) DUNAL.**

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Abstract

Withaniasomnifera (L) Dunal is a well known Indian medicinal plant and widely used in the treatment of many clinical conditions in India. The Ashwagandha belongs to genus *withania* include approximately 26 species, which only two species *W. somnifera* and *W. coagulans* are known to occur in India. In view of its varied therapeutic potential, it has also been the subject of considerable the modern scientific attention. The Phytochemical screening of different extractions revealed to presence of phenols, flavonoids, tannins, saponins, alkaloids, steroids, terpenoids and glycosides, which could account for its varied medicinal properties like anti-inflammatory, anti-oxidant and anti-analgesic. In Ayurveda, *Withania* is known to promote physical and mental health and used for various disorders that affect human health. *W. somnifera* could prove to be a good natural source of a potent and relatively safe radiosensitizer/chemotherapeutic agent. The present review summarizes the traditional medicinal usage, and phytochemicals and pharmacological activities of *W. somnifera*.

Key words: Phytochemicals, antimicrobial activity, anti-inflammatory, anti-oxidant, anti-analgesic and *W. somnifera*.

**SYNTHESIS OF SILVER NANOPARTICLES (AGNPS) USING
PTEROLOBIUMHEXAPETALUM(ROTH) SANTAPAU&WAGH AND ITS
INVESTIGATION OF BIOLOGICAL ACTIVITIES**

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Abstract

In this study, we have synthesized the silver nanoparticles (AgNPs) using *Pterolobiumhexapetalum* aqueous leaf extract (*P. hexapetalum*-ALE) which act as reducing and stabilizing agent. The synthesized *P. hexapetalum*-AgNPs (*Ph*-AgNPs) were characterized by UV-Vis, XRD, IR, FE-SEM with EDAX, HR-TEM with SAED pattern. The FE-SEM and HR-TEM examination revealed the nanoparticles were spherical in shape with a size of 10-50nm when synthesized by *Ph*-AgNPs. The synthesized *Ph*-AgNPs displayed the strong antibacterial efficacy against *B. cereus* (15mm) and the DPPH assay revealed the prominent radical scavenging activity (IC₅₀:114.90µg/mL). In addition, the synthesized *Ph*-AgNPs express a strong anticancer activity in opposition to human liver cancer cell-line (HepG2) with an IC₅₀ value of 34.92µg/mL. Further, the synthesized AgNPs exhibited an outstanding performance in larvicidal activity with LC₅₀ & LC₉₀ value of 3.120;11.531mg/mL on *Cx. quinquefasciatus* larvae at 24h observation. These studies propose that the synthesized *Ph*-AgNPs has promising potential biological and industrial applications.

Keywords: Green synthesis, Silver Nanoparticle, Antibacterial, Liver cancer, *Culexquinque fasciatus*

**GREEN SYNTHESIS OF ZNO NANOPARTICLES USING VITEX NEGUNDO
LEAF EXTRACT**

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Abstract

The ZnO nanoparticles were synthesized by using green method. The synthesis of single phase highly crystalline ZnO nanoparticles with an average size of about 15.8 nm by green novel and environmentally friendly pathway using the natural extract of vitex negundo extract as an effective oxidizing/reducing chemical agent. A thermal annealing at about 300 °C during 2 h under normal air conditions allows to obtain the highly crystallized zincite single phase. The FESEM microphotograph of the as-prepared ZnO powder is presented in agglomerated particles exhibit spherical morphology. Each particle represents the aggregate of smaller grains, integrated in an open circular or grape cluster structure. The follow up study will consist of identifying the physical/chemical mechanisms and the dynamic formation of the ZnO nanoparticles during the interaction of the zinc salt precursor and the *A. betulina*'s natural extract active compounds.

Keywords: Biosynthesis; vitex negundo and ZnO NPs

**PHYTOCHEMICAL ANALYSIS AND GAS CHROMATOGRAPHY-MASS
SPECTROMETRY OF METHANOLIC FLOWER EXTRACT OF SARACA
ASOCA**

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Abstract

Saracaasocais well known for its medicinal and rheumatism values in folk medicine. Therefore, in the present study, we investigated the effect of leaf of *Saracaasoca*. However, there has been not much information available on phytochemical components and GC-MS analysis in the leaf ethanol extract of *Saracaasoca*. Phytochemical analysis are importance for presence of steroid, terpenoid, flavonoid, carbohydrates, saponins, tannins phenols etc. The present study showed that steroid, flavonoid, terpenoid, carbohydrates, saponins, tannin, carbohydrates and phenol, whereas coumarin and alkaloid was absent, and GC-MS analysis of leaf extract of *S.asoca*, which results in observation of 40 peaks with different retention time, peak area and peak height. Each peak represents particular chemical constituents present in this plant.

Keywords: *Saracaasoca*, methanolic extract, secondary metabolites, GC-MS.

PHYTOCHEMICAL ANALYSIS AND ANTIOXIDANT ACTIVITIES OF AZADIRACHTA INDICAA.JUSS SEED EXTRACTS

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Abstract

In analysis of the established idea of minimizing the difficult effects of synthetic and semi-synthetic compounds through the use of herbal medicine, this study was undertaken to assess the chemical constituents of two important indigenous plants *Azadirachta indica*. Both plants have found widespread acceptance in herbal medicine, owing to their multitude of effects. Seeds of *A. indica* were extracted using methanol and water and their characteristics were studied. Extractability for methanolic and aqueous extracts of *A. indica* seeds was 11.95% and 6.14%, respectively. Phytochemical tests were conducted on these extracts the methanolic and aqueous extracts of *A. indica* seeds revealed alkaloids, tannins and sterols as common constituents whereas resins and flavonoids were the additional components found in methanolic extract. Antioxidant activity of seeds of *A. indica* was studied using two important assays such DPPH and FRAP were observed and are entered in terms of IC₅₀. DPPH activity of four different concentration of *A. indica* were shown as 59.21µg/ml and 56.34µg/ml respectively. Standard Butylated Hydroxy Toluene (BHT) shows DPPH activity of 69.27µg/ml. FRAP activity of seeds of *A. indica* were shown as 53.34µg/ml and 49.32µg/ml respectively. Standard Quercetin shows FRAP activity of 61.29µg/ml. The results suggested that seeds extract of the neem tree have strong antioxidant potential showed spot corresponding to BHT and quercetin.

Keywords: *Azadirachta indica*, Phytochemical, Neem tree, Seed, Antioxidant activity, DPPH and FRAP.

EFFECTS OF ORGANIC MANURE FERTILIZER ON PLANT GROWTH AND DEVELOPMENT OF CAPSICUM ANNUUM L.

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Abstract

This study was designed to observe the effects of different organic fertilizers on growth, yield and quality of *Capsicum annuum* L. organic fertilizers are organic materials that are more environmentally friendly compare to chemical fertilizers. In order to qualify as an organic fertilizer, the materials must naturally occur in nature. Usually, organic fertilizer is types of organic fertilizers are derived from plant and animal sources. The organic fertilizers may supply nutrients to soil but, differences type of source of fertilizer can give some different effect on plant. For example fertilizer that used plant-based fertilizer. Agricultural commodities resulted from organic cultivation are good for human health. The improvement in soil physical condition for the plant growth along with increased availability of N, P and K at the early stage of crop growth. Nitrogen, phosphorus and potassium contained in organic fertilizer have great effects in plant growth and development. Plant need high concentration of this primary nutrient will prevent good plant growth. On the other hand, treatment supplemented with chemical fertilizer (Urea), Vegetable manure and chicken manure gave positive effects. Control treatment shows the lowest overall growth and yield performance in chili plant. It can be that application of organic fertilizer had significantly affect the growth, yield and quality of chili plant. Application of organic fertilizers helps to supply nutrient as required for growth and yield of chili plant. The plants that were supplemented with chicken manure and vegetable manure showed high rate in growth development, high yield that the tested vegetable manure and chicken manure organics can improve the growth, yield and quality of chili. The best of organics treatment for growth, yield and quality of chili was vegetable manure and chicken manure the treatment as shown the high yield and quality of organic manure.

Keywords : Organic fertilizer, yield, quality, vegetable manure, chicken manure, chili plant

**GREEN SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL ACTIVITY
OF COPPER NANOPARTICLES FROM MUNTINGIA CALABURA
MEDICINAL PLANT**

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Abstract

Bio-nanoparticles are beneficial due to the eco-friendly and low-cost green synthesis of nanoparticles. Various parts of *Muntingia calabura* L. (Muntingiaceae), have been reported to possess important medicinal value, supported by a number of scientific studies. The present study was concentrated to synthesize copper nanoparticles using the aqueous fruit extract of *Muntingia calabura* L. as the reducing agent. The formation of copper nanoparticles as confirmed by colour change from blue to a dark brownish, UV-Visible Spectroscopy, FT-IR, X-ray Diffraction Method (XRD), and Energy Dispersive X-ray microanalysis spectroscopy (EDS). The nanoparticles showed an absorbance at 430nm on UV –Visible spectroscopy, XRD diffractogram showed four diffraction peaks at 14.03°, 23.01°, 29.07°, 31.02°. Further, the fruit extract exposed good antioxidant activity, DPPH scavenging assay and antibacterial activity against the copper nanoparticles were established using *E. coli* and *Staphylococcus aureus*. Green synthesized CuNPs displayed improved biological activities. The result supports future studies and obtained product from this potential antioxidant and biological activities.

Key words : Green synthesis, Cu nanoparticles, Antioxidant, antibacterial, *Muntingia calabura*, biological activities.

Bioplastics production from banana peel

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Abstract

Environment consist of both biotic and abiotic compounds Environment pollution has existed for centuries but only started to be significant following the industrial revolution in the 19th century. Plastic are considered at most important industries which manufacture polymer materials for packaging, building etc. However, the use of too many plastic results in massive harmful effects. It's takes a long time to degrade which is estimated at about 500 years to become toxic after decomposed. Bioplastics contribute by lowering the dependence on fossil fuels and reducing carbon dioxide emissions. Bioplastics are renewable biomass sources such as vegetable fats and oils, cornstarch, wood chips, food waste, agricultural by products used plastic bottles and other containers using microorganisms. Bioplastics are production from banana peels is good elasticity and flexibility, alow brittleness, a high toughness and to prevent cracking during handling storage. These bioplastics of banana peels is start biodegradable 3 to 4 months. Bioplastics are the alternative for over conventional plastics.

Keywords: Bioplastics, banana peel, biodegradable, good flexibility, alternative plastics

FACILE APPROACH FOR PHYTOSYNTHESIS OF ZINC NANOPARTICLES, PHYTOCHEMICAL ANALYSIS AND THEIR ANTIBACTERIAL ACTIVITY FROM *PLUMERIA OBTUSA. L*

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Abstract

In this study, the phytochemical content of medicinal plant *Plumeria obtusa. L* its leaf, stem, root, flowers extracts were investigated. Methanolic extracts of leaf, stem, root, flower were analysed which indicates the presence of phytochemicals like carbohydrates, tannis, saponins, glycosides, terpenoids, anthracyanin, alkaloids and coumarins. Out of 13 phytochemicals tested 9 were present in all the 4 plant samples. Absence of phenol, anthraquinones, steroids, Phlobatannins in leaf, stem, flower and root was observed. Biosynthesis of zinc oxide nanoparticles using *Plumeria obtusa.L* extracts, along with estimation of their antimicrobial potential by using different microorganisms were analysed. The UV-visible spectra of ZnO nanoparticles showed absorption maxima at 383 nm. SEM images showed irregular and mostly hexagonal shaped morphologies of ZnO nanoparticles within the size range of >50 nm from the leaves samples where as 20 to 42 nm with a wurtzite structures in the stem and root samples of *P.obtusa* and the change was observed from the flower to sphere shape in the flower samples. The antimicrobial nature and biocompatibility of ZnO nanoparticles were influenced by different parameters of the nanoparticles along with microorganisms. ZnO nanoparticles showed potent antibacterial activities against *Bacillus*, *Klebsiella*, *E.coli*, *Staphylococcus* and *Enterobacter*. The comparative studies of all the plant extracts proved that flower and root samples have high antibacterial properties than the stem and leaf extract samples. The present study supports that *Plumeria obtusa. L* has very high medicinal value wide range of pharmacological activities such as antimicrobial, antiproliferative, antimutagenic, anti-inflammatory, antiulcerogenic, algicidal, antioxidant, insecticidal and wound healing.. These ZnO nanoparticles can serve a dual purpose by facilitating use as an antibacterial agent against susceptible microorganisms as well as a biocompatible carrier molecule in drug delivery applications.

Keywords: *Plumeria obtusa. L*, phytochemicals, ZnO nanoparticles, SEM-EDX, antibacterial properties

PHYTO-MEDIATED GREEN SYNTHESIS OF ZINC NANOPARTICLES AND ITS CHARACTERIZATION USING AN AQUEOUS ROOT EXTRACT OF WITHANIA SOMNIFERA. L

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Abstract

In recent days, Nanotechnology has been emerging rapidly in science field and finds its application in diagnostics and therapeutics. The green synthesis of metal nanoparticles had a great importance in modern medical healthcare system. The present study focuses on *Withania somnifera* - a perineal plant that has the numerous medicinal properties such as antibacterial, antifungal, anticancer and anti-diabetic, because of its anti-oxidants. The previous researchers also found that there are numerous active components such as flavonoids and phenols. Metal nanoparticles play an important role in extract of plant materials. The present study describes the synthesis of Zinc nanoparticles of the root extract from *Withania somnifera*, and the structural and morphological characteristics of ZnONPs were examined using ultraviolet-visible (UV is) spectroscopy, (FTIR), scanning electron microscopy with energy dispersive x-ray spectroscopy SEM-EDX). The UV is spectrum of ZnONPs showed the surface plasmon resonance (SPR) peak at 330 nm. The SEM investigation revealed that the particles were spherical in shape with an average diameter of 30 nm. The chemical substances present in the rhizome extract that acted as a reducing agent for the synthesis of ZnONPs have been identified through FT-IR spectral analysis. The SEM-EDX analysis also showed cylindrical structure at 10 KV and the FTIR report showed the number of peaks for different phytoconstituents with functional group such as hydroxyl and carbonyl groups that are responsible for the medicinal applications. The results of zinc nanoparticle characterization of *Withania somnifera* leads to the further study.

Keywords: *Withania somnifera*, phytochemicals, ZnO nanoparticles, FTIR, SEM-EDX, antibacterial properties

ASSESSMENT OF HEAVY METALS CONTAMINATION AND SOIL FERTILITY IN AND AROUND SALEM DISTRICT, TAMIL NADU.

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Abstract

Industrialization plays an important role in development of country. However, it also severely affects the human health and agricultural soil fertility and production by discharging of various untreated harmful substances. Therefore, in the study aimed to investigate the physicochemical analysis and estimating the heavy metals of soil samples collected from sample 1 (Sivathapuram (silverpolishingshop)), sample 2 (Selathampatti soil nearby textile dye industry), Sample 3 (Sivathapuram soil near to silver polishing company), sample 4 (Sivathapuram nearby silver polishing company), sample 5 (Selathampatti, nearby silver polishing company), sample 6 (Ariyakovandampatti) nearby silver polishing company), sample 7 (Selathampatti (silverpolishingshop)), sample 8 ((Suramangalam) nearby aluminium industry), sample 9 (suramangalam) nearby steel industry). Sample 10 Selathampatti) nearby leather industry. In this study, the highest value of electrical conductivity was noticed sample 8 at Selathampatti (5.82ms/cm). Which is higher than the ICMR and WHO limit (4ms/cm). Similarly the sample 8 shows the maximum pH value was noticed in 8.6 at Selathampatti nearby aluminium industry. The salinity value of collected soil sample ranges from (0.32 to 2.1). The heavy metals such as lead (Pb), Chromium (Cr), Copper (Cu) concentration was estimated in sample soil by acid digestion method. The estimated lead concentration ranges from 0.3053 to 7.4915. The higher value of lead concentration (7.4915) was noticed at sample 9 (Selathampatti) near to steel industry. Among from the samples, the estimated chromium ranges from 1.7059 to 7.5366. The maximum value was noticed at 7.5366 at (Selathampatti) near to leather industry. The estimated copper concentration ranges from 0.011 to 11.2874. The maximum value was noticed at 11.2874 at (Sivathapuram) near to silver polishing company. The present study result indicates that highest contamination occurs in (Sivathapuram) due to the contamination of copper effluent from silver polishing company. These physicochemical parameters results showed that Selathampatti the industrial effluent area near by agriculture land soil sample were contamination due to the dumping of excess of chemical and heavy metals.

Keywords: Agricultural soil, H Contamination, textile dying industry, World Health Organization.

DEVELOPMENT OF MAGNESIUM NANOPARTICLE AND ASSESSMENT OF THE SOIL FERTILITY IN THE SOIL SAMPLE FROM MINING REGION OF SALEM, TAMILNADU

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Abstract

The phytonanotechnology revolution is developing daily all over the world. Our study was performed to identify the impact of different concentrations of MgO nanoparticles (MgONPs) and to assess the soil fertility in the soil sample taken from mining region. The study of physicochemical parameters of soil samples reveals that the spread of mining region may cause hindrance in agricultural activity through mines waste dump. The interpretation of macronutrients such as N, P, and K reveals that the soil quality degrades due to the leaching of low-grade waste magnesite ore that is being dumped along the mine's site. However, the heavy metals in micronutrients like Fe, Zn, Cu, and Mn are present in the sample soils which are found to be relatively in significant due to the waste dump residue that are contaminated in those soil samples. The keen observation of the pH value exceeding index value 7 indicates alkalinity of the sample soils. Addition of MgNp will be reduce the pH level and increasing the soil fertility. The current research helps us to better understand how nanoparticles might be used to degrade heavy metals present in agricultural fields while avoiding the creation of environmental hazards to soil health.

Keywords: Magnesite, Heavy metals, Environmental pollution, Physiochemical parameters, Soil fertility.

BIOREMEDIATION OF INDUSTRIAL EFFLUENT BACTERIA-

A MICROBIAL APPROACH

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Abstract

Dyeing and chemical industries are one of the most important factors for environmental pollution in the world. The wastewaters from these industries are generally contain strong toxic pollutants, organic and inorganic matter in varying degrees of concentration. Therefore the treatment of wastewater is crucial to decontaminate water bodies. There were 11 effluent samples were successfully collected from the private dye industry located in Kondalampatty and nearby areas. The collected samples were physico-chemically characterized. The analysed pH values for samples ranged between 4.3 – 11.7. The EC values for samples ranged between 2.68-47.0 (ms/ cm). The total dissolved solids present in the effluent sample ranges from 1.85– 33.8. The salinity present in the effluent sample ranges from 1.22 – 29.8. Bacteria were isolated from effluents of textile industries and screened by their capability to decolorize at least one of textile industries effluent outlet of the textile industries. Two isolates having the capability to decolorize the highest number of dyes with more than 85% of decolorization were identified as *Aeromonas veronii*(IEB1) and *Pseudomonas mosselii*(IEB4) based on morphological, cultural, biochemical characteristics, and 16S rDNA sequence analysis. Decolorization of textile industries effluent by the bacterial isolates was investigated using Fourier Transform Infrared Spectroscopy (FTIR) analysis. The treatment of Enrichment showed the visible decolourization of industrial effluents. This study showed industrial effluent bacteria will be the efficient bio-decolourizer.

Keywords: Dyeing industries, Wastewater treatment, Physico-chemical characterization, Decolorization, Microbial treatment

**EXPLORING PHYTOCHEMICALNANO SYNTHESIS AND
ANTIBACTERIAL ACTIVITY - A COMPARATIVE STUDY OF PLUMERIA
OBTUSA L AND SALVIA OFFICINALIS L**

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Abstract

The present research work was carried out to investigate the Nanoparticles Synthesis, Preliminary Phytochemical analysis and Antibacterial activity. This study revealed comparative analysis of the two different plant species *Plumeria obtuse* L and *Salvia officinalis* L the whole plant including their leaves, stem, root explants. Among the two plant species *Plumeria obtuse* showed best response. The presence and absence of thirteen phytochemicals were evaluated among these 2 plant species. *Plumeria obtuse* L showed their presence of carbohydrates, flavonoid, tannin, terpenoids, phenols, anthroquinine, anthrocyenin, steroids, phlobatannins and coumarins. In *salvia officinalis* extracts revealed the *Plumeria obtuse* presence of carbohydrates, flavonoid, Saponin, glycosides, tannins, phenols, steroids *Salvia officinalis* and coumarins, anthroquinine, and alkaloids. Absence of phytochemicals were seen in *salvia* namely terpenoid, anthroquines, coumarin, alkaloids. The ZnO Nanoparticles of *Plumeria obtusa* was found to exhibit greater activity against *Escherichia coli*, *Pseudomonas*, *Klebsiella pneumonia* and *Staphylococcus aureus* when compared to *Salvia officinalis* L. The SEM-EDX results showed 20 to 42 nm sized particles with a wurtzite structure and the change was observed from the flower to sphere shape from the flower samples of L. The EDX spectrum confirmed that aqueous leaf extract-stabilized nanoparticles with high-intensity Zinc metal peaks, including oxygen. SEM images were found to be spherical with 40 nm size. More importantly, the ZnO NPS exhibited promising antimicrobial effects on pathogenic bacteria (*staphylococcus aureus*) with inhibition zones of 1 mm. This study presents an efficient green synthesis route for ZnONPS with remarkable physicochemical and antibacterial properties.

Keywords: *Plumeria obtusa*, *Salvia officinalis*, Phytochemical, Nanosynthesis, Antibacterial activity.

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