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Proceedings of National Seminar on "Next Gen Tech-Revolutionizing Agricultural, Health and Environment"

Editor(s)
Dr. R. Harikrishnaraj, Dr. R. Valarmathi,
Dr. K. Kalaiarasi, Dr. R. Manikandan, Dr. P. R. Janani

Organized by

PG & Research Department of
Biotechnology and Microbiology

Padmavani Arts and Science
College for Women (Autonomous)
Salem-11, Tamilnadu

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PROCEEDINGS OF THE

NATIONAL SEMINAR ON

"NEXT GEN TECH-REVOLUTIONIZING AGRICULTURAL, HEALTH & ENVIRONMENT

09th August 2024

INSTITUTION'S INNOVATION COUNCIL
(Ministry of Education Initiative)

A+ GRADE NAAC CGPA: 3.44

Organized by

PG & RESEARCH DEPARTMENT OF BIOTECHNOLOGY & DEPARTMENT OF MICROBIOLOGY

PADMAVANI ARTS & SCIENCE COLLEGE FOR WOMEN
(Autonomous)

Accredited by NAAC with A+ Grade (CGPA 3.44)-Cycle 2

Recognized Under section 2(f) & 12(B) status by UGC Act. 1956 &

An ISO 9001-2015 Certified Institution Salem-11, Tamil Nadu

Editors

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Dr. K. Kalaiarasi, Dr. R. Manikandan & Dr. P. R. Janani

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Jointly Organizes a

NATIONAL SEMINAR ON
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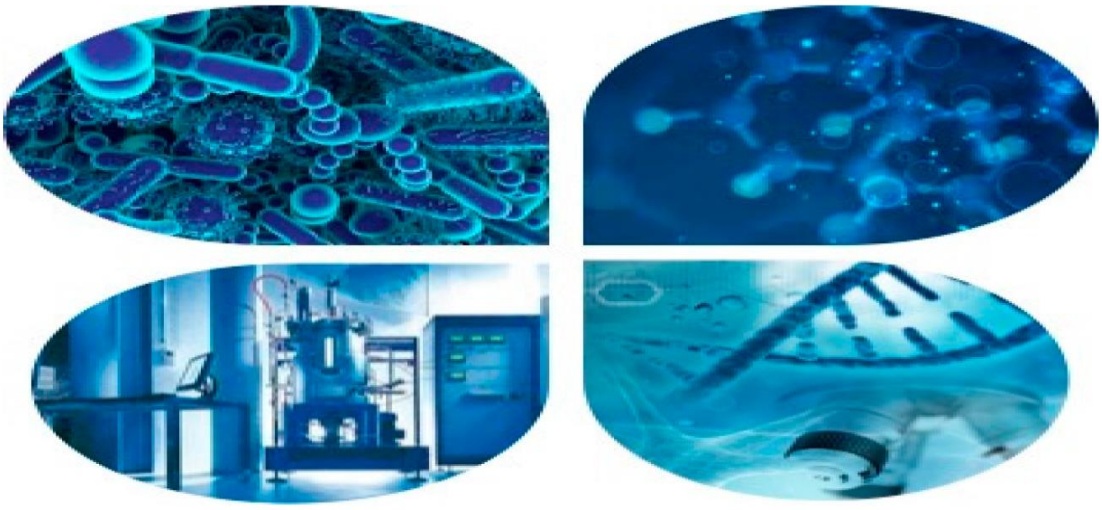
09th August 2024



ABOUT THE COLLEGE

Padmavani Arts and Science College for Women was established in the year 2005. The college is situated in a sylvan surrounding easily accessible in the outskirts of Salem-Bangalore NH-7. The Institution imparts quality education with innovative training and skill development apart from the regular curriculum. The institute grooms a developed individual to challenge the scenario of todays corporate dependent world. The state of art lab facilities with modern infrastructures, library, internet, hostel and qualified faculty altogether ensures a student community of the future.

About the Biotechnology Department

Department of Biotechnology was established in the year 2006. It has been providing quality education, to achieve outstanding result and secure first rank in the university exam and to make students employable in their society. The department offer both Under Graduate, Post Graduate and Research programme. The department has well qualified and experienced staff with rich experience in the field of academic, R&D, publication of books and articles in various referred/reputed national and international journals.

About the Microbiology Department

Department of Microbiology was recently established in the year 2020. The department is budding and is striving to pioneer in near future. The department has well qualified staffs and offers B.Sc., Programme in Microbiology. The students of our department periodically visit various science institutes and get a deep knowledge about the recent research and instruments.

About of the Seminar

The intention of conducting the seminar is to bring the eminent Scientist, budding researchers and academicians from different areas of bioscience in a single platform. It creates awareness on the recent trends in the development and exchange of views (ideas).

Organizing Committee

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Thiru. K.Duraisamy, M.A.,
Secretary

It gives me an immense pleasure that Padmavani Arts and Science College for Women, organizing a National Seminar on "Next Gen Tech- Revolutionizing Agricultural, Health and Environment during August 09, 2024 at Padmavani Arts and Science College for Women, Autonomous, Salem organized by Department of Biotechnology and Microbiology.

The central theme of the conference is on agricultural, health and environment. Both Departments provides an opportunity for meeting of Researchers, Faculties, Scientists and specialists in the various research and development fields of Science and Technology.

The conference offers a premise for global experts to gather and interact intensively on the topics of agricultural, health and environment. I hope eminent speakers will cover the theme virtual reality from different perspectives. I am privileged to say that this conference will definitely offer suitable solutions to the global issues of **Next Gen Tech**.

The success of this seminar is solely on the dedication and efforts of innumerable people who started working on the preparations in many ways to make this seminar become a reality. Eventually I express my special thanks and appreciation to all. I wish **NGT-RAHE**all the best for its success.

Thiru. K.Duraisamy, M.A.,
Chief – Patron NGT-RAHE- 2024

MESSAGE FROM THE CHAIRMAN

Thiru.K.Sathiyamoorthy
Chairman

I am pleased to welcome you all for the National Seminar on Next Gen Tech-Revolutionizing Agricultural, Health and Environment during August 09, 2024 at Padmavani Arts and Science College for Women, Autonomous, Salem organized by Department of Biotechnology and Microbiology.

Padmavani Campus is a camouflage wealth of knowledge, innovation and technology that lies within. Padmavani itself is a niche of opportunities to all aspiring researchers. The events in the seminar are targeted towards researchers, practitioners, professionals, educators and students to share their experience, innovative ideas, issues, recent trends and future directions in field of Science and Technology.

This conference is a unique forum for exchange of innovative ideas, technical expertise for technological advancements etc. in this evergreen field. It includes keynote address from Academicians and paper presentation by research scholars. It is a matter of joy for us to welcome the participants to this seminar.

In a nutshell, the seminar promises to transcend to a new and unprecedented level of excellence. It is thus the zenith where technology and skill meets opportunities and guidance. It is a milestone that one would not dare to miss. I wish **NGT-RAHE**a grand success.

Thiru.K.Sathiyamoorthy
Chairman- NGT-RAHE - 2024

MESSAGE FROM THE DIRECTRESS

Tmt.Esaivani Sathiyamoorthy
Directress

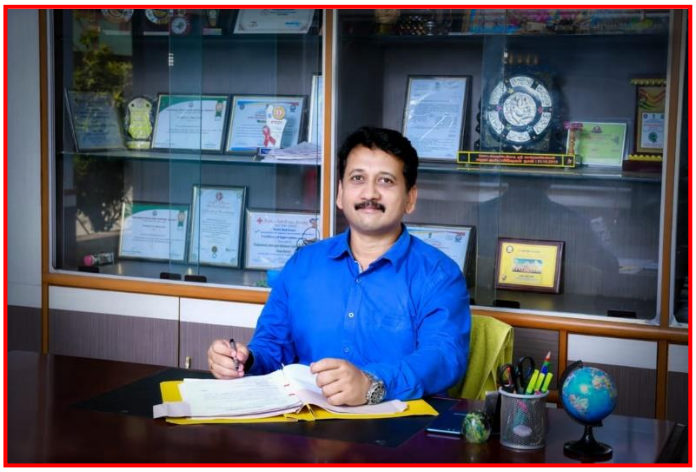
I have immense pleasure in writing this message on the occasion of the National Seminar on Next Gen Tech- Revolutionizing Agricultural, Health and Environment during August 09, 2024 at Padmavani Arts and Science College for Women, Autonomous, Salem organized by Department of Biotechnology and Microbiology.

This seminar will provide a platform to groom young scientists from all over the country and to bridge the researchers working in academia and other professionals through current technological trends. It is a high time to create research activities among the budding professionals.

May this seminar provide greater opportunities for every member of this specialty to learn more and let this learning be of immense help to the community at huge. I congratulate the organizers for their initiative and wish the seminar all success.

Tmt. Esaivani Sathiyamoorthy
Directress NGT-RAHE - 2024

Principal's Desk



Dr. R. Harikrishnaraj, Ph. D.
Principal & Convener

It gives me immense pleasure to be a part of this hosting team of **National Seminar on Next Gen Tech- Revolutionizing Agricultural, Health and Environment** during August 09, 2024 at Padmavani Arts and Science College for Women, Autonomous, Salem organized by Department of Biotechnology and Microbiology.

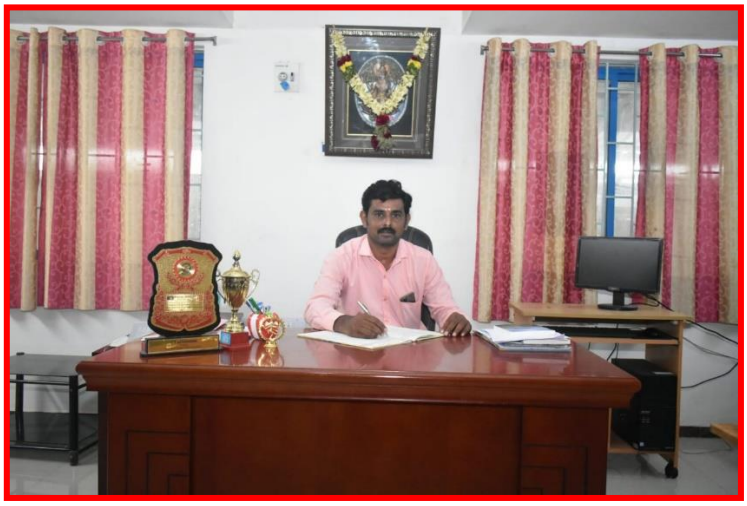
The seminar intends to bring together scientists, and research scholars from different disciplines to discuss concerns related to various techniques in science and technology. I take this opportunity to welcome all the delegates of the seminar. On behalf of **NGT-RAHE** whole team, I would like to thank all the authors, sponsors and keynote speakers for their support and co-operation.

The rapid development in technologies and changes in lifestyle impose various issues in many countries. The seminar**NGT-RAHE** has been crafted to challenge the hurdles and we are fortunate to have leading speakers to share their experience and perspectives to achieve smart solutions through their innovation.

It has been a team work and as a team I appreciate HODs, Coordinators Faculty members for giving their best to any task taken up at any given point of time. A warm and heartfelt thanks to Chief Guest, Keynote address, Plenary session chair, Panelist, delegates, author, co-author, participants and last but not the least my dearest students. I thank the publishers – Excellent Publishers for coming out with the ISBN book and Seminar Souvenir.

I hope the Seminar, Souvenir and the ISBN book is a culmination of knowledge and exchange platform for all.

Dr. R. Harikrishnaraj
Principal & Convener
NGT-RAHE- 2024



Dr. P. MUTHU KUMAR. M.Sc, M.Phil, M.Ed, M.Phil, M.A., Ph.D., SET,
ADMINISTRATIVE OFFICER

It gives me an immense pleasure to be a part of the **National Seminar on Next Gen Tech- Revolutionizing Agricultural, Health and Environment** during August 09, 2024 at Padmavani Arts and Science College for Women, Autonomous, Salem organized by Department of Biotechnology and Microbiology.

I strongly believe that this seminar will provide tools and knowledge to overcome significant problems appearing in our industry and society by identifying innovative ideas and technologies introduced by the researchers and students.

The success of this seminar will encourage us in introducing many more initiatives for innovative trends in the coming years. I wish the **NGT-RAHE** a great success.

Dr. P. MUTHU KUMAR
NGT-RAHE- 2024

Dr. M. Ramesh, M.Sc, M.Phil., Ph.D.,
Executive Officer

I am glad to be the part of the **National Seminar on Next Gen Tech-Revolutionizing Agricultural, Health and Environment** during August 09, 2024 at Padmavani Arts and Science College for Women, Autonomous, Salem organized by Department of Biotechnology and Microbiology.

The events in the conference are targeted towards researchers, practitioners, professionals, educators and students to share their experience, innovative ideas, issues, recent trends and future directions in field of Science and Technology.

Finally, I congratulate the team members and participant for their efforts in organizing and participating in this seminar and wish the seminar all the success.

Dr. M. Ramesh
NGT-RAHE - 2024

Convener's Message

Dr. R.Harikrishnaraj

Mrs. R.Valarmathi

It is our privilege and honor to welcome you all to the **National Seminar on Next Gen Tech- Revolutionizing Agricultural, Health and Environment** during August 09, 2024 at Padmavani Arts and Science College for Women, Autonomous, Salem organized by Department of Biotechnology and Microbiology.

The main goal of organizing this seminar is to share and enhance the knowledge of each and every individual in this fast-moving Information Era. We have given a good opportunity for those who have a thirst in knowing the future technological developments and also share their ideas. Additionally, this conference will also facilitate the participants to expose and share various novel ideas. The seminar aims to bridge the researchers working in academia and other professionals through research presentations and keynote addresses in current technological trends. It reflects the growing importance in the field of research and practice for contribution and better opportunities in future. You will get ample opportunities to widen your knowledge and network.

I want to thank in advance the seminar committee for extending their valuable time in organizing the program and all the authors, reviewers, and other contributors for their sparkling efforts and their belief in the excellence of NGT RAHE - 2024. I cordially invite all the enthusiasts to participate with full vigor in this celebrated event which can give immense exposure and global opportunities to all.

Organizing Secretary's Message

Dr.K.Kalaiarasi

Dr.R.Manikandan

Dr.Janani P R

It is my great pleasure to announce that the **National Seminar on Next Gen Tech- Revolutionizing Agricultural, Health and Environment** during August 09, 2024 at Padmavani Arts and Science College for Women, Autonomous, Salem organized by Department of Biotechnology and Microbiology was a grant success. It has been a real honour and privilege to serve as the Organising Secretary of the seminar.

This year, the program spanned one day of seminar. There were three very informative Keynote presentations and a Panel Discussion which was an excellent platform for discussions, debate and exchange of ideas on current topics like agriculture, health and environment.

We thank our secretary, chairman sir, directress mam, and principal sir for their vision and leadership. The conference would not have been possible without the enthusiasm and hard work of our colleagues Dr.M.Sriramani, Mrs.V.Renuka, Mrs. Soundarya, Mrs.K.Usharani. We are also grateful to all the authors for their valuable contributions.

NATIONAL SEMINAR

ON

"Next Gen Tech-Revolutionizing Agricultural, Health and Environment"

ABSTRACT PROCEEDINGS

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Padmavani Arts and Science College for Women,

Salem-11, Tamil Nadu

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NATIONAL SEMINAR
ON
"*Next Gen Tech-Revolutionizing Agricultural, Health and Environment*"

09, August, 2024

INVITED ABSTRACTS (ORAL PRESENTATION)

INVITED ABSTRACTS (POSTER PRESENTATION)

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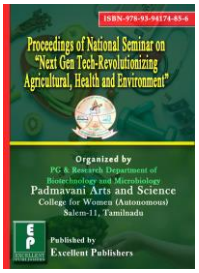
"Next Gen Tech-Revolutionizing Agricultural, Health and Environment"



Invited Abstracts *OP/01*

Isolation and Screening of Exopolysaccharide By An Osmotolerant and Metal Resistant *Mixta* Sp

M.Naveen Banu and Dr. Ezhlilarasu*

Department of Microbiology, Selvamm Arts and Science College (A), Namakkal, Tamil Nadu, India

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Abstract

The capacity of PGPB to create exopolysaccharides is an indirect method. The EPS generated by PGPB helps to maintain the ionic balance by binding Na+ cations, which decrease and are present around the root zone. The EPS that PGPB produces aids in soil aggregation, water retention, and metal ion chelation inside the plant. Utilize plant-associated biofilms to fend off infections and lessen microbial competition. Twenty bacterial isolates from rhizospheric soil were examined in this investigation of characteristics promoted plant growth. Sucrose and yeast extract were shown to be the best donors of nitrogen and carbon for synthesis of extracellular polymerization (EPS). On a mineral salt medium, the amount of EPS produced was measured. Following three days of incubation, the results revealed that slimy, mucoid colonies were seen on the plate, indicating that Mixta calida was producing EPS. Tube assaying was used to measure biofilm activity. The crystal violet-stained tube walls developed a ring around them in presence of biofilm activity.

Keywords: Exopolysaccharide, Biofilm , PGPB

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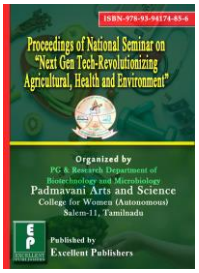

Invited Abstracts *OP/02*

Elucidation of Bioactive Compounds and Nutraceutical Importance of *Cissus quadrangularis*

R. Jeevitha and K. Suresh*

Department of Biotechnology, M.G.R. College, Hosur 635130, TamilNadu, India

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Abstract

Cissus quadrangularis, a perennial plant of the Vitaceae family, has garnered attention for its rich content of bioactive compounds and potential nutraceutical benefits. The plant is traditionally used in Ayurvedic medicine for its purported ability to enhance bone health and treat various ailments. Recent scientific studies have identified a plethora of bioactive constituents in Cissus quadrangularis, including flavonoids, triterpenoids, and phytosterols, which contribute to its anti-inflammatory, antioxidant, and analgesic properties. These compounds play a crucial role in the plant's efficacy in promoting bone healing, managing obesity, and alleviating metabolic disorders. The elucidation of these bioactive compounds not only underscores the medicinal value of *Cissus quadrangularis* but also opens avenues for its application in the development of functional foods and nutraceuticals, highlighting its significance in promoting human health and well-being.

Keywords: *Cissus quadrangularis*, Bioactive compounds, Nutraceuticals, Bone health, Ayurvedic medicine

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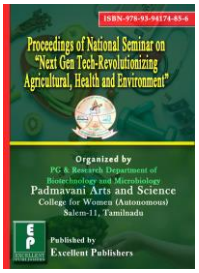

Invited Abstracts *OP/03*

Exploration of Antimicrobial peptide Potential of *Bacillus* Isolates from Mangrove Soils

T.Chethankumar and Dr.G.Neethirajan*

PG and Research centre in Biotechnology, M.G.R. College, Hosur 635130, TamilNadu, India

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Abstract

Antimicrobials of critical importance to human medicine, as identified by WHO, include β-lactams, polymyxins, lincosamides, aminoglycosides, tetracyclines, and polypeptides. Bacillus species, known for their ability to produce approximately 800 types of peptide antibiotics effective against bacteria and fungi, are particularly notable, with *B. subtilis* and *B. brevis* producing 66 and 23 active metabolites, respectively. These antibiotics are synthesized either through ribosomal or non-ribosomal mechanisms, with notable examples including gramicidin S from *B. brevis* and bacitracin from *B. subtilis*. *Bacillus* spp., being spore formers, can withstand extreme environmental conditions and possess probiotic properties, enhancing intestinal health by antagonizing pathogenic bacteria and improving microbial balance. Among these, *Bacillus megaterium*, isolated from diverse habitats such as soil, seawater, and food, is versatile, producing substances like vitamin B12, oxetanocin, and penicillin amidase. Soil samples from the unique mangrove habitats of the Honnavar river region in Karnataka yielded Bacillus isolates, confirmed through 16s rRNA gene sequencing. Sequence alignment and phylogenetic analysis revealed significant similarity to known Bacillus species, with isolates like MGR24 showing notable antibacterial activity against test organisms, comparable to streptomycin sulfate. This underscores the potential of Bacillus isolates from mangrove soils as sources of novel antibacterial agents.

Keywords: *Bacillus* species, Peptide antibiotics, Mangrove soils, Antibacterial activity,16s rRNA gene sequencing

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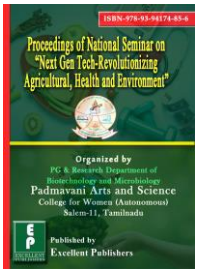

Invited Abstracts *OP/04*

Bioinspired Zinc Oxide Nanoparticles Phytochemical Profiling and Antimicrobial Evaluation of *Salvia officinalis* (L)

Renuka Varatharajan[1] and Kalaiarasi Kalamegam[2]*

[1]Research Scholar, Department of Biotechnology, Padmavani Arts and Science college for Women (Autonomous), Salem-11, Tamilnadu, India.
[2]Assistant Professor, Department of Biotechnology, Padmavani Arts and Science college for Women (Autonomous), Salem-11, Tamilnadu, India.

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Abstract

Medicinal plants are taken a great interest as source of bioactive compounds used for the treatment of different human pathologies. *Salvia officinalis* (L) has been utilised in traditional medicine for the treatment of a variety of diseases, with subsequent transformation into nanosized metal oxides giving greater potential benefits, targeted therapy, and cost-effectiveness. In this study, we used leaves to biosynthesize zinc oxide nanoparticles and phytochemical analysis using methanolic extracts of the plant. UV-visible spectrophotometer, FTIR, SEM-EDX, qualitative, HPLC and antimicrobial properties were analyzed. UV-visible spectrophotometer analysis of green synthesized ZnO NPs shows absorption peak maximum at 368 nm, FTIR analysis showed the presence of N=O stretch nitrogen groups, C=O stretch anhydrides, =C-N stretch alkenes. SEM images showed a cluster of moderately square, unevenly distributed ZnO NPs with average size of 50.4nm. EDX pattern exhibits strong emission energy at 1.743keV. The phytochemical variations, physicochemical alterations, and biological characteristics were studied respectively. Qualitative phytochemical analysis showed the presence of alkaloid, flavonoid, terpenoids, phenols and tannins wheras the quantitative study of HPLC analysis showed the presence of compounds such as Luteolin, β-Thujone, Salvianolic acid, Carveol, P.Coumaric acid, Quercetin,β-Pineneand Myrtenol. The antimicrobial activity against *E. coli*, *Enterobacter*, *Klebsiella*, *Bacillus*, and *Staphylococcus* showed that synthesized ZnO nanoparticles with the maximum zone of inhibition against all the bacterial species when compared to the plant crude extracts and Phytochemical extracts.Collectively our studies revealed that *Salvia officinalis* (L) containing ZnO nanoparticles has the potential to be more effective than wild *Salvia officinalis* (L) extracts and further research will help to explore the molecular process, which will benefit scientific research communities.

Keywords: *Salvia officinalis* (L), ZnO nanoparticles, HPLC, antimicrobial properties.

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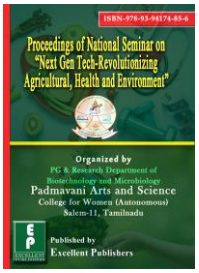

Invited Abstracts *OP/05*

Elucidating Genetic Determinants of Bad Obstetric History through Whole Exome Sequencing

Kanaka Durga Devi Yadamreddy and K. Suresh*

Department of Biotechnology, M.G.R. College, Hosur 635130, TamilNadu, India

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Abstract

Bad obstetric history, including infertility and recurrent pregnancy loss, poses a multifactorial challenge in reproductive medicine, with known risk factors such as delayed age at conception, diabetes mellitus, hypertension, autoimmune disorders, and uterine abnormalities significantly contributing to adverse pregnancy outcomes. Despite essential first-tier evaluations like karyotyping, MTHFR, Factor V Leiden, Factor II mutations, and total plasma homocysteine assessment, many cases remain unexplained. This study proposes utilizing whole exome sequencing (WES) to explore additional genetic determinants linked to bad obstetric history. WES comprehensively examines the coding regions of the genome, detecting rare or novel genetic variants missed by conventional testing. By investigating the entire exome, the study aims to identify genetic factors contributing to infertility, recurrent pregnancy loss, or other obstetric complications, enhancing our understanding of the genetic basis of bad obstetric history. The findings hold promise for identifying novel biomarkers or pathways involved in adverse reproductive outcomes, improving risk stratification, guiding personalized management strategies, and ultimately advancing successful pregnancy outcomes in affected individuals.

Keywords: Bad obstetric history,Whole exome sequencing (WES),Genetic determinants,Infertility,Recurrent pregnancy loss

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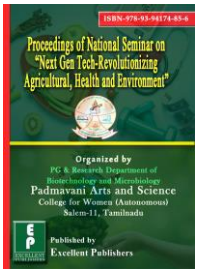

Invited Abstracts *OP/06*

Biodegration of Textile Industry Effluents by *Aeromonos veronii* (IEB1) and *Pseudomonas mosselii* (IEB4) are Isolated from Textile Effluents

V. Dhivyapriya, R. Elanthendral, S. Leena and R. Manikandan*

PG and Research Department of Biotechnology, Padmavani Arts and Science College for women (Autonomous), Salem-1, TamilNadu, India

Email id: drmanibiotech@gmail.com

Abstract

Dyeing and chemical industries plays a critical role in the environmental pollution. It is urgent need to overcome this crisis. This study was investigated to biodegradation of textile industry effluents by Bacterial stains. Different effluent samples were collected from different areas in Salem, Tamil nadu. The physiochemical analysis like pH, electrical conductivity, total dissolved solids, salinity were tested to these samples. Bacteria were isolated from textile effluent industries and screened by their capability to decolourize industrial effluents. Among 20 isolates, 3 isolates having the capacity to decolourize the highest concentration of dyes. Those identified bacteria are *Aeromonas veronii* and *Pseudomonas mosselii* based on morphological, cultural, biochemical characteristics and 16s rDNA sequence analysis. Degradative and decolourizing activity against various reactive dyes suggest that the bacterial isolates in this study have potential practical application in the biotransformation of various dye effluents.

Keywords: Biodegradation, *Aeromonas veronii, Pseudomonas mosselii*, Biotransformation, Industrial effluents.

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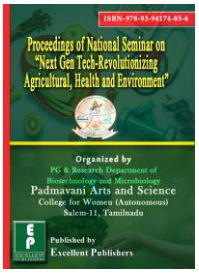

Invited Abstracts *OP/07*

Synthesis and Characterization of ZnONPs from *Ziziphus jujube* (Mill.) Leaf extract and its effect on Antibacterial activity

K.Sneka, S.Divyadevi, R.Ramya, M.A. Hansika, Dr.K.kalaiarasi*

PG and Research Department of Biotechnology, Padmavani Arts and Science College for women (Autonomous), Salem-1, TamilNadu, India

Email id: kalaiarasikalamegam@gmail.com

Abstract

Traditional medicine are used by near about 60 percent of world's population. The traditional medicine are derived from medicinal plants, minerals and organic matters. *Ziziphus jujuba* an indigenous plant possesses terrific medicinal properties. *Ziziphus jujuba* fruit is rich in vitamin C, B1, B2. In this study aimed to synthesis of ZnONP from ziziphus jujuba leaf extract and its effect on antibacterial activity. *Escherichia coli*, Tetracycline, *Pseudomonas* species has used for the antibacterial activity of *Ziziphus jujuba*. The current study successfully prepared a noval and sustained release nanobamboo charcoal along with ZnONPs synthesized from *Ziziphus jujuba*. The *Ziziphus jujuba* extract was taken by boiling and filtering method. The antibacterial potential of ZnONPs determined against harmful pathogens under minor modification disc-diffusion methodology. This significant effect on drug delivery system. The nanoparticles were characterized by SEM, EDAX. SEM image has shown individual ZnONP as well as a numerous of aggregates. The EDAX analysis of ZnOps produced strong peaks at 0.61 and 1.34d conforming the presence of O>C>Zn element due to the surface plasma.

Keywords: *Ziziphus jujuba*, antibacterial activity, traditional medicine, ZnO

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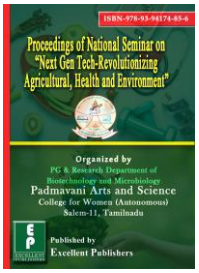

Invited Abstracts *OP/08*

Investigation on Heavy Metal Accumulation in Native Plant Species and Soil Microorganism in the Region of the Northern State of Tamilnadu, India

S. Dhivakar[1], A. P. Jayaprakash[1], S. Palanikumar[1], M. Sanjay[1], Jobins John Cheria[1], I. Ganesh Babu1*

[1]Department of Biotechnology, Vinayaka Mission's Kirupananda Variyar Engineering College,Salem, Vinayaka Mission's Research Foundation (Deemed to be University), Salem – 636 308, TamilNadu, India

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Abstract

Heavy metals accumulate in soil due to anthropogenic activities, causing harmful effects on plants and other living organisms. These metals can disrupt growth, development, ionic imbalance, decreased photosynthetic rate, destruction of chloroplasts and pigments, changes in elemental composition, and disrupted plant-water relations. This study aimed to investigate the heavy metal accumulation in native plant species and soil microorganisms. Five plant samples and soil microorganisms were screened and identified based on their morphological characteristics. The levels of heavy metals (Cd, Cr, Cu, Co, Fe, Mn, Ni, Mo, Pb, Zn) in these plant species and soil microorganisms were determined using acid digestion followed by atomic absorption spectroscopy based on regulatory standards. The study involved sample collection, screening and identification of species, sample preparation, acid digestion, atomic absorption, and spectroscopy analysis. The expected result was that the concentration of heavy metals (Cd, Cu, Cr, Pd, and Zn) in soil samples from the urbanized area of Salem was found. The spatial distribution and source of heavy metal contamination were evaluated, and ten soil samples were collected and analyzed for heavy metals (Zn, Cu, Cr, Pd, and Cd).

Keywords: *Ziziphus jujuba*, antibacterial activity, traditional medicine, ZnO

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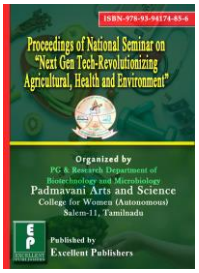

Invited Abstracts *OP/09*

Alleviation of chromium induced toxicity in oryza sativa using biogenic synthesized iron oxide (FeO) nanoparticles

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Abstract

Ecological reputation and food safety is threatened by contamination of Chromium (Cr) is a common toxic trace element found in agricultural soils, due to anthropogenic activities. Therefore, it is necessary to develop effective techniques for remediation and immobilization of heavy metal in soil. The present study was aimed to synthesis of iron oxide nanoparticles (FeONps) from sugarcane bagasses (saccharum officinarum) and characterised by X-ray difraction (XRD), Fourier-transform infrared spectroscopy (FTIR). Energy Dispersive X-Ray Analysis (EDX). On the other hand the effect of synthesized FeONps on the seed germination, plant growth and Cr accumulation was studied in oryza sativa. The XRD analysis of peak value 35.5 was confirmed the formation of iron oxide nanoparticles. FTIR showed that the peak value at 2500 to 3800 cm-1 indicates the O–H and C=C stretching due to the presence of phenol and alkene functional groups.EDX analysis shows peak around 79.62, which confirm the binding intensity of FeONPS. The addition of FeONps was increased seed germination (80%) compared with control (78%). FeONps amendment was reduced Cr accumulation in oryza sativa of shoot and root tissues 75.5% and 86.6% respectively. Whereas increased the oryza sativa root length (4.2cm) and shoot length (13.37cm) compared than Cr treatment. Estimated content of Chlorophylls, Carotenoids from the leaves. This study provide fundamental knowledge on the role that FeONPs play in the phytoremediation of heavy metal-contaminated soil. Iron oxide nanoparticles are a workable way to restore soil fertility and remediate dangerous Cr-contaminated soil.

Keywords: *Oryza sativa*, Chromium contamination, *Saccharum officinarum* iron nanoparticles, Remediation, Soil fertility

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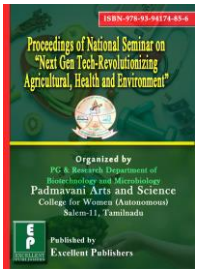

Invited Abstracts *OP/10*

Assessment of heavy metals contamination and soil fertility analysis in and around Salem district Tamil Nadu

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Abstract

The urbanization and industrialization growth around the world has resulted into introduction of several environmental pollution. Heavy metal accumulation in soil has become one of the most important environmental problems in recent decades. Heavy metal contamination is the major cause of soil pollution. Eight common heavy metals are arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver. In this study the assessment of heavy metals contamination and soil fertility analysis was done. The soil samples are collected from different places in and around Salem district. The determination of heavy metals in soil was done by Digestion method, Atomic Absorption Spectroscopy (AAS). Then the physiochemical characterization like pH, electrical conductivity and salinity was conducted in this sample. Among the samples the maximum value of lead is 7.4915 at (Selathampatti), chromium is 7.5366 at (Selathampatti), copper is 11.2874 at (Sivathapuram). The present study result indicates that highest contamination occurs in (Sivathapuram) due to contamination of copper effluent.

Keywords: Heavy metal contamination, soil fertility analysis, Atomic absorption spectroscopy, physiochemical characterization

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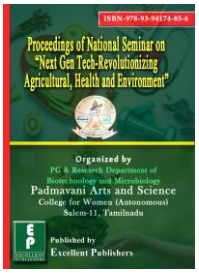

Invited Abstracts *OP/11*

Assessment of Agricultural Soils Fertility Analysis in and Around Magnesite Mines, Salem

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Abstract

Mining is the major source for Environmental pollution in the world.The human existence on earth is almost impossible without the chemicals like metals due to their products are very important to mankind.In this study was investigated the soil physicochemical production to the analysis and assessment of agricultural soil fertility in and around dalmiapuram MAGNESITE mine agricultura.The physicochemical analysis as done to identify determination of pH macronutrients and micronutrients like N,P,K and Fe,Mn,Zn,Cu and carried out the evoluting the effect of magnesite mine contamination or v.radiate seed germination under the green house condition.The result reveat the physicochemical parameters of soil sample 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 water 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 agricultural land.

Keywords: Magnesite Mine, *V.radiate*, seed germination, Environmental pollution, Physicochemical, Micronutrients, Micronutrients.

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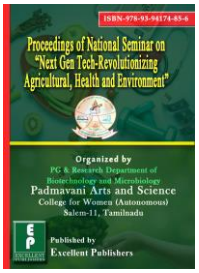

Phytochemical analysis of *Andrographis paniculata* leaf extract and its effect on anti microbial activity

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Abstract

Medicinal plants have bioactive compounds which are used for during of various human diseases and also play an important role in healing. Andrographis Paniculata, known as king of bitter has been traditionally used for various element. This study aimed to investigate the phytochemical Composition and antimicrobial properties of A.Paniculata extract obtained using aqueous and chloroform solvent. Phytochemical analysis was done to identify the presence of bioactive compounds. The result revealed the presence of a divorce range of phytochemical constituents including alkaloid, flavonoids, terpanoid and phenols. The extracts exhibits promising anti microbial against selective bacteria and fungus like E.Coli and Aspergillus Niger and the zone of inhibition against E.Coli was recorded as 4.00- 6.00mm. These finding underscore the potential of A.Paniculata as a valuable source of natural anti microbial agent, warranty for the investigation into the isolation and characterization of the active compounds responsible for the observed bio active.

Keywords: *Andrographis paniculata*, Phytochemical analysis, Antimicrobial activity, *E.coli*, *Aspergillus niger*, aqueous extraction, chloroform extraction.

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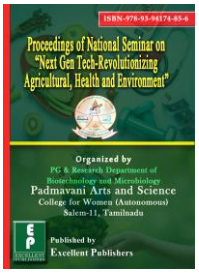

Invited Abstracts *OP/13*

Phytochemical Analysis and Antibacterial Activity of *Justica transquebariensis* extract

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Abstract

Medical plants are the backbone of traditional medicine which means more than Billion people in the less develops centuries utilize medicinal plants on a regular Basis. *Justicinal tranquebariensis* is a small shul, which is widely used in the Traditional system of medicine for the treatment of fever, inflammation, liver Disease, anti-viral activities and more. This study was inviscid phytochemical Analysis of *J. tranquebariensis* extract is enzyme on antimicrobial activity *J. tranquebariensis* leaf extract was extracted by ethanol method.The result should the present of glycosides steroids, phytosteroids, Phycobatannins and carbohydrate in the *J. tranquebariensis* leaf extract.By phytochemical screening the *J. tranquebariensis* leaf extract. Showed Bactericidal activity against E.Faecalis, *K.pneumoniae*, *E.coli*, *P.aeruginosa* and *S. aureus* organisms. The present results indicated that the *J. tranquebariensis* of use in the traditional medicine for treating infectious of disease Caused by microbes.

Keywords: *J. tranquebariensis*, Phytochemical Analysis, Antibacterial Activity, Phycobatannins

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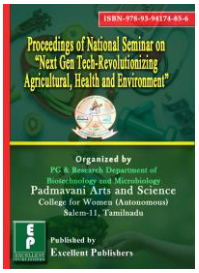

Invited Abstracts *OP/14*

Synthesis and Characterization of ZnONps from *Bambusa arundinaceae* (RETZ) leaf extract and its effect on antibacterial activity

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Abstract

Bambusa arundinaceae (retz).Wild the fasting growing perennial plant on earth, is native to india and cultivated throughout the tropics, commomly known as thorny bamboo or "mulmunkil". The present study was aimed to synthesis and characterization of ZnONps from *Bambusa arundinaceae* (retz) leaf extract and its effect on antibacterial activity.The bamboo leaves were used to prepare the aqueous extract and ZnONps were synthesized by boiled method and characterized by FTIR Measurement were carried out to identify possible biomolecules for the reduction of Zinc ions and capping of the bioreduced silver nanoparticles synthesized in the leaf broth of bamboo species with activated charcoal.SEM image has showed individual zinc nanoparticle as well as a number of aggregates.The EDX analysis of pyrolysis bamboo biochar is found to rich in C and O elements.The biosynthesized ZnONps showed significantly higher level of antibacterial activity against tested *E.coli*. It is noteworthy to record that the plant aqueous leaf extract also exhibited certain level of antimicrobial activity against tested human bacterial pathogens.

Keywords: *Bambusa arundinaceae*, ZnONps, bamboo leaves, EDX analysis

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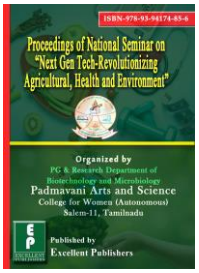

Invited Abstracts *OP/15*

Assessment of thiourea modified biochar to alleviate chromium bioavailability and toxicity by in Vigna radiate in Cr contaminated agriculture soil

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Abstract

In the present study, BC was developed by corn husk and characterized by Fourier Transform Infrared Spectroscopy (FTIR), X-ray Diffraction (XRD) and Scanning Electron Microscope (SEM) with Dispersive X-ray Spectroscopy (EDX) and randomised pot experiment was investigated the impact of BC and TU+BC combination on Cr phytoavailability, agriculture soil fertility and Cr toxicity tolerance mechanism in *V. radiate.* The physicochemical properties like pH (9.62±0.109), salinity (0.91±0.005 ppt), EC (0.859±0.021 mS/cm) and available nitrogen values of TU+BC was found to be higher than BC. Two new peaks 617.9cm-1 and 1110.5cm-1 were observed in TU+BC, which are corresponded to stretching vibration of –C-S and –C=S (thiocarbonly) groups, whereas, these peaks are showed in BC. In XRD analysis exhibited some peaks located at 25.3°, 44.2°, 59.0° and 76.1° could be corresponding to be (002), (100), (200) and (203) planes of graphite structure, these are indicated that thiourea was successfully loaded on biochar. SEM analysis showed smooth surface on BC but TU+BC have more porous with rugged surface. Furthermore, EDS spectrum analysis showed carbon, oxygen, potassium, iron, chloride elements content in both BC and TU+BC but sulphur was present in TU+BC only. The seed germination and plant growth was affected at Cr (25 mg/Kg) alone treatment, while it was significantly increased seed germination (86.0%), shoot (8.7± 0.173), root length (4.01±0.031) and biomass (0.314±0.002 and 0.386±0.001) with amendment of TU-BC in Cr contaminated soil. Cr accumulations was increased in *V. radiate* root 203.1±1.086 and shoot 97.42±0.952µg/g DW at 25 mg/Kg Cr treatment, whereas it was significantly decreased by 94.8±0.031 and 33.71±0.053 µg/g DW with TU+BC addition in Cr contaminated soil. Similarly, Cr translocation root to shoot also reduced by 35.5% after addition of TU+BC in Cr contaminated soil. Compared to control photosynthetic pigments content was decreased 20.0% at Cr treatment. It is interesting to note that addition of TU+BC was increased 123.8% photosynthetic pigments in *V. radiate* under Cr stress. The antioxidative enzymes like CAT (28.2%), POX (47.0%) and SOD (16.0%) activities were decreased, when compared to control. However, TU+BC addition improved the CAT (126.5%), POX (162.7%) and SOD (116.0%) activities of *V. radiate* in Cr treatment. These results suggested that the TU+BC amendment with Cr may reduction of Cr induced stress that could enhance seed germination, plant growth, photosynthetic pigments and antioxidative enzymes activities in *V. radiate*. Moreover, TU+BC amendment limit the Cr phytoavailability in rhizosphere, accumulation and translocation in *V. radiate* tissues and enhanced the soil fertility.

Keywords: Biochar, Thiourea modified biochar, Chromium stress, Vigna radiate, Antioxidative enzyme

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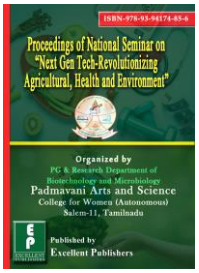

Invited Abstracts ***OP/16***

Study on Nutraceutical effect of Biopeptides Isolated from *Dunaliella salina*

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Abstract

Marine life constitutes about 80% of the world biota with thousands of bioactive compounds and secondary metabolites derived from marine invertebrates such as tunicates, sponges, molluscs, bryozoans, sea slugs and many other marine organisms. These bioactive molecules and secondary metabolites possess antibiotic, antiparasitic, antiviral, anti-inflammatory, antifibrotic and anticancer activities. Due to its notable carotenoid concentration and substantial nutritional value, the microalga *Dunaliella salina* is a prospective source of bioactive chemicals. The goal of this work is to synthesize and extract biopeptides from *Dunaliella salina* and investigate their possible uses in the nutrient-dense food sector. Through *in vitro* tests, these biopeptides noteworthy anti-inflammatory, antibacterial, and antioxidant characteristics were evaluated. Based on reviews, it was noticed that when biopeptides were included in different food matrices, it improved better health benefits and nutritional profiles. Including *Dunaliella salina* biopeptides in functional meals offers a novel and sustainable way to boost general health and deplete nutritional deficiencies, it is a rich source of bioactive chemicals and necessary amino acids, which are peptides that help the production of proteins and general nutritional health. The effect of marine microalgae as a potential resource for the creation of next-generation nutraceuticals is highlighted in this review.

Keywords: *Dunaliella salina, biopeptides,* nutritional food, medical properties, nutraceuticals

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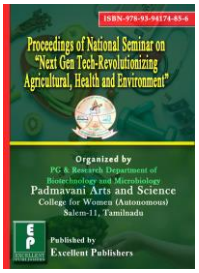

Invited Abstracts *OP/17*

The Science Behind Bioremediation

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Abstract

A brief outline of the development of bioremediation technologies is presented. The major features and limitations are presented and an overview of the current state of the art in the field applications is sketched. The term bioremediation has been introduced to describe the process of using biological agents. to remove toxic waste from the environment. Bioremediation is the most effective management tool to manage the polluted environment and recover contaminated soil. Bioremediation, both in situ and ex-situ have also enjoyed strong scientific growth, in part due to the increased use of natural attenuation, since most natural attenuation is due to biodegradation, Bioremediation and natural attention are also seen as a solution for emerging contaminant problems. Microbes are very helpful to remediate the contaminated environment. Number of microbes including aerobes, anaerobes and fungi are involved in bioremediation process.

Keywords: Bioremediation. Biotechnology, Microbes, and Carbon Sequestration

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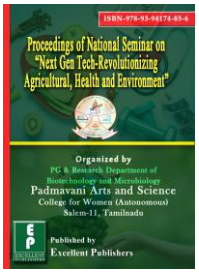

Invited Abstracts *OP/18*

A Review of Bioplastics Synthesised from Sugarcane Bagasse

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Abstract

Plastics are the synthetic non-degradable polymer material used for all applications almost everywhere to meet the growing demands. The continuous utilization of petroleum based various products forms of plastic are creating several environmental pollutants. Bioplastics are degradable polymer material at a shorter time period and hence is a most promising alternative for conventional plastics. Growing environmental worries about synthetic plastics have sparked a great deal of interest in creating biodegradable and sustainable alternatives. The potential of sugarcane bagasse, a plentiful agricultural by-product, used as a raw material for the manufacturing of bioplastics is investigated in this study. After cellulose was extracted from sugarcane bagasse using chemical processes, different polymerization techniques were employed to create bioplastic films. The mechanical, thermal, and biodegradation properties of the resultant bioplastic films were described. A series of chemical pre-treatment and enzymatic hydrolysis processes were optimized to efficiently convert bagasse into fermentable sugars which were then used to synthesize polyhydroxyalkanoates [PHAs].From the recent studies it was observed that the films have tensile strength and flexibility similar to that of traditional plastics through mechanical testing, which qualified them for use in packaging applications. This study aim to emphasize the potential effect of sugarcane bagasse's as a sustainable feedstock for the synthesis of bioplastics, providing a green remedy for the pollution caused by plastics.

Keywords: Sugarcane bagasse, bioplastics, biodegradation, polyhydroxyalkanoates

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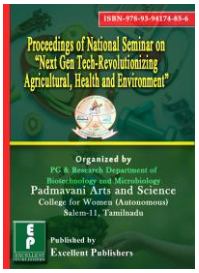

Invited Abstracts *OP/19*

Current Advances in the Development of Hydrogel-Based Wound Dressings for Diabetic Foot Ulcer Treatment

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Abstract

Foot ulcers caused by diabetes are the common issue that frequently result in amputations of the lower extremities. These chronic wounds persist due to infections and other related complications, presenting a challenge in healthcare that demands creative medical solutions. Hydrogels are the standout option for diabetic wound healing as they have unique properties like fastening the healing of wounds, which prevents the amputations etc., able to address the complex microenvironment of these challenging wounds. In this study, we emphasize the versatility of hydrogels which demonstrate their ability to promote tissue adhesion, prevent scarring, combat infection, reduce inflammation, facilitate electrical signaling, manage bleeding, heal injuries, and exhibit tailored responses to different wound types. This study addresses the potential benefits of hydrogels in diabetic wound healing. This review aims to establish the groundwork for academics and companies to enhance the use of hydrogel-based methods that can significantly improve diabetic wound healing, increasing the hope for patients with chronic diabetic wounds.

Keywords: Hydrogels, Diabetic Foot Ulcers, Wound Healing, Infections, Scarring Prevention

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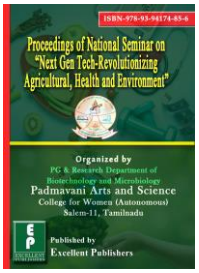

Invited Abstracts *OP/20*

Effect of biochar and magnesium nanoparticles modified biochar on chromium immobilization in contaminated soil and alleviation of chromium induced toxicity in *Abelmoschus esculentus*

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Abstract

Magnesium Nanoparticles (MgNPs) and biochar are emerging as effective solutions to enhance plant growth and mitigate heavy metal stress in agricultural systems. The present study was aimed to synthesis of MgNPs, biochar and biochar+MgNPs composite from sugarcane bagasse. Moreover, investigated the developed biochar+MgNPs composite on seed germination, plant growth, biomass and Cr accumulation and translocation in *Abelmoschus esculentus*. Amendments of MgNPs +BC composite germination percentage 71% increased compared to Cr alone treatment. Shoot and root lengths were also improved in treated with the MgNP+BC+Cr treatment showed 32 cm and 9 cm, respectively. Fresh and dry biomass measurements indicated that biochar and MgNP+Cr treatments positively influenced plant biomass. Whereas, Cr accumulation was substantially lower in biochar, with 63% compared to Cr alone treatments. On the other hand factor (TF) was reduced, in MgNPs+BC composite is under Cr stress. The MgNP+BC+Cr treatment exhibited the lowest Cr translocation, highlighting its potential in heavymetal remediation. In this study the combination of MgNPs and biochar enhanced the growth and biomass of *Abelmoschus esculentus* as well as effectively reduced Cr accumulation and translocation, suggesting a promising approach for improving soil fertility and immobilization of heavy metal in contaminated soil.

Keywords: Magnesium nanoparticles, Biochar, Sugarcane bagasse, Abelmoschus esculentus, Chromium translocation

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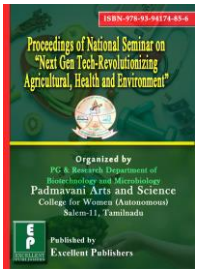

Green Synthesis of Zinc Oxide Nanoparticles and its Characterization from *Corollocarpus epigaeus*

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Abstract

Biosynthesis of nanoparticles have been increasing significantly in the field of nanoscience. It has been widely used in many recent technologies and there is no doubt that they have been also manifested its application in medical field. Plants and plant-based nanoparticles are more stable than the microorganisms. The plant *Corollocarpus epigaeus* (L) belongs to the family *Cucurbitaceae* family. The root is yellow in color and bitter in taste. It is a monoecious plant, found mostly in tropical countries. Numerous reports from researches documented that the rhizome of *Corollocarpus epigaeus* (L) has bioactive compounds such as alkaloids, flavonoids, saponins and phenols with antimicrobial, anti-rheumatism and antioxidant properties. Synthesis of Zinc oxide nanoparticles is more advantageous than other metal nanoparticles in respect to its easy availability. The present study explains the structural and morphological characteristics of Zincoxide nanoparticles from roots of *Corollocarpus epigaeus* (L) by UV spectroscopy, Fourier transform infra-red (FTIR) and scanning electron microscopy with energy dispersive x-ray spectroscopy (SEM-EDX). The UV spectroscopy showed peak at 412 nm. The FTIR report showed various compounds with hydroxyl group, carboxyl group and Alkyne C-H stretch that has numerous antioxidant properties. The SEM reports also showed the ZnO NP were spherical in shape with diameter of 30nm. The results paved the way for the further investigations.

Keywords: *Corollocarpus epigaeus*, ZnO nanoparticles, and antimicrobial properties.

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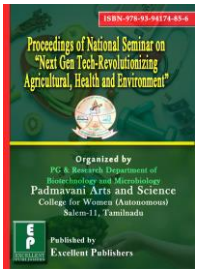

Invited Abstracts *OP/22*

Nanoparticles: The Next Generation Technology for Sustainable Agriculture

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Abstract

Agri-nanotechnology has the potential to transform the agricultural practices. Nanoparticles of interest can be produced both by various physical and chemical methods. The biogenetic production of nanoparticles is now of high interest due to simplicity of the procedures and their versatility. Several species of bacteria and plants are able to synthesize nanoparticles or help in the process of their production. Implementation of nanoparticle- based smart delivery system and nanosensors holds the promise of controlled release of agrochemicals and site-targeted delivery of various macromolecules needed for improved plant disease resistance, efficient nutrient utilization and improved plant defence in an environment-friendly manner. Nanoparticle-mediated plant transformation has the potential for genetic modification of plant improvement.

Keywords: Agri-nanotechnology, Biogenic, Nanosensors, Biocontrol, Inoculants

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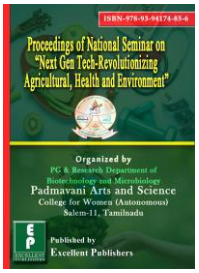

Invited Abstracts *OP/23*

The Role of Microbiome in Cancer Development and Therapy

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Abstract

Targeting the microbiome, microbiota-derived metabolites, and related pathways representasignificant challenge in oncology. Microbiome analyses have confirmed the negative impact of cancer treatment on gut homostasis, resulting in acute dybiosis and severe complications, including mssive inflammatory immune response, mucosal barrier disruption, and bacterial translocation across the gut epithelium. In this review, we provide current insights into the role of the microbiome in tumor microbiombes on chemo- and immunotherapy efficacy, as well as treatment induced late effect including cognitive impairment and cardiotoxity. As discussed, microbiota modulation via probioyic supplement and fecal microbiota transplantation represent a new trend in cancer patient care, aiming to increase bacterial diversity, alleviate acute and long-term treatment-induced toxicity. Determination of causal correlations might lead to the identification of clinically relevant diagnostic and prognostic microbial biomarkers. Notably, restoration of intestinal homeostasis could contribute to optimizing treatment efficacy and improving cancer patient outcomes.

Keywords: Gut microbiome; dysbiosis; cancer treatment efficacy; late effect; cognitive impairment; cardiotoxicity; probiotics; fecal microbiota transplantation.

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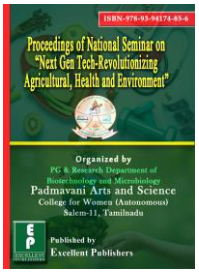

Invited Abstracts *OP/24*

Lactic Acid Bacteria: Food safety and Human health Application

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Abstract

Research on lactic acid bacteria has confirmed how specific strains possess probiotic properties and impart unique sensory characteristics to food products. The use of probiotic lactic acid bacteria (LAB) in many food products, thus confers various health benefits to humans when they are frequently consumed in adequate amounts. The advent of functional food or the concept of nutraceuticals objectively places more emphasis on seeking alternatives to limit the use of medications thus promoting the regular consumption of fermented foods. Probiotic use has thus been recommended to fulfill the role of nutraceuticals, as no side effects on human health have been reported. Probiotics and lactic acid bacteria can boost and strengthen the human immune system, thereby increasing its resistance against numerous disease conditions. Consumer safety and confidence in dairy and fermented food products and the desire of the food industry to meet the sensory and health needs of consumers, has thus increased the demand for probiotic starter cultures with exceptional performance coupled with health benefiting properties. The potential of probiotic cultures and lactic acid bacteria in many industrial applications including fermented food products generally affects product characteristics and also serves as health-promoting foods for humans. The alleviation of lactose intolerance in many populations globally has been one of the widely accepted health claims attributed to probiotics and lactic acid bacteria, although many diseases have been treated with probiotic lactic acid bacteria and have been proven with scientific and clinical studies. The aim of our review was to present information related to lactic acid bacteria, the new classification and perspectives on industrial applications with a special emphasis on food safety and human health.

Keywords: Lactic acid bacteria ; health benefits; bio-preservation; probiotics.

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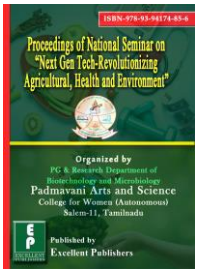

Invited Abstracts *OP/25*

The Human Microbiome and its Impact on Health

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Abstract

The human microbiome is a complex ecosystem of microorganisms inhabiting the human body. It plays a crucial role in maintaining health and preventing disease. Dysbiosis, an imbalance of the microbiome, has been linked to various diseases, including inflammatory bowel disease, obesity, diabetes, mental health disorders, and cancer.Understanding the microbiome's composition, function, and interactions with the host is essential for developing personalized medicine approaches, novel therapies, and preventive strategies to promote health and mitigate disease. Further research is needed to unravel the intricate relationships between the microbiome and human health. The human microbiome comprises trillions of microorganisms inhabiting the human body, influencing various physiological processes. An imbalance of the microbiome, also known as dysbiosis, has been linked to various diseases, including inflammatory bowel disease, obesity, diabetes, mental health disorders, and cancer. Understanding the human microbiome's composition, function, and interactions with the host is essential for developing personalized medicine approaches, novel therapies, and preventive strategies to promote health and mitigate disease. The human microbiome plays a crucial role in health and disease. Dysbiosis has been linked to various diseases, including inflammatory bowel disease, obesity, and cancer. Understanding the microbiome is essential for developing personalized medicine approaches and novel therapies. The microbiome is essential for human development, immunity and nutrition.The bacteria living in and on us are not invaders but beneficial colonizers. Autoimmune diseases such as diabetes, rheumatoid arthritis, muscular dystrophy, multiple sclerosis, and fibromyalgia are associated with dysfunction in the microbiome. Disease-causing microbes accumulate over time, changing gene activity and metabolic processes and resulting in an abnormal immune response against substances and tissues normally present in the body. Autoimmune diseases appear to be passed in families not by DNA inheritance but by inheriting the family's microbiome.

Keywords: Human microbiome, dysbiosis, personalized medicine, microbiome research, health and disease.

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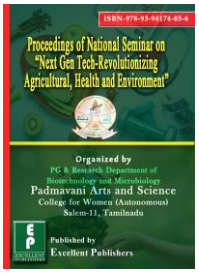

Invited Abstracts *OP/26*

Rhizobacterium-Based Nanobiofertilizer: A Novel Approach to Enhance Plant Growth in Nutrient-Deficient Soil

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Abstract

Nutrient deficiency in soil poses a significant challenge to agricultural productivity worldwide. Traditional fertilizers have limitations in their efficiency and environmental impact. In response, innovative strategies such as nanobiofertilizers have emerged to improve nutrient availability and plant growth. Rhizobacterium-based nano biofertilizers represent a promising avenue due to their symbiotic relationship with plants and their ability to enhance nutrient. This abstract explores the potential of rhizobacterium-based nanobiofertilizers as plant growth enhancers in nutrient-deficient soil. By encapsulating beneficial microorganisms within nanocarriers, such as nanoparticles or nanogels, these formulations offer targeted nutrient delivery, prolonged efficacy, and enhanced bioavailability. Furthermore, the nanoscale dimensions facilitate improved root penetration and uptake of nutrients, resulting in increased crop yields and nutrient-use efficiency and the mechanisms underlying their action, including nitrogen fixation, phosphate solubilization, and production of plant growth-promoting substances. Additionally, we highlight recent advancements, challenges, and future prospects in the application of rhizobacterium-based nanobiofertilizers for sustainable agriculture. Overall, this abstract provides valuable insights into harnessing the power of nanotechnology and microbial ecology to address soil nutrient deficiencies and improve crop yields and future prospects in sustainable agriculture.

Keywords: Nano biofertilizer, Rhizobacterium, Nanocarriers.

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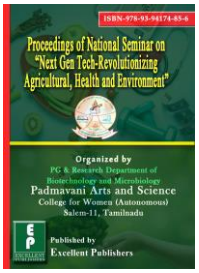

Invited Abstracts *OP/27*

Fate of Antibiotics in Ecosystem

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Abstract

Due to consumption of heavy amount of antibiotics in our medication, day by day these antibiotics are getting accumulated in nature. As our body is not capable of metabolizing all of the antibiotics. Sources of accumulation of antibiotics are not only by human consumption and also agricultural practices and in the treatment of animals as a mean to prevent illnesses, to promote growth (animal fattening) and to increase feed efficiency. Antibiotics enter the environment through wastewater irrigation, bio-solids and animal manure used to fertilize agricultural land, thus finding their way into the food chain; some antibiotics remain persistent in the soil from days to months. The antibiotics extensive usages have raised questions on their limits, sources and fate in the environment as well as for their hazards to humans. This heavy consumption and accumulation of antibiotics have led to development of new antibiotic resistant microbial strains which is now a global threat thus we need to remediate the accumulated antibiotics from our environment so that there is no more development of resistant strains.

Keywords: Antibiotics, resistant strain, metabolism, environment, remediation.

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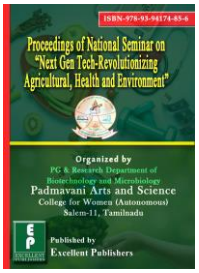

Invited Abstracts *OP/28*

Phytochemical Analysis and Antioxidant Activities of *Solanum erianthum*

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Abstract

Medicinal plants are an important part of our natural wealth and has become useful of the Progress in modern medical and pharmaceutical research. Modern Pharmacopoeia still contains at least 25% drugs derived from plants. Solanum erianthum the Potato tree is a species of Nightshade, it aimed to Phytochemical analysis and antioxidant of Solanum erianthum. The solanum eriathum extract was Prepared by Soxhlet extraction method. phytochemical analysis of methanol and chloroform extracts of solanum erianthum has confirmed the presence of flavonoids, Saponins, Alkaloids, Terpinoids, steroids, phenol compounds, phenolic compounds, Tannis and Carbohydrates. The total antioxidant activity of solanum crianthum extract revealed the maximum percentage of scavenging activity of free radicals at 1000 µg/ml is 60.78. And The IC50 Value is found to be 820.36 µg/ml.The reducing power of assayof Solanum erianthum extract showed the maximum activity in methnol extract(IC50:617.83 µg/ml). The Hydrogen peroxide radical scavenging activity of Solanum erianthum extract showed the highest activity at the concentration 609.54 ug/ml with the Inhibition of 80% .The lipid peroxidation assay of Solanum erianthum showed the the highest activity at concentration of 317.30 ug/ml with the inhibition of 88%.

Keywords: Phytochemical analysis, Antioxidant activities, scavenging activity, Hydrogen peroxide Lipid peroxidation assay.

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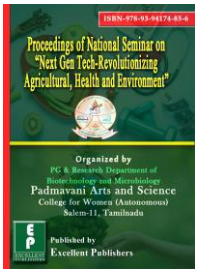

Invited Abstracts *OP/29*

Sustainable synthesis of zinc oxide nanoparticles using *Annona reticulata* fruit extract and its antibacterial and photocatalytic activity

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Abstract

In this study, Annona reticulata fruit extract based synthesis of zinc oxide nanoparticles (ARF-ZnONPs) were fabricated and their diverse properties and applications were studied. Phytochemical analysis confirmed the presence of phenols and flavonoids in the fruit extract, playing a crucial role in the stabilization and reduction of the synthesized ARF-ZnONPs. The biosynthesized ARF-ZnONPs were characterized through a range of analytical techniques. UV-visible spectrophotometry has been employed to investigate their optical characteristics. FT-IR spectroscopy was employed to identify the functional groups responsible for the synthesis of the ARF-ZnONPs. The structural properties were evaluated using XRD. The morphology and size distribution of the synthesized NPs were examined using FESEM and elemental spectra evaluated using EDX. The ARF-ZnONPs exhibited excellent photocatalytic degradation of methylene blue and methyl orangedyes under sunlight exposure with photocatalytic degradation of 88.34%, and 84.43% respectively. Additionally, the nanoparticles displayed antimicrobial activity against Gram-positive and Gram-negative bacteria. Overall, our findings highlight the versatile properties of the greenly synthesized ARF-ZnONPs, showcasing their potential in environmental remediation, and antimicrobial formulations, and as promising candidates for further exploration in the biomedical fields, including drug delivery and therapeutics.

Keywords: *Annona reticulata* fruit, zinc oxide nanoparticles, photocatalytic degradation, antimicrobial activity.

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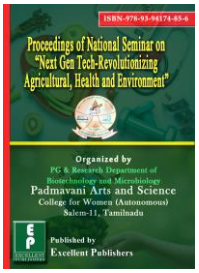

Invited Abstracts *OP/30*

Biogenic synthesis of iron oxide nanoparticles from *Anethum sowa* seed extracts its photocatalytic activity and nanotoxicity assay

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Abstract

Today, the use of plant extracts for the synthesis of nanoparticles is of great interest. In the current study, iron oxide nanoparticles (FeONPs) were made environmentally friendly by reducing and capping agents from seed extract of Anethum sowa.UV-vis spectroscopy, Fourier-transform infrared spectroscopy (FT-IR), X-ray diffraction (XRD), and scanning electron microscopy with energy dispersive spectroscopy (SEM-EDX) were all used to analyse the produced FeONPs.Absorption of the 289 nm surface plasmon resonance (SPR) centre by UV-vis spectrophotometry proved that FeONPs had formed.The crystalline structures of produced FeONPs were revealed by XRD findings. FeONPswas predominantly spherical forms with size of 23.5 nm was found using SEM and EDS.The presence of biomolecules responsible for iron reduction is confirmed by FT-IR.Aedes aegypti and Culex quinquefasciatus mosquito larvae were used in the larvicidal activities and the synthesized FeONPs acted effectively against both larvae. photocatalytic activity was also tested using reactive orange 16 (RO16) and phenol red (PR) with the percentage of degradation being about 93.95% and 92.91% respectively. Finally, nanotoxicity test was done against Artemia salina and results suggest that produced FeONPs are less toxic. This work revealed that the green synthesized iron oxide nanoparticles usingA. sowaseed extract were associated with good photocatalytic activity and betterlarvicidal potential against selected organisms.

Keywords: *Aedes aegypti, Anethum sowa, Artemia salina, Culex quinquefasciatus,* iron oxide nanoparticles.

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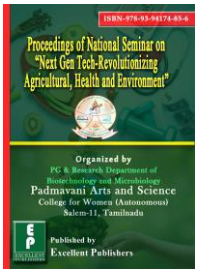

Invited Abstracts *OP/31*

Degradation and Detoxification of Textile Azo Dyes using Autochthonous Bacteria *Bacillus cereus* SKB12

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Abstract

Textile industries are garnering the attention of the research community and environmental activists because of the indiscriminate discharge of synthetic textile dye effluents that heavily pollute the environment. It has resulted in the accumulation of toxic pollutants and metabolites in the aquatic and soil ecosystem, leading to a decline in the growth of many flora and fauna. As a solution to this problem, the microbial remediation approach is highly sought after for its eco-friendly, easy handling, cost-effective, and facile characteristics. In this study, autochthonous bacterial strain SKB12 performed better than the other strains isolated from the textile dye effluent sample. Later, through 16srDNA analysis, the strain SKB12 was identified as Bacillus cereus SKB12 was subjected to decolorization studies under optimized conditions and showed 96.1%, 88.7%, 84.7%, and 82.7% degradation of chosen azo dyes Reactive Yellow 145, Reactive Black 5, Reactive Red 180, and Reactive Red 198, respectively. Further, the strain was qualitatively analyzed for its enzyme activity. Apart from decolorization of dyes, it is necessary to ensure that no toxic metabolites or intermediates persist. For this purpose, the degraded dye samples were characterized by HPLC and GC-MS. Based on variations in retention time, mass/charge ratio, molecular weight, and changes in peak formation, it was confirmed that the metabolites produced were non-toxic. The metabolic pathway for dye degradation was also deduced. Ecotoxicity studies on Brine shrimp and Vignaradiata were in favour of using Bacillus cereus SKB12 for degradation of textile dyes.

Keywords: Textile dye degradation, azo dyes, detoxification, autochthonous bacteria, and ecotoxicity.

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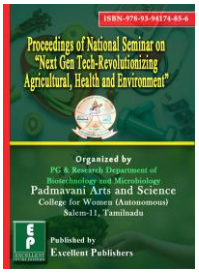

Invited Abstracts *OP/32*

A Bibliometric analysis of Social media impact on climate change

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Abstract

Social media has received importance in recent years as a means for businesses to reach customers online and persuade them to make a purchase. Social media enables an online public sphere for social movement actors, news organizations, and others to frame climate change and the climate movement. In this study, the documents retrieved from the Scopus database on the keywords "Social media impact on climate change" areanalyzed through bibliometric analysis using Biolioshiny Software. The hot topics and directions for future trends are provided by bibliometric analysis using the review of literature. A total of 1430 documents exist in Scopus for the given keywords, where the number of documents found to be raised from 2014-2024 is 75-147 respectively. Three types such as article (978), book chapter (127), and conference paper (122) hold the first three positions in the database. Most documents are published under the subject area of Climatic Change, Sustainability Switzerland, and Mitigation And Adaptation Strategies For Global Change. The data search showed that the United States, the United Kingdom, and China are the three major countries that published more documents such as 373, 208, and 131 respectively. Biblioshiny is the R software tool that was used to evaluate expressive data conceive topical trends and research with the retrieved documents from the Scopus database based on the keywords. It is been observed that conversations around the climate movement on social media have highly increased which resulted in a substantial number of publications on the field. These findings reported in the studied expected to contribute to our understanding of how worldwide research is focusing on the use of social media to frame issues and collective action, in comparison to the traditional mainstream news outlets on global climate change.

Keywords: Social media, climate change, social concern, policies, influence.

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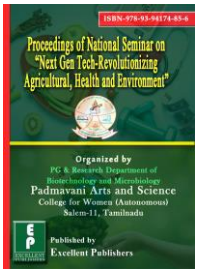

Invited Abstracts *OP/33*

Bioprospecting of Earthworm Coelomic Fluid: An Alternative to Plant Tissue Culture Supplements

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Abstract

Plant tissue culture (PTC) has evolved as an indispensable domain of biological sciences. However, the optimization of tissue culture media is an arduous process owing to the need for tissue-specific media components. Earthworms, on the other hand, are the crucial drivers of soil fertility, commonly described as "ecosystem engineers". The Coelomic Fluid (CF), major portion of earthworm's cutaneous excreta, is characterized by high N concentration as ammonia and urea, as well as small-molecule metabolites, amino acids, and proteins. The current work thus aimed to utilize the CF of *Eudrilus eugeniae* (ECF) as an alternative for growth hormones used in PTC media. In this regard, ECF was extracted through cold shock method and it was found through 1H-NMR analysis that the major composition of ECF is TCA cycle and related metabolites including fumarate, succinate, formate and acetate. GC-MS analysis revealed that the ECF comprises of long-chain saturated fatty acids such as oleic and stearic acid that helps in the development of plant cell membranes. The assessment of growth parameters in Zea mays revealed that the plant growth (height and weight) is enhanced by 29% with the addition of 1% CF to the basal PTC media. Further, biochemical parameters such as photosynthetic pigments (chlorophyll and carotenoids), total proteins, and sugars were elevated by 41%. The study thus substantiates the potential of earthworm coelomic fluid as a plant tissue culture media supplement.

Keywords: Coelomic fluid, *Eudrilus eugeniae*, plant tissue culture, growth hormones, and *Zea mays*.

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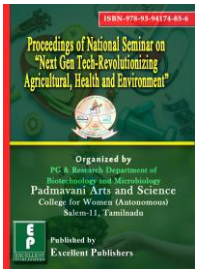

Invited Abstracts *OP/34*

Optimization of *Chlamydomonas* sp. Biorefinery for Sustainable Production of Methyl Ester and Malic Acid

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Abstract

In this study, a biorefinery approach was applied to *Chlamydomonas* sp. Wet biomass of *Chlamydomonas* sp. was utilized for in situ transesterification using a potassium carbonate catalyst. Various factors influencing the reaction, including solvent-to-algae ratio, water content, catalyst addition, reaction temperature, and time, were examined. Under optimal conditions, a 92% methyl ester yield was achieved. Ultrasound pretreatment was identified as the most effective method for extracting the maximum sugar content from the biomass after in situ transesterification. The hydrolysate from acid-hydrolyzed samples containing sugar was subsequently fermented by *Aspergillus* sp. for malic acid production. The production of malic acid was optimized with a sugar concentration of 100 g/l and $CaCO_3$ concentration of 95 g/l. Adding oxaloacetic acid (a TCA cycle intermediate) to the fermentation mixture enhanced malic acid production, resulting in 85 mol of malic acid from 100 mol of sugars from hydrolysate (85 mol%) with a 2.09-fold increase. The primary challenge remains in the sustainable production of biomass and the enhancement of lipid and carbohydrate content in microalgae. Further optimization is required to increase the feasibility of commercialization. Hence, *Chlamydomonas* sp. can be effectively utilized in a microalgae biorefinery to produce valuable malic acid and methyl ester, promoting commercialization and supporting sustainable global demands for alternative fuels.

Keywords: *Aspergillus* sp., Biorefinery, *Chlamydomonas sp*., Malic acid, Transesterification

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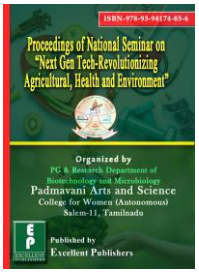

Onion Peel Biochar for Heavy Metal Remediation: Assessment of Efficiency and Safety in Daniorerio

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Abstract

The presence of heavy metals in water has become a worldwide environmentalconcern due to its detrimental effects. Lead and Iron toxicity was proven to be linked with oxidativestress, inactivation of antioxidant enzymes, and aberrant neuro-behavior, especially inaquatic organisms. The conventional methods for heavy metal removal are not economical and effective. On the other hand, onion peel is anagricultural waste product that is neither fit as an animal feed nor feasible for composting.Thus, the study aimed to convert onion peel into an adsorbent for the remediation of heavymetals. The onion peel biochar (OPB) was observed to completely remove lead (Pb) and iron (Fe) fromthe aqueous solution as confirmed by Atomic Absorption Spectroscopy (AAS). Moreover,onion peel biochar showed 100% efficiency within 5 minutes for 100 ppm of lead and iron. It wasdiscovered that 800 ppm OPB was ideal for the elimination of the metals based on adsorption experiments. The safety of the Pbremediated water in zebrafish was assessed bybehavioral and biochemical analyses. Novel tank tests, mirror biting, and light/darkpreference tests were performed to assess the behavior of adult zebrafish after exposure to100 ppm remediated water and revealed positive behavior in the treatment group. Thebiochemical assays showed that the superoxide dismutase (SOD) and catalase (CAT) levelsin the liver are comparable with the control. The experimental data validated that the OPBremediated water poses no toxicity as substantiated by negligible mortality. Therefore, thestudy substantiates the potential of remediation of lead using onion peel biochar and itssafety for the aquatic environment.

Keywords: Heavy metal pollution, onion peel, biochar, adsorbent, zebrafish and behavioural analysis.

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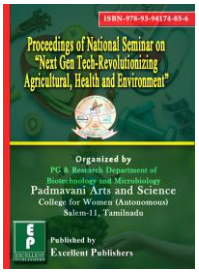

Role of *Catharanthus roseus* in Phytoremediation of Textile Industrial Effluent

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Abstract

WHO (World Health Organisation) estimated that around 80% of diseases are waterborne. Phytoremediation is a process of using plants to clean up these effluent contaminated environments. Wastewater also contains substantial pollution loads with increased Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), Total Suspended solids (TSS), Total Dissolved Solids (TDS) and heavy metals. Industrial effluents are condemned as one of the worst polluters of our precious water bodies and soils. They are well known mutagenic, carcinogenic, allergic, and cytotoxic agents posing threats to all life forms. Plants are potential candidates to remediate wastewater from contaminated sites. By using plants that are used in phytoremediation, like *Catharanthus roseus*, Lemnar Minor, *Eichhornia crassipes* and so on, these plants have a greater ability to remove the contamination. *Catharanthus roseus* have been chosen due to its easy availability, cost effective and easy maintenance. The present study mainly focused on phytoremediation of industrial effluent using Catharanthusroseus. Industrial effluent was collected and considered as 50% and 100% of concentration for its physicochemical analysis and further study. In all studies, treated effluent showed reduced pollutants than untreated effluent.

Keywords: Phytoremediation, Catharanthusroseus, Phytochemical analysis, Trace analysis, Phyto-bed, porosity, BOD, COD, TSS, TDS.

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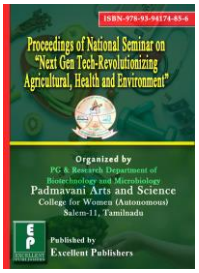

Kombucha Tea as an Anti-Hyperglycemic agent in Humans with Diabetes Due to the Presence of Bacterial Load

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Abstract

Diabetes mellitus is the ninth leading cause of death in the world. It is also a major risk factor associated with several health complications, including coronary heart disease, stroke, peripheral vascular disease, kidney failure, and an overall decreased quality of life. Rates of diabetes have increased more than 400% in the past 30 years, mostly as type 2 diabetes (T2D). Kombucha is a popular fermented tea that has attracted considerable attention due, in part, to its suggested health benefits. Previous results from animal models led us to hypothesize kombucha may reduce blood sugar levels in humans with diabetes.Kombucha is a beverage obtained by fermentation of sweetened tea with a symbiotic consortium of bacteria and yeasts (SCOBY). Historically, kombucha has been suggested to have multiple potential health benefits, including reducing risks of cardiovascular disease, cancer, bacterial and viral infections, anxiety and depression, and diabetes. These suggested benefits could be mediated by organic acids or other fermentation end-products, by tea constituents, or by added flavoring ingredients, such as ginger, fruit, mint, and herbs that have potential bioactive properties.Kombucha lowered average fasting blood glucose levels at 4 weeks compared to baseline (164 vs. 116 mg/dL, $p = 0.035$), whereas the placebo did not (162 vs. 141 mg/dL, $p = 0.078$). The kombuchamicrobiota, as assessed by cultural enumeration, was mainly comprised of lactic acid bacteria, acetic acid bacteria, and yeast, with each group present at about 106 colony forming units (CFU)/mL. Likewise, 16S rRNA gene sequencing confirmed that lactic acid and acetic acid bacteria were the most abundant bacteria, and ITS sequencing showed Dekkera was the most abundant yeast. The primary fermentation end products were lactic and acetic acids, both less than 1%. Ethanol was present at 1.5%.

Keywords: Kombucha, Diabetes Mellitus, SCOBY, Fermentation, Lactic and Acetic acids.

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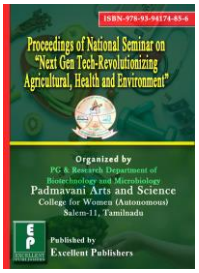

Invited Abstracts *OP/38*

Nanostructures from Nature: Calcium-Laden Garlic Peel Biochar for Emerging Pollutants Abatement

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Abstract

Garlic peel is the second highest-generated agro-waste in urban market areas. Since it has a pungent odor, it is neither feasible for animal feed nor decomposing. On the other hand, emerging pollutants such as industrial dyes and antibiotics are a burgeoning concern for society and the environment due to their deleterious effects. The present work thus aimed to convert garlic peel waste to Garlic Peel Biochar (GPBC), a material with dual properties. That is, the GPBC exhibits both the properties of absorbent and photocatalyst. The presence of metal was confirmed with EDAX and elemental mapping, wherein we found high calcium and carbon content. It was further validated by crystalline peaks in XRD and dodecahedral nanostructures in FESEM analysis. The dual property was validated by assessing methylene blue, turquoise blue and Remazol red dye removal efficiency and tetracycline degradation. A systematic study demonstrated that GPBC could degrade TQB and RR within 4 hours when exposed to both sunlight and LED light. It was extraordinary that GPBC was proficient enough to degrade MB, TQB and RR in the whole pH spectrum and at any dye concentration (even 100 ppm). It was found that only 0.8 mg/L of GPBC is needed to degrade 97%,96% and 100% of MB, TQB and RR and reduce the microbial load in AC condensate water to under 30 mins. All these data substantiated the evolution of a circular economy in which agro-waste could be a resourceful material for pollutant abatement and management.

Keywords: Emerging pollutants, garlic peel, biochar, textile dyes, antibiotics, and photocatalysis.

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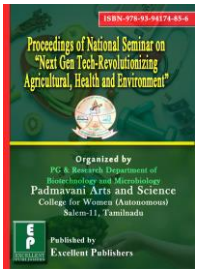

Invited Abstracts *OP/39*

Phyto fabricated Copper-chitosan nanoparticle against triple negative breast cancer – A Review

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Abstract

The advancements in science and technology have led to the exploration of drug delivery system which can target tumor or tumor microenvironment to deliver the drug cargo. This has the potency to better treat the patients with solid tumors like breast cancer. Triple negative sub-type of breast cancer is very aggressive and un-responsive to common chemotherapeutic drugs like tamoxifen as the subtype is hormone receptor negative. Nano construct-based delivery significantly reduces the toxic side effects of chemotherapeutic drugs, since the drug is being targeted. Copper is FDA approved metal for use in humans with many advantageous pharmacological features. Chitosan, a polysaccharide is a well-researched natural material in biomedical use. Phyto-fabrication, the use of plant extract, in then synthesis of nanoparticle has advantages such as being less toxic, environmental-friendly, and incorporation of bioactive plant ingredients in the synthesized nanoparticles. The phyto fabricated copper – chitosan construct can be surface modified for drug release in pH responsive stimulus. There is requirement for research into optimization of nano construct, drug release profile, efficacy and toxicity profile and mechanism of action in model systems.

Keywords: Nanoparticle, Copper, Chitosan, Phyto fabrication, Drug delivery, triple negative breast cancer.

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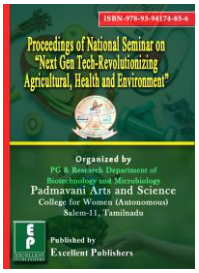

Invited Abstracts *PP/01*

Risk assessment of fluoride contamination in ground water in and around Salem District and screening of fluoride Hyperaccumulators - A green Phytoremediation Approach

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Abstract

Water is essential for life, and it contaminated with Fluoride. Fluoride is a minute quantity is an essential for bone and formation of teeth enamel and helps to prevent dental caries. High level of fluoride considered as a serious contamination and then to treat "*A Green Phytoremediation".* Phytoremediation is an augmenting technology that employs to remove contamination from the environment. Due to the sensitivity of plants to fluoride ions, they can be used as bio monitors for fluoride Pollution. In the present study aimed to determine the fluoride concentration in ground water in and around Salem District, Tamil Nadu and screened the fluoride hyperaccumulator plant species (*Acalypha Indica, Euphorbia heterophylla, Senna Occidentalis, stachytarphera jamaicensis, tagets erecta*). Subsequently plant treated with different Concentrations of Naf (5, 10, 20 and 40 mg/L). The result showed the visible Symptoms of Naf toxicity in this 5 plants from the added dose of 20mg L- Naf. This suggested that the plants are unable to tolerate addition of F higher than 20 mg/ L- Naf . But it was observed that was increased total soluble content in the plants *Stachytarphera Jamaicensis, Euphorbia heterophylla and Fagets erecta* grown at 10 mg/ L- NaF. The amount of protein was found to be decreased from 20mg /L-Naf. In this study, all the pH values were under the ICMR limit and WHO li mit (6.5 to 8.5). Among 50 samples, the highest value of EC was noticed at Thindamangalam (3.26ms/cm) area. Which is higher than the ICMR and WHO limit (300ms/cm)? Similarly, the maximum TDS values were observed at Marakotti (1.760ppt), Ammapalayam (1.841ppt), Nadupatty (1.521ppt), M. Chettipatty (1.672ppt), Thindamangalam (2.23ppt), Egapuram (1.729ppt), Pottaneri (1.535ppt) values rather than the ICMR and WHO limit (500- 1500ppt/l). All are the salinity values are higher than the ICMR and WHO limit (200ppt). All the collected samples are contaminated with fluoride. In addition, fluoride hyperaccumulator plants like Acalypha indica, Euphorbia heterophylla, Senna occidentalis, Stachytarpheta jamaicensis were identified.These plant species could hyperaccumulate fluoride from the contaminated water.

Keywords: Fluoride, Phytoremediation, Hyperaccumulators, *Acalypha indica, Euphorbia heterophylla, Senna occidentalis, Stachytarpheta jamaicensis.*

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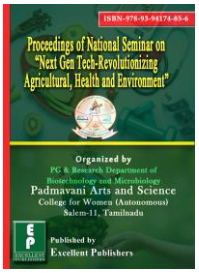

Invited Abstracts *PP/02*

Isolation of erythromycin degradation bacterial strains from hospital waste contaminated soil

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Abstract

Intensive livestock farming has been identified to be associated with extensive usage of antibiotics contained in pharmaceuticals that are widely produced and applied to treat bacterial infections in human and livestock. The use of antibiotics in livestock production is forebidden in some regions because of overuse and misuse. In the present study aimed to have detection of antibiotics in coastal water, Soil and wastewater. Erythromycin like antibiotics is known as "Malrolides. It belongs to the polyketide class of Natural products. It is often used for people who have allerg to penicillin. It is used to treat certain infections caused by bacteria.Various method have been explored to remove erythromycin antibiotics from wastes, including chemical hydrolysis, membrane seperation, activated carbon adsorption and photodegradation. There are number of drawbacks in these methods, so we choose biodegradation may be alternative tools to degrade antibiotics in waste. The enrichment and acclimatization method was used for isolating and screening erythromycin degrading bacterial strains. A total of four erythromycin degrading bacterial strains [KPRB1, KPRB2 and EPRB3) were Isolated from the soil collected on the pig farm. All the isolates were first subjected to preliminary screening which was Carried out through antibiotic susceptibility tests against erythromycin. Two erythromycin degrading bacterial strains [EREBI and [PRB2) were isolated from the Karuppur SIDCO soil and Waste water sample. The isolated bacterial strain may have bioremediation of erythromycin contaminated environment such an soil and waste water.

Keywords: Livestock , Malrolides, Erythromycin, Bioremediation.

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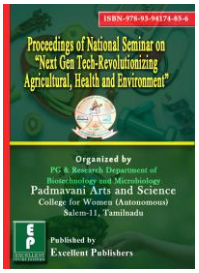

Invited Abstracts *PP/03*

Isolation and Characterization of Yest From Idli Batter and its Application on Antibacterial

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Abstract

Fermentation is a biochemical process. Some Mo's are involed in this process. In hestory of fermented beverages & dairies dates back to more than 3500 years. Creating an environment less favorable for spoilage mo's. In many rural areas, Spontaneous food fermentations are still the main method for food processing, theis methed allows for microbial adaptation and national Selection of Strains thriving in the food metrix There are several playas involved in spontaneous fermentations and Previous studies have reported isolation of various yeast/bacteria from natural fermentations of eg. cereal based foods. Idli is a natural fermented South Indian food. which is prepared foon rice (*Oryza sativa*) and black gram (Vigna mengo) and soaked After Nacl (salt 2,%) that batter is allowed to fermentation at temperature for 24 hs allow fermentation with addition of any started culture In this study batter is used to identify the antibacterial, activity against the selected pathogens *Eschericha coli*, *Staphylococcus arureus*, *Enterococcus faecatis* by well diffusion assay. Colonies obtained were seen to be big. Smooth & whitish to be oxidase negative and non- spore forming isolation showed high tolerance to these conditions they could be subjected to further invivo assay in other to establish the possible probiotic prospect of other promising species - Kluveromyces and also consolidate the phenotypic results with genotypic identification.

Keywords: Fermentation, idli batter, antibacterial, Yeast, *Oryza sativa*, *Vigna mungo*, YPD AGAR, Antimicrobial, oxidase spore, *Kluveromyces*, genotypic.

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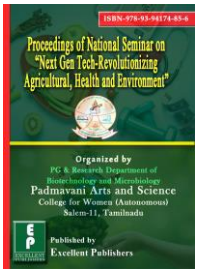

Invited Abstracts *PP/04*

Biomimetic synthesize of zinc oxide nanoparticles using rhizome extracts of *Drynaria quercifolia* and their antibacterial potential

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Abstract

The present investigation focus on the facile, ecologically sustainable, cost-effective, and green synthesis of *Drynaria quercifolia* rhizome based zinc oxide nanoparticles (DQR-ZnONPs) and tests their antibacterial potential. The UV-visible spectrometry absorption peak at 370 nm validated the synthesis of DQR-ZnONPs. The X-ray diffraction (XRD) pattern indicates the crystalline nature of the material, and Fourier transform infrared (FT-IR) analysis reveals its functional groups. The morphological studies in the field emission scanning electron microscopy (FE-SEM) analysis revealed rod-like shapes for DQR-ZnONPs with sizes in the range of 37-45 nm. Energy-dispersive X-ray (EDX) spectroscopy confirmed the presence of zinc. By using the well diffusion method, the DQR-ZnONPs that were made more effective at killing both gram-positive and gram-negative pathogens, with *Staphylococcus aureus and Pseudomonas aeruginosa* having the largest zone of inhibition (16±0.43) and (14±0.53) respectively. This finding indicate that biomimeticsynthesized DQR-ZnONPs will make great antibacterial drugs in the future.

Keywords: *Drynaria quercifolia*, rhizome; Biogenic synthesis; zinc oxide nanoparticles; Antibacterial activity.

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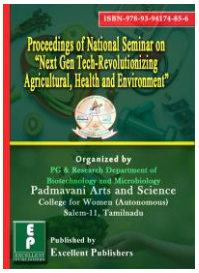

Invited Abstracts *PP/05*

Biosynthesis of silver nanoparticles using *Drynaria quercifolia* rhizome extract and their antibacterial efficacy

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Abstract

This study introduces a sustainable and environmentally friendly method for synthesizing silver nanoparticles (AgNPs) using waste from *Drynaria quercifolia rhizome* extract. The UV-visible spectroscopic technique was initially used for the silver nanoparticle formation in which the absorption band at 430 nm was observed. Fourier-transform infrared spectroscopy (FT-IR) analysis was performed to confirm the role of reducing and capping/stabilizing agents in the synthesis of AgNPs. X-ray diffraction (XRD) study was carried out to analyze the crystalline nature of the AgNPs. The scanning electron microscopy (SEM) analysis was used to investigate the shape of biosynthesized AgNPs, and it was revealed that the synthesized nanoparticles are nearly spherical with an average size of 25 nm. Energy dispersive spectroscopy (EDS) was used to analyze the AgNPs within the energy range of 3 keV to detect the presence of silver. In the presence of synthesized AgNPs, both the gram-positive *Staphylococcus aureus* (18.45 mm) and the gram-negative *Pseudomonas aeruginosa* (16.36 mm) bacteria exhibited significant antibacterial activity. The developed method for the AgNPs synthesis using *Drynaria quercifolia* rhizome extractis an eco-friendly, cost-effective, and efficient approach.

Keywords: *Drynaria quercifolia*, rhizome; Biogenic synthesis; Silver nanoparticles; Antibacterial activity.