

MMK & SDM MAHILA MAHAVIDYALAYA  
KRISHNAMURTHY PURAM, MYSORE



DEPARTMENT OF MICROBIOLOGY

A Report on

International E Conference on

"Recent Research and Innovations in Life Science 2021"



DATE: 19<sup>th</sup> February 2021  
TIME: 9:15 AM

PRINCIPAL

MMK & SDM Mahila Maha Vidyalaya  
Krishnamurthypuram, Mysore-570004

### OBJECTIVES OF CONFERENCE:

- The main objective of organizing this conference to create space for creating collaborative links between academics, Scientists and professional practitioners and their workplaces, aiming at long-term sharing of knowledge and discussions of recent research in life science.
- To determine through history how the organization has changed its practices and adopted new solution.
- To assess how the new practices, technology and strategies will contribute to the overall effectiveness

### OUTCOME OF CONFERENCE:

- Discover and upgrade to the latest inventions and ongoing research in the field of Life Science.
- Gain irreplaceable knowledge and apply it to their research.
- Improve presentation and communication skills.





## MMK & SDM MAHILA MAHA VIDYALAYA

Krishnanahypuram, Mysuru-570001  
Managed by: SDM Educational Society & Ujire  
President: Padmavibhushana Dr. D. Veerendra Heggade

Department of Microbiology & IQAC  
In Collaboration with

Association of Microbiologists of India (AMI), Mysore Chapter.

Organising

International 1<sup>st</sup> Conference

on

"Recent Research and Innovations in Life Science 2021"



Date: 19<sup>th</sup> February 2021

SDM Educational Society & Ujire

Sri Dharmasitha Manjunatheshwara Educational Society & Ujire, Karnataka is a premier non profit educational organisation functioning under the sacred aegis of Shree Kshetra Dharmasitha. Under the able guidance of the distinguished President Padmavibhushana Awardee Dr. D.Veerendra Heggade, SDM Educational Society spearheads more than fifty five educational institutions around Karnataka. Establishments that represents the best of traditional expertise and contemporary excellence from the base of studies in subjects ranging from Medicine, Engineering, Laws, Social Science, Management, Naturopathy and Ayurveda.

About the College:

MMK &SDM MMV established in the year 1990 & is managed by Educational Society & Ujire, Karnataka. This Institution offers different streams of UG Courses in Science, Commerce, Management, Computer Science & PG in Commerce for Women students, in fulfilling the vision "Empowerment of Women to build Enlightened Society".

The College has well developed infrastructure, facilities to accommodate students to involve both in academics & research activities. The students of the institution brought several laurels in various academics and extracurricular activities. This institution have got good rank for science stream in India Today Ranking, and it has been participating in NIRF ranking and got good factors in some criterias. The institution encourages the students to involve in research activities and article publishing in national and international journals, few UG students are publishing papers in International journals and are involved in research projects.

About the Department:

The Department of Microbiology came in to existence in 2006 by introducing B.Sc in (Biochemistry Microbiology & Biotechnology), a three year programme which is affiliated to University of Mysore. Programme is to equip students for present scenario by providing practical exposure to them. The department is offering an add-on certificate courses to enhance the skill of the students & bridge the gap between academics and industries. The Department has committed faculty members to enable the students to have hands-on feel of multiple talents & encourages Research activities by assigning them in house Short Term Projects, also students are sent for Internships in reputed Research Institutes & Industries. As a part of this mission the Department of Microbiology is Organizing One Day International Level Conference

About AMI

The Association of Microbiologists of India established in 1938 is one of the oldest and reputed scientific organizations of the country. Since its inception, it has contributed significantly towards development of microbiology, particularly in areas of research teaching and commerce in country.

The Association publishes a quarterly journal, "Indian Journal of Microbiology" for the last 45 years and holds a National convention annually at one of the well established centers of microbiology in the country. At present, there are more than 4000 life and annual members and about 450 corporate members of the Association. Indian Journal of Microbiology, by publishing peer reviewed original research findings and research reviews from researchers in India and abroad, has been acquired as respectable status among national and international scientific research periodicals in the world. AMI-Mysore chapter is actively involved in popularizing microbiology by organizing various scientific events from past eleven years. In this recognition it has received "Best Unit" awards with cash prize of Rs. 5000/- for the five consecutive years (2009, 2010, 2011, 2012 and 2013) by AMI, New Delhi.

### About the Conference

The International Conference on "Recent Research and Innovations in Life Science 2021" will feature innovative academics and industrial experts in the filed of Life Science. The idea of the Conference is for the young scientists, scholars & students from different Universities & the Industries to present the ongoing activities & hence to foster research relations between the Universities and Industries. It is organized with a motivation to provide a platform for the academicians, researchers and students to share their research findings. The key intention of the conference is to provide opportunity for the participants to share their ideas & experience in person, discuss the latest innovations, trends and practical concerns and challenges faced in these fields.

### RESOURCE PERSONS

**Dr. Komaratah Palle**, Associate Professor, Weitlauf Endowed Chair for Cancer Research, Dept. of Cell Biology & Biochemistry, Dept. of Surgery, Texas Tech University Health Sciences Center, Lubbock, U.S.

**Dr. Anil Tomar**, Scientist, Dept of Biophysics, AIIMS, New Delhi.

**Dr. Amina Yasmeen**, Associate Professor & HOD, Department of Pharmacology, Govt. Unani Medical College & Hospital, Bengaluru

### Conference Theme:

#### Recent Research and Innovations in Life Science.

**Sub-Themes:** Marine biology, Agricultural Science, Molecular Biology, Drug Discovery, Environmental Science, Medical Science, Bioremediation, Food Bioprocessing, Fermentation Technologies, Microbial Genetics, and Microbial Diversity

#### Guidelines for the submission of Abstracts:

Abstracts not exceeding 250 words are invited for oral presentation in any of the themes of the conference. The one page abstract should be typed in 12 point, Times New Roman, normal font & single space. Authors are requested to email the soft copy to [rajarajeshwari.r@sdmmmkmysore.in](mailto:rajarajeshwari.r@sdmmmkmysore.in)

#### Guidelines for the Oral Presentation:

The duration of the presentation must be focused and is restricted to only 6 mins. As in any research presentation, the outline includes statement of the problem, description of the methodology, summary of the work, and then the presentation of results. Conclusions should leave the delegates with a clear take away message.

#### Registration Fee Details:

Free Registration

For Paper Presentation : 100 - on or before February 16, 2021

Click on the given link for registration  
<https://forms.gle/uFvT46PWJl1f1n2oJ9>

#### Contact Details:

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Mrs. Rajarajeshwari R  
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**Chief Organisers**



**Prof. Sainath Malligemadu**  
 Principal



**Dr. Anand Tamatam**  
 Scientist, DFRL  
 AMI President, Mysore Chapter

**Convener**

**Smt. Aniya Sameen, M. P**  
 Asst Professor & HOD  
 Dept. of Microbiology  
 AMI Joint Secretary- Mysore Chapter

**Co- Conveners**

**Smt. Rajarajeshwari R**  
 Asst Professor  
 Dept. of Microbiology

**Dr. Divya K. S**  
 Asst. Professor  
 DOS in Microbiology, Mahajanas PG Centre  
 AMI Secretary- Mysore Chapter

**IQAC Coordinator**  
**Smt. G.R. Sumithra**  
 Asst Professor & HOD  
 Department of Electronics

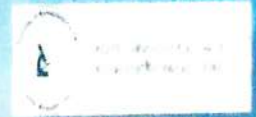


# MMK & SDM MAHILA MAHA VIDYALAYA

Krishnamurhyapuram, Mysuru-570004

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Department of Microbiology & IQAC

In Collaboration with

Association of Microbiologists of India (AMI), Mysore Chapter.

**Invites you to**

*International E-Conference*

on

*"Recent Research and Innovations in Life Science 2021"*

Date: 19<sup>th</sup> February 2021

Platform : Google Meet- To join the video meeting, click this link: [meet.google.com/qvv-myyvv-wix](https://meet.google.com/qvv-myyvv-wix)

**Chief Guest**

**Dr. Hanumanthachar Joshi**

Principal

Sarad Vilas College of Pharmacy

Image result for hd plain background for ppt

**Chief Organisers**

**Prof. Samath Mallagemadu**

Principal

MMK & SDMMV

**Dr. Anand Tamatam**

Scientist, DFRL

AMI President, Mysore Chapter

**Convener**

**Smt. Atiya Saameen, M. P**

Asst Professor & HOD

Dept. of Microbiology

**Co- Convener's**

**Smt. Rajarajeshwari, R**

Asst. Professor

Dept. of Microbiology

**Dr. Divya K. S**

Asst Professor

DOS in Microbiology, Mahajanas PG Centre

AMI Secretary- Mysore Chapter

**IQAC Coordinator**

**Smt. G.R. Sumithra**

Asst Professor & HOD

Department of Electronics

**ALL ARE WELCOME**





## PROGRAMME SCHEDULE

### Inauguration- 09.15am

Invocation	Ms. Bhumika, Ms. Nimisha & Ms. Ramyashree, II B. Sc Students
Welcome Speech	Mrs. Atiya Sameen, M.P Asst. Professor & Head Department of Microbiology
Lighting the Lamp	Dignitaries
Keynote address	Dr. Hanumanthachar Joshi Principal Sarada Vilas College of Pharmacy Mysuru
Address the Gathering	Dr. T. Anand Scientist "F" & Head Nutrition, Biochemistry & Toxicology DFRL, Siddartha Nagar AMI President
Presidential address	Prof. Sainath Malligemadu Principal
Vote of thanks	Dr. Divya K. S Asst. Professor DOS in Microbiology, Mahajanas PG Centre AMI Secretary- Mysore Chapter

### TECHNICAL SESSIONS

10.00-10.45AM	"Designing rational combination therapies to treat lethal cancers" Komaraiah Palle, Ph.D. (Kumar) Associate Professor Weitlauf Endowed Chair for Cancer Research Department of Cell Biology & Biochemistry Department of Surgery Texas Tech University Health Sciences Center
10.45-11AM	BREAK
11.00AM-11.45AM	"Evaluation of Shelf life period of Daarchini (Cinnamon zeylanicum Blume) by accelerated stability studies" Dr. Anna Yasmeen Associate Professor & HOD Department of Pharmacology Govt. Unani Medical College & Hospital, Bengaluru
11.45- 12.15PM	'Proteomics and male infertility markers' Dr. Anil Tomar Scientist Dept of Biophysics AIIMS, New Delhi
12.30-1.30PM	ORAL PRESENTATION
1.45PM	Announcement of best Oral Presentaion Mrs. Rajarajeshwari, R Asst. Professor, Dept. of Microbiology



The International E Conference was inaugurated by **Dr. Hanumanthachar Joshi, Principal, Sarada Vilas College of Pharmacy, Mysuru**, who delivered the key note address. He highlighted the importance of research and its innovations. The participants were encouraged to acknowledge the current technological accomplishments the wide scope towards discoveries and new inventions in Life Science.

The Occasion was also graced by **Dr. Anand T, Scientist F & Head, Nutrition, Biochemistry & Toxicology, DRDO-DFRL, Mysuru**. He highlighted the interesting facts of Science, wherein participants were very happy to interact with him.

The inauguration and valedictory functions were presided by **Prof. Sainath Malligemadu, Principal, MMK & SDM Mahila Maha Vidyalaya, Mysuru**.

**Convener:** Mrs. Atiya Sameen M P, Asst Professor & HOD

**Co-convener:** Mrs. Rajarajeshwari R, Asst. Professor

Dr. Divya K S, Asst. Professor, PG Dept. of Microbiology, Mahajanas PG Centre.

Over 113 delegates comprising of faculties from various institutions, research scholars from different Research Centers and PG students from different places participated in the conference. The Conference perceived a series of dynamic talks from renowned scientists from Texas Tech University Health Sciences Center, Lubbock, US, AIIMS and created a platform to promote research work in the form of Oral presentations.

#### **Oral Presentation competition was held.**

**Dr. Sathish**, Professor & Chairman, Department of studies in Microbiology, University of Mysore & **Dr. Divya K. S**, Asst. Professor, DOS In Microbiology, Mahajanas PG Centre, AMI Secretary, Mysore Chapter were the judges.





**Participant list of Oral Presentation**

Sl No	Participant Name	Institution	Title of the Presentation
1	Girish. K.	Postgraduate Department of Microbiology, Maharani's Science College for Women, JLB Road, Mysuru – 570 005, Karnataka, INDIA	Antimicrobial Activity of <i>Pleurotus ostreatus</i>
2	Ashok N. Pyati	Plant Tissue Culture Laboratory, Department of PG Botany, Maharani's Science college for Women, Mysore- 570 005, Karnataka, India.	In Vitro Seed Germination and Seedling development of a Medicinally Important Orchid <i>Dendrobium crepidatum</i> Lindl. And Paxton
3	Talluri Rameshwari K R	Department of Microbiology, Faculty of Life Sciences, JSS Academy of Higher Education and Research, Sri Shivarathreeshwara Nagar, Mysuru, India	Histopathological studies and Cellular changes of <i>Mycobacterium tuberculosis</i> in Extra Pulmonary Tuberculosis in Mysuru City
4	Ashwini M	Department of Microbiology, Faculty of Life Sciences, JSS Academy of Higher Education & Research, Sri Shivarathreeshwara Nagar, Mysuru – 570015, India.	Molecular characterization and conjugal transfer of macrolide -lincosamide-streptogramin resistance in lactic acid bacteria isolated from food samples
5	Vrinda S	Department of Forensic Science School of Sciences, JAIN (Deemed to be University), Jayanagar, 3 rd Block, Bengaluru-560011	Comparative analysis of microbial and biochemical markers in saliva samples of human subjects of different age groups
6	Abhijith M Singh	Department of Biotechnology JSS College for Women, Mysuru 570009, Karnataka, India	Green Synthesis of Silver Nanoparticles from Hexane Extract of foliage of <i>Urochloa ramosa</i> and Evaluation of Antimicrobial and Antiangiogenic Properties
7	V. Nishitha Naik	Central Sericultural Research and Training Institute, Mysuru, India	Diversity analysis of Microbial population in mulberry gardens of Karnataka
8	Rajrupa	Department of	<i>Aspergillus tamarii</i> PS6





	Bhattacharyya	Microbiology, School of Sciences, Block 1, JAIN (Deemed-to-be University), Bangalore-560011, Karnataka, India	derived Pectinase: Production, Characterization and Application
9	Maheshwari M S	Division of Molecular Biology, School of Life sciences, JSS Academy of Higher Education and Research	Biosynthesis of nanoparticles using Terminalia chebula fruit extract and its biological activity against plant pathogen of Solanum lycopersicum.
10	Swetha S		Molecular docking analysis of green synthesized nanoparticles of titanium dioxide using allium sativum against 4g6t and 4rsw proteins
11	B. L. Kiran	Department of Botany, JSS College of Arts, Commerce and Science, Mysuru -25, India	Evaluation of antifungal efficacy of some medicinal plants against panama wilt of banana caused by <i>Fusarium oxysporum</i> f.sp. cubense
12	Vrinda A	Division of Environmental Science, Department of Water and Health, JSSAHER, Mysore-17.	A study on effect of chemical fertilizer residues on water quality around the agricultural areas of pandavapura taluk, mandya district



## DETAILS OF TECHNICAL SESSION

**Plenary Lecture -1 (Topic: "Designing rational combination therapies to treat lethal cancers")**

**Time : 10-10.45am**

**Resource Person: Dr. Komaraiah Palle**

**Weitlauf Endowed Chair for Cancer Research**

**Department of Cell Biology & Biochemistry**

**Department of Surgery**

**Texas Tech University Health Sciences Center**

The speaker highlighted on different therapies to treat cancer, such as Hyperthermia, chemotherapy and radiation therapy. Depending on particular situation, you may receive one treatment or you may receive a combination of treatments.

**Plenary Lecture -2 (Topic: "Proteomics and male infertility marker")**

**Time: 11-11.45am**

**Resource Person: Dr. Anil Tomar**

**Scientist**

**Dept of Biophysics**

**AIIMS, Delhi.**

The speaker highlighted on the role of differentially expressed proteins as a resource for potential biomarkers identification of infertility, as male infertility is of rising concern in reproductive medicine and evidence pertaining to its aetiology at molecular level particularly proteomics, as spermatozoa lack transcription and translation. He also briefed up saying many clinical attempts have been made to identify biomarkers of male infertility in sperm proteome but only few studies have targeted seminal plasma. Human seminal plasma is a rich source of proteins that are essentially required for development of sperm and successful fertilization.







Google

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Long E 76° 38' 36.6648"  
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Judges Chairing the Oral presentation which was conducted online



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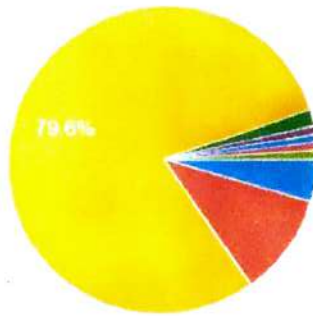
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Karnataka 570008, India  
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## PARTICIPANTS

### Designation

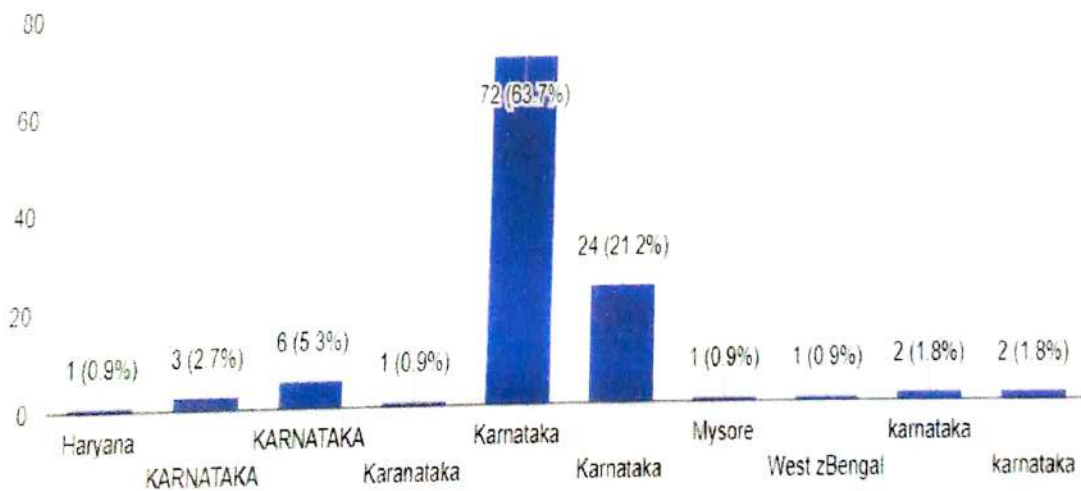
113 responses



- Delegate
- Research Scholar
- Student
- Assistant Professor
- Assistant professor
- Assistant Professor
- Associate Professor
- Lecturer

### State

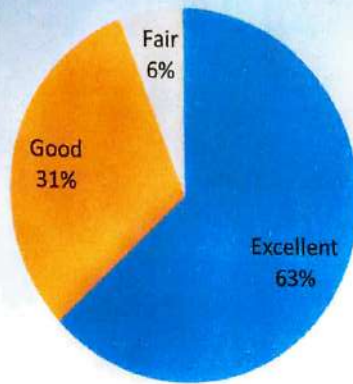
113 responses





# FEEDBACK

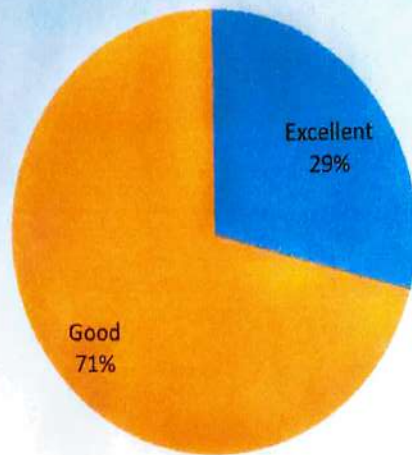
## Keynote Presentation



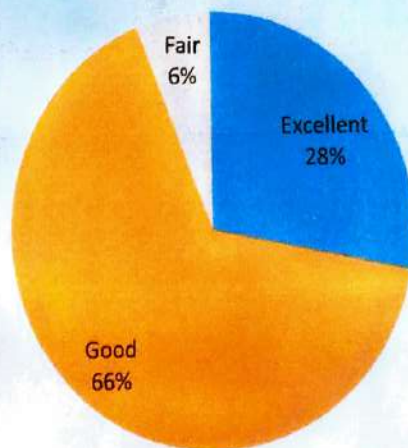
## How was the technical session 1



## How was the technical session 2



## Opinion about Oral Presentation





## Overall Experience



DETAILS OF ABSTRACTS SUBMITTED BY PARTICIPANTS





## ***Green Synthesis of Silver Nanoparticles from Hexane Extract of foliage of Urochloa ramosa and Evaluation of Antimicrobial and Antiangiogenic Properties***

Abhijith M Singh<sup>1</sup>, N.D. Rekha<sup>2</sup>, L. Mallesha<sup>3</sup>, K. Sumana<sup>4\*</sup>

1 Department of Biotechnology JSS College for Women, Mysuru 570009, Karnataka, India

2 PG Department of Studies and Research in Bio-Technology, JSS College of Arts, Commerce

and Science, Mysuru-570025, Karnataka, India.

3 PG Department of Studies and Research in chemistry, JSS College of Arts, Commerce and Science,

Mysuru-570025, Karnataka, India.

4 Department of Microbiology, Faculty of Life Science, JSS Academy of Higher Education and

Research, Sri Shivarathreshwara Nagara, Mysore – 570017

### **Abstract**

*Urochloa ramosa* (UR) grass is distributed in Malawi, Yemen, Zimbabwe and Southern India. Currently it is cultivated and used for its enormous benefits over the environment such as stabilization and reclamation of polluted soils, to control root-knot nematodes infecting crops that lead to economic loss and to treat ulcers and snake bites. They do bear edible seeds having anti-inflammatory and anticancerous properties owing to its high fiber and phenolic contents. Present research is focused on green synthesis of silver nanoparticles using hexane extract from foliage of *Urochloa ramosa* (AgNpHEUR) and evaluation of antimicrobial & anti-angiogenic properties. Synthesised nanoparticles were subjected to characterization using UV-visible spectrophotometer, FTIR, X-RD and SEM analysis. Antimicrobial assay was performed against gram positive bacteria viz., *Bacillus subtilis* and *Staphylococcus aureus*, gram negative bacteria viz., *Pseudomonas aeruginosa* and *Escherichia coli* and a fungi *Candida albicans* in Dimethyl formamide by disc diffusion method on nutrient agar medium. Gentamycin and Fluconazole of 10µg each served as standards. The plates were incubated at 37 °C for 24 h and the zone of inhibition was determined. AgNpHEUR was found to be effective against *Candida albicans* ranging from 42-70% inhibition indicating potent antifungal property than antibacterial activity. Anti-angiogenic effect was studied by Chick chorioallantoic membrane assay. Complete inhibition of proliferation of blood vessels in CAM assay showed anti-angiogenic property. Hence AgNpHEBR can be used for therapeutic purposes as it has demonstrated efficient antimicrobial and antiangiogenic activity that can have potential role in medical field.



# EVALUATION OF ANTIFUNGAL EFFICACY OF SOME MEDICINAL PLANTS AGAINST PANAMA WILT OF BANANA CAUSED BY *FUSARIUM OXYSPORUM F. SP. CUBENSE*

B. L. Kiran<sup>1</sup> and K. A. Raveesha<sup>2\*</sup>

<sup>1</sup>Department of Botany, JSS College of Arts, Commerce and Science, Mysuru -25, India

<sup>2</sup>Department of Water and Health, Faculty of Life Sciences, JSS Academy of Higher Education and Research, JSS University, Mysuru-15, India

## ABSTRACT

Banana (*Musa sp.*) is among the most important food and fruit crop in many developing countries. *Fusarium oxysporum f. Sp. cubnse* (Foc) causes fusarium wilt, a lethal disease that results in devastating economic losses to banana production worldwide. It has been reported in all banana producing countries including Asia, Central and South America, Africa and Australia. Nanjangud rasabale, which has been given the Geographical Indication tag, is devastated by *Fusarium* wilt fungal disease. In the present study, we investigated the *in vitro* biological control of Foc by using some locally available medicinal plants such as *Prosopis juliflora*, *Piper betle*, *Garcinia indica*, *Callistemon lanceolates*, *Azadirachta indica*, *Decalepis hamiltonii* and *Combretum indicum*. Soxhlet extraction of selected plants was done by using methanol and antifungal activity was determined by poisoned food technique. All the extracts inhibited mycelial growth at various levels. Among them *Prosopis juliflora* exhibited maximum antifungal activity against the tested plant pathogen Foc followed by *Piper betle* and *Azadirachta indica* whereas least activity was observed in *Callistemon lanceolates*. Among the different concentrations (2%, 4% and 6%) used 6 % methanolic plant extract of *Prosopis juliflora* showed mycelial inhibition by 64 %. Results revealed that *Prosopis juliflora* is a potential source of antifungal phytochemicals, therefore extensive research is required to extract their active compounds thus providing a substitute of chemical fungicide and an alternative approach to current management practices of panama wilt disease.

**Keywords:** *Banana*, *Fusarium oxysporum f. Sp. cubnse*, *Prosopis juliflora*.

\*Corresponding author. Tel.: +91-9845481329. E-mail: [karaveesha@gmail.com](mailto:karaveesha@gmail.com)





## **Biosynthesis of nanoparticles using *Terminalia chebula* fruit extract and its biological activity against plant pathogen of *Solanum lycopersicum*.**

Maheshwari M S, Kantesh M Basalingappa\*

Division of Molecular Biology, School of Life sciences,  
JSS Academy of Higher Education and Research  
Mysore-570015

**ABSTRACT:** A number of disease-causing organisms (pathogens) can infect *Solanum lycopersicum* L. (tomato) and cause disease. The most common diseases that affect tomato are caused by various fungi, bacteria, and viruses. Several studies show that the biogenic synthesized nanoparticles using microbes and plants extracts without hazardous chemicals are promising in control of plant pathogens. The utility of plant extracts for nanoparticle synthesis has various advantages such as accessibility and safety when handling. The need for environmental non toxic synthetic protocols for nanoparticles synthesis leads to the developing interest in biological approaches that are free from the use of toxic chemicals as by-products. Therefore, green nanotechnology is increasingly in demand. In this study, *Terminalia chebula* methanolic plant extract coated titanium dioxide nanoparticle (TiO<sub>2</sub>NP) was synthesized and characterized. The antioxidant and antibacterial activity was determined. The result showed increased zone of inhibition in *Terminalia chebula* methanolic extract TiO<sub>2</sub> bind nanoparticles (TiO<sub>2</sub>NP) compared to methanolic extract. The phytochemical analysis viz. DPPH, Reducing power and ABTS assays revealed highest antioxidant potential in TiO<sub>2</sub> binded nanoparticle in comparison with methanolic extract of *Terminalia chebula*. Further, TiO<sub>2</sub> bind nanoparticles extend its potentiality by exhibiting antibiofilm property. Hence, this study proves that the combinatorial use of *Terminalia chebula* methanolic extracts along with TiO<sub>2</sub> bind nanoparticles eradicate plant pathogens in association with *Solanum lycopersicum*.

**KEYWORDS:** Nanoparticle, *Terminalia chebula*, Plant pathogen, Antioxidant.



## Antimicrobial Activity of *Pleurotus ostreatus*

Neha, Y.D. and Girish, K.\*

Postgraduate Department of Microbiology, Maharani's Science College for Women, JLB  
Road, Mysuru – 570 005, Karnataka, INDIA

\*Corresponding author email: girishk77@yahoo.com

*Pleurotus* is a genus of gilled mushroom, which belongs to class Agaricomycetes and family Pleurotaceae. The genus *Pleurotus* comprises about 40 species (including *Pleurotus ostreatus*) that are commonly referred to as 'oyster mushrooms'. Fruiting bodies as well as active mycelia of *P. ostreatus* possess a number of therapeutic properties like anti-inflammatory, immune-stimulatory and immune-modulatory activities, anticancer activity, etc. In recent times they have also attracted great attention as a source of bioactive metabolites for the development of drugs and nutraceuticals. Infectious diseases account for a high proportion of health problems in most of the developing countries. Although several antimicrobial agents have been synthesized chemically, indiscriminate use of commercial antimicrobial drugs has led to the development of resistance to the existing antibiotics by the microorganisms. The spread of such drug resistant pathogens is becoming one of the most serious threats to successful treatment of microbial diseases. This has generated the need for novel antimicrobial agents from different natural sources. Owing to this the present investigation was carried out to evaluate the antimicrobial potential of the mushroom *P. ostreatus*. Aqueous and methanol extracts of *P. ostreatus* were tested for antibacterial activity against different human pathogenic bacteria (MTCC cultures) such as *Bacillus subtilis*, *Listeria monocytogenes*, *Streptococcus pneumoniae*, *Staphylococcus aureus* (Gram positive), *Escherichia coli*, *Enterobacter aerogenes*, *Klebsiella pneumoniae*, *Proteus vulgaris*, *Salmonella enterica ser. typhi* and *Shigella flexneri* (Gram negative) by the agar well diffusion method. The extracts were also tested for antifungal activity against different phytopathogenic fungi such as *Alternaria* sp., *Aspergillus* sp., *Fusarium* sp., and *Helminthosporium* sp., by poisoned food technique. The aqueous extract of *P. ostreatus*, at 25%, 50%, 75% and 100% concentrations, showed no effect against any human pathogenic bacteria as well as any phytopathogenic fungi studied. The methanol extract of *P. ostreatus*, though did not show any antibacterial activity at lower concentrations (250, 500, 750 and 1000 ppm), exhibited inhibitory action on all the bacteria tested with maximum inhibitory action on *P. vulgaris*, *K. pneumoniae*, *E. aerogenes*, *L. monocytogenes*, and *S. enterica ser. typhi* at 2000, 3000, 4000 and 5000 ppm concentrations. However, even methanolic extract of *P. ostreatus* failed to exhibit antifungal activity against any of the phytopathogenic fungi studied even at the highest concentration of 5000 ppm. The results of present investigations showed promising evidence for the antibacterial effect of *Pleurotus ostreatus* extracts. Thus this mushroom could be further studied to discover novel bioactive natural products that may help in the development of new drugs of potent antibacterial activity.

**Key words:** *Pleurotus ostreatus*, antimicrobial, antibacterial, antifungal





## QUALITY AROUND THE AGRICULTURAL AREAS OF PANDAVPURA TALUK, MANDYA DISTRICT

Divya J\*, Vrinda A and Belagali S.L

\*Assistant Professor, Division of Environmental Science, Department of Water and Health, JSSAHER, Mysore-17.

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### ABSTRACT

India is one of the countries which depend on chemical fertilizers as part of modern agriculture. Chemical fertilizers are applied to soil in order to increase the level of nutrients in the soil. The main nutrients added are nitrogen, phosphorus, potassium and other nutrients in smaller amounts. Although chemical fertilizers improve crops yield, there are certain disadvantages compared to organic fertilizers. Among the chemical fertilizers, Urea and Diammonium phosphate (DAP) are the major types used as a source of nitrogen and phosphorous in Indian agriculture. During the present study, the evaluation of chemical fertilizer residues and its influence on water quality has been studied. The water samples were collected from different water sources (channels, bore wells and Dam) around the agricultural areas of Pandavapura taluk, Mandya district. From the experimental study, it was found that, the majority of the water quality parameters were found to be within the WHO standards. In case of phosphate, it was found to be above the WHO standards. This clearly indicates that, the application of DAP fertilizers has influenced on the enrichment of phosphate concentration in water resources through surface run-off and leaching along with irrigation water. In order to overcome fertilizer pollution, judicious application of chemical fertilizers with proper dose and application time need to be prioritized so that, it will help to reduce the water pollution due to any kind of agrochemical run-off.

**Key Words:** Urea, DAP, Phosphate, WHO Standard.



## Diversity analysis of Microbial population in mulberry gardens of Karnataka

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### Abstract

Mulberry (*Morus* spp.) is intensively cultivated in India for silkworm rearing. Once established, the plantation is exploited for leaf harvesting over a period of years as a mono crop. Proper soil management is the prerequisite for achieving higher productivity. Hence, the study was conducted to know the population of different microbes occurring in soil samples of mulberry gardens was assessed for its prevalence in terms of frequency and relative density. A total of 40 mulberry gardens were selected from 4 districts of Karnataka viz. Bangalore, Chamaraja Nagara, Chitradurga and Ramanagara. The soil samples were analysed for microbial population by dilution plate technique. Results revealed that more prominent species of fungi found in the experimental sites were belonging to genera of *Penicillium*, *Aspergillus* and *Rhizopus*. The frequency (%) of occurrence of these fungi was 100.00, 97.82 and 82.6. Relative density of *Penicillium* was (30.25), *Aspergillus* (19.4) and *Rhizopus* (14.53). Less prevalent species of fungi were *Alternaria* (0.69) and *Verticillium* (0.44). Among the bacteria *Pseudomonas* and *Bacillus* were found in all the soil samples. Relative density of *Bacillus* was (50.42) and *Pseudomonas* (34.49) when compared to other bacteria such as *P. fluorescence*, *Azospirillum* and *Azotobacter*. Less frequency and relative density was observed in case of *Xanthomonas* (0.55) and (0.29). Actinomycetes were present in all the soil samples but relative density was less when compared to bacteria and fungi. Soil properties revealed that soil colour varied from light red to light black and texture sandy loam to clay loam. Average pH, EC, OC and macronutrients such as N and P are within the normal range except K.

Key words: Diversity analysis, microbial population, frequency, relative density, mulberry





## ***In Vitro* Seed Germination and Seedling development of a Medicinally Important Orchid *Dendrobium crepidatum* Lindl. And Paxton**

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### **Abstract:**

*Dendrobium crepidatum* is an epiphytic orchid and is highly valued for its medicinal properties. Its pseudobulbs and stem is used in treating fractured and dislocated bones. However this orchid species is getting depleted from natural habitats, due to various anthropological activities. Therefore an efficient protocol for *in vitro* conservation was established. The immature seeds from the green pods were germinated on four basal media viz., half strength Murashige and Skoog ( $\frac{1}{2}$  MS), Knudson C (KC), Vacin and Went (VW) and Burgeff's N<sub>3</sub>f (N<sub>3</sub>f) media. Seed germination and protocorm formation was significantly higher in  $\frac{1}{2}$  MS medium (70.3%) followed by KC (60.1%), VW (56.0%) and N<sub>3</sub>f (42%) after 65 days of culture. To enhance the seed germination frequency various plant growth regulators (PGRs) viz., Indole 3 acetic acid (IAA),  $\alpha$ -Naphthalene acetic acid (NAA), 6-Benzyl amino purine (BAP) and Kinetin (KN) were added to the  $\frac{1}{2}$  MS medium. Among the various PGRs tested NAA (5.38  $\mu$ M) and BAP (3.23  $\mu$ M) induced optimum percentage of seed germination and protocorm formation (91.9%) after 55 days of culture. These protocorms were sub cultured on  $\frac{1}{2}$  MS medium supplemented with Coconut Water (CW 15%) stimulated the differentiation of protocorms into seedlings. Well developed seedlings were successfully acclimatized in community pots containing brick pieces, charcoal, vermiculite and coconut husk in the ratio of 1:1:1:1, gave maximum survival rate of 90.6%.

**Key words:** *In vitro*, orchid, seed germination, plant growth regulators



## Molecular characterization and conjugal transfer of macrolide-lincosamide-streptogramin resistance in lactic acid bacteria isolated from food samples

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### Abstract

Lactic acid bacteria (LAB) being a reservoir of antibiotic resistant genes, possibly pose a threat to human and animal health. Therefore, the aim of this study were to investigate the prevalence and transferability of macrolide-lincosamide-streptogramin (MLS) resistance among LAB isolates from various food samples. The LAB isolates resistant to erythromycin (n=146) were isolated from different food samples on selective media. The isolates were identified as *Lactobacillus brevis*, *Enterococcus haire*, *Lactobacillus fermentum*, *Pediococcus acidilactici*, *Enterococcus faecalis*. Diverse MLS phenotypes were observed among the LAB isolates (n = 38) analysed through double disc and triple disc test. Standard minimum inhibitory concentration tests along with induction studies displayed cMLSb, L, M, KH and I phenotype resistance among MLS antibiotics. Genotypic evaluation tests using specific primers for MLS resistant genes revealed the presence of *ermB*, *mefA/E*, *msrA/B* and *msrC* genes in the isolates of various food samples. *Lactobacillus fermentum* isolated from Idli batter was used as donor to analyse the transferability of antibiotic resistant gene to recipients *Enterococcus faecalis* JH2-2 and *Pediococcus acidilactici* MM1. The transfer frequency per recipient were found to be  $1.4 \times 10^{-4}$  and  $1 \times 10^{-3}$ . At the end of mating period, phenotypic and genotypic resistance to erythromycin in recipient was observed. The study illustrated the diverse MLS phenotypic and genotypic resistance among the LAB isolates of food samples and its ability in diffusing their AR traits in to the available recipient. This increases the concern of antibiotic resistance spread in the food chain when used as food additives/ probiotics. Therefore, awareness has be practiced in the proper use of antibiotics as a growth promoters and sensible use of antibiotics in therapeutics and non-medical sectors in order to prevent the dissemination of antibiotic resistance.

**Keywords:** Antibiotic resistance, Lactic acid bacteria, Resistant genes, Erythromycin, Clindamycin, *In vitro* conjugation





**Histopathological studies and Cellular changes of *Mycobacterium tuberculosis* in Extra Pulmonary Tuberculosis in Mysuru City**

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**ABSTRACT**

Extra Pulmonary Tuberculosis is a bacterial air borne respiratory infectious disease caused by the *Mycobacterium tuberculosis*. Epidemiology study explained the increase in EPTB in Karnataka and especially in Mysore District. The Highest cases was observed in Bangalore City with 7798 cases, Bangalore Urban (3111), Belgaum (2634) Tumkur (2491) cases and Mysore stands 5<sup>th</sup> position in Karnataka with 2,472 EPTB cases alone. So, the study area is focused in Mysore city. The presence of the *Mycobacterium tuberculosis*, in EPTB samples were done by using the primary staining technique along with the pathogenicity pattern. Extrapulmonary TB histopathology is the central caseating necrosis consists of the giant cells, and caseating granuloma. Samples were collected from the JSS hospital, Mysore, they recorded a many case of EPTB with enlarged lymphadenitis at outpatient department (OPD). The blue print of the Mysuru district center, for the EPTB samples that were collected from 2017-19 were interpreted through Arc-GIS software. A total of 250 (n=250) were taken for the study from the JSS Hospital, Mysuru. Out of 250 samples 230 samples were positive for the MTB by histopathological examination the most common region was lymph node of cervical region (176 cases), followed by submandibular (40) and supraclavicular (18), multiple lymph node (8), axillary (6), inguinal node swelling (2) cases and other sites of infection (12 cases). So, the present study explains that staining methods gives 90% of the result and remaining may show positive for the EPTB in the molecular studies. Hence the Histopathological study explains the identification of the EPTB through the primary staining techniques. Because of the variable presentation, the diagnosis is often overlooked as it may also include unusual locations. The need for the hour to reduce its burden on the current health system is normal guidance for its correct diagnosis and care.



**Keyword's:** Extra Pulmonary Tuberculosis, Histopathological studies, H & E staining, Acid fast staining, Lymph node EPTB, Age and Gender distribution of EPTB, etc.,

**Sub-Theme: FERMENTATION TECHNOLOGIES**

***Aspergillus tamarii* PS6 derived Pectinase: Production, Characterization and Application**

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**Abstract**

Pectinases, a heterogeneous group of glycosyl hydrolyses depolymerize pectin (a polymer found in fruits and vegetables) and play a significant role in food and beverage processing industries. Industrially, pectinases are predominantly sourced from prokaryotes (bacteria and actinomycetes) and eukaryotes (fungi and plants). The current study concentrated on the isolation, screening of pectinolytic fungi from spoiled fruits and soil samples, submerged fermentation of fungal pectinase using different fruit peels (tomato, orange, sweet lime, grapefruit or apple peels) and nitrogen supplements (peptone, yeast extract, beef extract, casein, ammonium sulphate or ammonium chloride). The partially purified protein was subjected to enzyme characterization involving determination of optimum pH and temperature for the pectinase activity. Solvent tolerance of the enzyme was also undertaken using acetone, ethanol, and methanol (20% v/v). Among the 11 isolates screened for pectinase production, isolate PS6 demonstrated the highest enzyme synthesis and was identified as *Aspergillus tamarii*. The broth supplemented with orange peel and yeast extract (1% w/v), respectively favoured maximum enzyme production. The ammonium sulphate precipitated and dialyzed pectinase was best active at pH 5.0 and 60 °C. The enzyme demonstrated tolerance towards solvents in the order: acetone < methanol < ethanol. Application studies for the pectinase included clarification of unprocessed wine, wherein the enzyme was active in the presence of alcohol content (11% v/v) of the wine and reduced the turbidity by 92%. Results from the enzyme characterization and application study suggested that the *Aspergillus tamarii* PS6 pectinase may be considered as a suitable bio-agent for the beverage industry.

**Key words:** Pectinase, *Aspergillus tamarii*, fruit peels, biosynthesis, characterization





MOLECULAR DOCKING ANALYSIS OF GREEN SYNTHESIZED NANOPARTICLES  
OF TITANIUM DIOXIDE USING *ALLIUM SATIVUM* AGAINST 4G6T AND 4RSW  
PROTEINS

ABSTRACT:

Green nanotechnology is an emerging segment in all fields of science and, compared to the alternative chemical methods of nano synthesis, is environmentally friendly. The molecular docking method is an emerging drug design technique against pathogens that can be used to study the interaction at atomic level between a tiny molecule, a ligand and a protein that helps us to understand the existence of tiny molecules at the target protein binding site, as well as to elucidate fundamental biochemical processes.

Garlic (*Allium sativum*) is a well-known herb that has nutraceutical, medicinal and insecticidal properties. The antibacterial effect of garlic, including organosulfur compounds and flavonoids, is attributable to the presence of its bioactive constituents. The current study focuses on molecular docking and insilco analysis using PyMol software and Chimera software to understand the binding of bioactive garlic compounds coated with TiO<sub>2</sub> nanoparticles against 4G6T and 4RSW *pseudomonas syringae* effector proteins in comparison with standard Streptomycin. The outcome of this study can serve as a possible leading molecule to produce effective antibacterial agents against plant pathogens.



**Sub-Theme: Medical Science**

**Comparative analysis of microbial and biochemical markers in saliva samples of human subjects of different age groups**

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**Abstract**

In recent years, saliva is gaining popularity as a forensic evidence due to its ease of collection, safety in handling and its close relationship with plasma. Salivary biomarkers are used in crime detection and diagnosis of systemic diseases. The present study was undertaken with the objectives to isolate and enumerate *Streptococcus salivarius*, *S. mutans* and *Candida* spp. from saliva samples of different human population and to determine the lysozyme and salivary amylase activities among the samples. 18 saliva samples were collected aseptically in sterile containers from male and female subjects of different age groups (20-35 years, 35-50 years and 50-65 years) along with informed consent forms and processed. Colonies of *Streptococcus* spp. and *Candida* spp. were isolated and enumerated on Mitis Salivarius Bacitracin agar and Sabouraud dextrose agar, respectively. Results were expressed as colony forming units per ml. Amylase and lysozyme activity was determined by iodometric method and by *Micrococcus lysodeikticus* cell wall disruption method, respectively. Analysis was done using saliva samples (fresh, stored for 15 days and 30 days at room temperature and 4°C). For males, higher colony counts were reported compared to female subjects. Comparative analysis of salivary amylase and lysozyme activities demonstrated a gradual decline with progressing age groups in both male and female subjects. For males, the amylase activity showed an increase in stored samples than in fresh samples whereas the level of lysozyme varied within subject population. The results suggest variation in the levels of salivary biomarkers which may be used in forensic analysis.

**Keywords:** Amylase activity; biomarkers; forensic evidence; lysozyme activity; saliva

