OMICS Group

OMICS Group International through its Open Access Initiative is committed to make genuine and reliable contributions to the scientific community. OMICS Group hosts over **400** leading-edge peer reviewed Open Access Journals and organizes over **300** International Conferences annually all over the world. OMICS Publishing Group journals have over **3 million** readers and the fame and success of the same can be attributed to the strong editorial board which contains over **30000** eminent personalities that ensure a rapid, quality and quick review process. OMICS Group signed an agreement with more than **1000** International Societies to make healthcare information Open Access.

OMICS Journals are welcoming Submissions

OMICS Group welcomes submissions that are original and technically so as to serve both the developing world and developed countries in the best possible way.

OMICS Journals are poised in excellence by publishing high quality research. OMICS Group follows an Editorial Manager® System peer review process and boasts of a strong and active editorial board.

Editors and reviewers are experts in their field and provide anonymous, unbiased and detailed reviews of all submissions.

The journal gives the options of multiple language translations for all the articles and all archived articles are available in HTML, XML, PDF and audio formats. Also, all the published articles are archived in repositories and indexing services like DOAJ, CAS, Google Scholar, Scientific Commons, Index Copernicus, EBSCO, HINARI and GALE.

For more details please visit our website:
http://omicsonline.org/Submitmanuscript.php

Research Interest & Expertise

Dr. Kartikeya Tiwari

Editorial Board Member

International Journal of Biodiversity, Bio prospecting & Development (OMICS GROUP)

- Presently I am working as Assistant Professor, Microbiology in Management and Science University, Shah Alam, Selangor Malaysia.
  I did my Ph.D. from Mycology laboratory, University of Rajasthan, Jaipur, India. My research interests include the following fields.

- Isolation of novel microbes (Bacteria and fungi) from different niches of unique locations.
- Identification of these novel microbial strains.
- Exploitation and optimization of novel microbial strains to harness bioactive compounds.

Global requirement

- World is facing the problem of environmental pollution, drug resistance in pathogens, non biodegradable compounds recycling, deforestation and species extinction (animals, plants and microbes).
- Increased industrialization and urbanization added to the above.
- Several Scientists /researchers started working in the area but still require the further research and up gradation so that the process can be optimized/standardized.

Contd....

- A large number of research laboratories still facing the problem in the preservation of novel microbial strains. (number of times the cultures/strains lost due to improper handling, wrong barcoding, lack of skilled man power, financial issues and migration of peoples/scientists to different places.
- Global committees focusing in this area and looking forward to sort out these issues.

Fill the gap

- Global committee members should come out with innovative ideas and generate funds for these issues to serve human mankind and next generation benefit.
- Plantation and reforestation is the demand of coming time to stop extinction of species (Microbes, animal and plants) and maintain natural biodiversity.
- Use of chemicals and heavy metals already spoiled the environment heavily. The harmful/xenobiotic compounds should be banned to save the future.

What next

- Use ecofriendly chemicals /drugs and minimize/stop the use of plastics/polybags

or

- Develop a standardized ecofriendly protocol to dispose these items.
- Identify the sites of rich microbial diversity and come out with a solution to preserve these sites.
- Distribute and spread the awareness amongst common people for the use of ecofriendly products.
- Generate the skilled manpower to sort out these issues.

Research interest

- My group is working in the area of endophyte biology; isolating and identifying the novel microbial strains of various niches , for example we have isolated *Alternaria solani*, *Bacillus amyloliquefaciens*, *Alternaria alternata*, *Aspergillus niger*, *Penicillium notatum* , *Cladosporium* and *fusarium* species.

- Currently working on the optimization and standardization of these novel strains to get bioactive compounds at highest /maximum level.

Concept & discoveries

- Endophytes are defined as microorganisms that reside in the tissues of living plants are relatively unstudied and potential sources of novel natural products for exploitation in medicine, agriculture and industry.

- These microbes can produce novel products in natural manner, therefore contain minimum /no side effects. For example taxol (Paclitaxel) is an anticancerous drug produced from *Taxomyces adreanae* (fungal endophyte).

Contd....

- The secondary metabolite ambuic acid, an antifungal agent, isolated from *Pestalotiopsis microspora* have been used as models to develop new solid-state nuclear magnetic resonance (NMR) tensor methods to assist in the characterization of molecular stereochemistry of organic molecules (Harper *et al.*, 2001 & 2003).

- Colletotric acid, a metabolite of Colletotrichum gleospoirioides, an endophytic fungus in Artemisia mongolica, displayed antimicrobial activity against bacteria as well as against the fungal pathogens (Zou et al., 2000).

Contd....

- *Muscodor albus* is a newly described endophytic fungus obtained from the plant *Cinnamomum zeylanicum* (Worapong *et al.*, 2001 & 2002). This xylariaceous fungus effectively inhibits and kills certain fungal and bacterial pathogens by producing a mixture of volatile compounds (Strobel *et al.*, 2001).
- The potential use of mycofumigation to treat soil, seeds and plants may soon be a reality. Using *M. albus* as screening tool, it has now been possible to isolate other endophytic fungi that produce volatile antibiotics.

Contd....

- A unique peptide antimycotic termed cryptocandin was isolated and characterized from *Cryptosporiopsis quercina* (Strobel *et al.*, 2001). This compound contains a number of peculiar hydroxylated amino acids and a novel amino acid: 3-hydroxyl-4-hydroxyl methyl proline. The bioactive compound is related to the known antimycotics, the echinocandins and the pneumocandins. Thus, other antifungal agents related to cryptocandin is also produced by *C. quercina*.

Contd....

- Alternaric acid, a biologically active secondary metabolite, produced from *Alternaria solani* shown effectiveness against various fungal pathogens (Tiwari & Chittora, 2013; Brian *et al.*, 1949).
- The recent discovery of polyester polyurethane is one of the few types of plastics susceptible to degradation by natural sources, mainly bio-degradation by microbial attack and enzyme degradation.
- Pestalotiopsis microspora was able to survive on an exclusive "diet" of

Contd....

polyurethane as it only carbon source, both in aerobic and anaerobic conditions.

- In the new study, the researchers identify various plant fungi that can use polyurethane as a sole carbon source. They demonstrate this for two populations of Pestalotiopsis microspora and several others from the same genus, although they note that the ability to degrade polyurethane is not universal across all Pestalotiopsis species.
- The only other microbe so far known to be capable of using polyurethane as a sole source of carbon.

Contd....

- Based on molecular investigations, the researchers concluded that P. microspora fungi were able to break down the plastic using a specific enzyme they called polyurethanase. Interestingly, when they isolated this enzyme, they found that it could degrade polyurethane on its own, independently of the fungi.

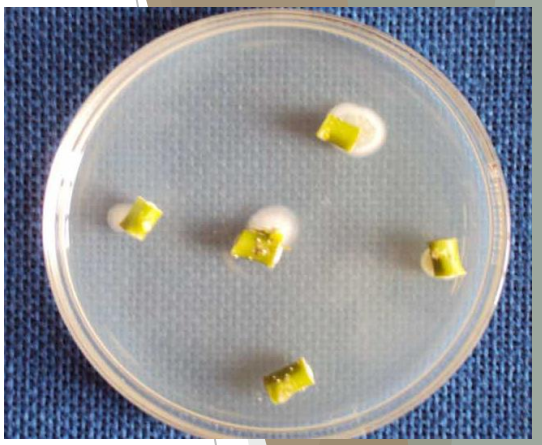
Protocol of isolation of fungal endophytes

❑ Criteria for plant selection

- ❖ Plants from unique environmental niches especially those with an unusual biology and possessing novel strategies of survival.
- ❖ Plants that have an ethno botanical history which are used in specific uses.
- ❖ Plants that are endemic, have an unusual longevity, are more likely to lodge endophytes with active natural products.
- ❖ Plants growing in areas of great biodiversity have more number of endophytes.

❑ Surface sterilization and inoculation

- All explants were surface sterilized by dipping in 75% ethanol for 1 minute, 4% sodium hypochlorite for 2 minutes followed by rinsing three times in sterilized distill water. In each petridish , a total of four-five processed explants were eventually spaced onto the surface of potato dextrose agar media supplemented with 200ug/ml tetracycline.



Explants for the isolation of fungal endophytes

❑ Incubation

The petriplates with explants were incubated in the culture room at 25^0C.

❑ Identification of fungal endophytes

- The identification of endophytic fungal strains was based on the morphology of the fungal culture , colony or hyphae, the characteristics of the spores and reproductive structures . Measurements of all fungal characters were made in water mounts, and the slides were subsequently mounted in lactophenol-cotton blue stain. Those cultures which fail to sporulate were named as mycelia sterilia, and divided into different morpho species according to their cultural characteristics.

❑ Preservation of pure cultures

- The fungi in the pure culture were preserved on the slant at 4^0C with proper labelling; each tube was labelled with the code number, batch number and full name of the fungi and date of storage. Several replica was made for each isolate and appropriate media was used according to the use of microbial strains.

Pure culture of *Alternaria solani*

Contd....

❑ Data analysis

- ❖ Data analysis was carried out by calculating the frequency of colonization rate (CR) and relative colonization frequencies (RF).Colonization rate (%) of an endophyte was equal to the number of segments colonized by a single endophyte divided by the total number of segments observed x 100.

Recent publications

- **Tiwari K.** and Thakur H K., "Diversity and Molecular Characterization of Dominant *Bacillus amyloliquefaciens* (JNU-001) Endophytic Bacterial Strains Isolated from Native Neem Varieties of Sanganer Region of Rajasthan" International Journal of Biodiversity, Bioprospecting and Development, OMICS Group of Publications, 2014 1:1, Vol. 1, Issue 1, 1000115 (doi:10.4172/ ijbbd.1000115).
- **Tiwari K.** and Lodha P., "Isolation, frequency distribution and diversity of novel endophytic fungal communities of *Fusarium* species in Rhus mysorensis L. from Sanganer region of Rajasthan" Elixir International Journal 2014, Elixir Bio Technology 68 (2014) 21983-21986 (ISSN 2229-712X)
- **Tiwari K.** and Chittora M., "Assessment of genetic diversity and distribution of endophytic *Alternaria solani* isolates associated with dominant Karanja plants in Sanganer region of Rajasthan" *Springer Plus* 2013, 2193-1801-2-313 (ISSN Number – 2193-1801).

Contd....

- **Tiwari K., "**Frequency distribution and assessment of genetic diversity of novel endophyte *Alternaria alternata* accessions isolated from *Pongammia pinnata* L." *Pakistan Journal of Biological Sciences* 16 (19): page no. 1004-1009, 2013 (ISSN Number – 1028-8880).
- Garima, **Tiwari K.** and Chittora M., "Study the effect of various physical & Biochemical parameters on the production of laccase enzyme produced from *Aspergillus flavus* at In-Vitro conditions" *International Journal of Recent Scientific Research*, Volume 4, Issue 5, May 2013, page no. 662-665 (ISSN Number – 0976-3031).
- Garima, Chittora M., and **Tiwari K.,** "Assessment of genetic diversity based on polypeptide band pattern among different isolates of *Aspergillus flavus* using SDS-PAGE" *International Journal of Bioassays*, Volume 2 (07), June 2013, page no. 1034-36 (ISSN Number – 2278-778X).
- Chittora M., and **Tiwari K., "**Biology & Biotechnology of Cumin" *International Journal of Bioassays*, Volume 2 (07), June 2013, page no. 1066-68 (ISSN Number – 2278-778X).

Contd....

- **Tiwari K., "**Isolation, frequency distribution and diversity of novel fungal endophytes in *Securinega leucopyrus* L. from Sanganer region of Rajasthan" *International Journal of Integrative sciences, Innovation and Technology* Section B, Volume 1, Issue 5, December 2012, page no. 40-43 (ISSN Number – 2278- 1145).
- **Tiwari K. and Lodha P., "**Endophytic fungal metabolites and their potential : An overview" *International Journal of Life Sciences* Volume 1, Number 2, June – August 2012, page no. 112-117 (ISSN Number - 2319-1198).
- Upadhyay M. K., Jain D., **Tiwari K.**, Singh A., and Verma H. N., "Exploitation of Fungi: A potential approach for the management of weeds" *Proceedings of National Academy of Sciences* Section B, Vol.81 pt. I, 2011 India, page no. 69-75 (ISSN Number - 0973-1628).

Books

- **Tiwari K.** "Studies on fungal endophytes of certain angiospermic plants occurring in Sanganer region of Rajasthan" Lambert Academic Publishing Germany, 2012 (ISBN Number 978 – 3 – 659 – 29097 – 8).

Address for correspondence

Dr. Kartikeya Tiwari

tiwarikartik1@gmail.com

Kartikeya_tiwari@msu.edu.my

Mobile No.+60149294304

Corresponding Address – 23-7, Menara – U, Sector 13, Infront of Management and Science University, Darul Ehsaan, Shah Alam, Selangor, Malaysia - 40100

Biodiversity, Bioprospecting and Development Related Journals

- Journal of Bioprocessing & Biotechniques
- Journal of Bioremediation & Biodegradation
- Journal of Bioequivalence & Bioavailability
- Journal of Biodiversity & Endangered Species

Biodiversity, Bioprospecting and Development Related Conferences

- 3rd International Conference on Earth Science & Climate Change
- 3rd World Congress on Biotechnology
- 5thWorld Congress on Bioavailabity and Bioequivalence: Pharmaceutical R&D Summit
- 3rd International Conference on Biodiversity & Sustainable Energy Development

OMICS Group **Open Access Membership**

OMICS publishing Group Open Access Membership enables academic and research institutions, funders and corporations to actively encourage open access in scholarly communication and the dissemination of research published by their authors.

For more details and benefits, click on the link below:

http://omicsonline.org/membership.php