## 3<sup>rd</sup> World Congress and Expo on **Applied Microbiology** November 07-09, 2

November 07-09, 2016 Dubai, UAE

## Harnessing the potentials of nano-embedded mychorrhiza for growth and value addition to medicinally important plant *Brassica olearacea* (Broccoli)

Ajit Varma, Uma, Manpreet Kaur Attri and Manika Khanuja Amity University, India

N anobiotechnology has a great potential to enhance the quality of life through its wide range of applications in agriculture including nano-fertilizers, nano-pesticides, nano-herbicides. In this direction, an investigation has been initiated to study the effect of ZnO nanostructured materials on the growth of *Piriformospora indica* (*Hymenomycetes Basidiomycota*) which is a novel and new cultivable mycorrhiza. This fungus possesses multifunctional activities like plant growth promoter, biofertilizer, immune modulator, obviates biotic and abiotic stresses, bioherbicide, phytoremediator etc. In the present "nano-agriculture" study, *P. indica* is treated with ZnO nanoparticles. In particular observations, colonies were found to be more distinct, larger in size, smooth and round in ZnO nanoparticles infused medium as compared to control without nanoparticle where fungal surface is rough and overall colony size were not very large. The results of the study are examined by fresh and dry weight, spore count and scanning electron microscopy analysis. It is inferred that addition of ZnO nanoparticle resulted in promising enhancement in the biomass of *P. indica*. Treatment of Broccoli seeds with nano-embedded fungal propagule resulted in early germination as compared to control.

Ajitvarma@amity.edu

## Biochemical and molecular characterization of fluorescents Pseudomonas spp.: Study of their potentialities to control *Verticillium* dahliae Kleb

**Tihar-Benzina F, Sahir-Halouane F** and **Oulebsir-Mohand Kaci H** Université de M'Hamed Bougara, Algeria

ur research topic fits into the context of biological control which can be considered as a potential alternative to chemical control. The studies we conducted were designed to isolation and identification and the selection *Pseudomonas* spp. fluorescent group for their use against this phytopathogenic fungus. The surveys carried out during the 2012-2014 agricultural partner in several groves located in Boumerdes, Bouira and Tizi Ouzou showed the presence of fungal diseases that has vascular Verticillium. Isolated fluorescent Pseudomonas was screened using the antagonism in vitro and in situ test. The five selected isolates significantly reduced the mycelia growth and the formation of microsclerotia of V. dahlaie. The effectiveness of selected strains is then evaluated in pots under green house; the incidence and the severity of Verticillium wilt showed after bacterial inoculation of the roots of tomato plants were significantly reduced compared to the control treatment. The ability of the two best isolates of Pseudomonas PF49 and PP30 to protect tomato against the invasion of the fungus was confirmed, a relative PGPR effect was observed; especially in the last stages of culture. The genetic identification of best Pseudomonas isolates by sequencing the 16S RNA, allowed us to confirm the heterogeneity of our collection. Four main groups were defined the group was related to P. fluorescens, P. Putida, P. azotoformans and P. plecoglossicida. These strains were further characterized for the production of certain secondary metabolites involved in the fight biological against V. dahalie such as siderophores, HCN, phosphatases, the CWDE (Cell Wall Degrading enzymes) and other antimicrobial compounds. The results suggest that a combination of those metabolites could be involved in the inhibition of the formation of microsclerotia. A new strain of *Pseudomonas* spp. aboriginal PP30 from the tomato rhizosphere has been identified. The selected strains are excellent candidates to control V. dahliae affecting various economically important crops in Algerian agriculture.

benzinafarida@yahoo.fr