

May 23-24, 2019
Zurich, Switzerland

J Food Nutr Disor 2019, Volume 8
DOI: 10.4172/2324-9323-C3-030

Biogenic Mn nanoparticles application, characterization and reclamation of *Aspergillus niger* mycelial growth causing fruit rot disease in Japanese persimmon

Iftikhar Hussain, Muhammad Farooq Hussain Munis and Yidong Zhang

Shanghai Jiao Tong University, China

The fruit rot disease caused by *Aspergillus niger* is an important limiting factor for Persimmon production in Pakistan. Unfortunately, the management of this disease entirely depends on chemical fungicides in our country. The purpose of this work was to explore the effect of Mn₃O₄ nanoparticles for the control of this disease in different conditions. The nanoparticles were applied at 50 ppm concentrations to determine their antifungal activity in both in vitro and in vivo conditions. The in vivo results indicated that the Mn₃O₄ nanoparticles cause a substantial impression on the mycelia growth of *Aspergillus niger*. The Mn₃O₄ nanoparticles were prepared successfully by using aqueous extracts of different plants such as *Mangifera indica*, *Azadirachta indica*, *Turmeric aphylla* and *Calotropis procera*. The XRD study was performed to see the rhombohedral structure of Mn₃O₄ nanoparticles. No diffraction peaks of XRD were observed from standard peaks of Mn₃O₄ nanoparticles.

The size of the nanoparticle was influenced and varied in different types of plant extracts. The average size of Mn₃O₄ nanoparticles were changed in different plant extracts and observed to be 33 nm, 56 nm, 35 nm and 35 nm in *Mangifera indica*, *Azadirachta indica*, *Turmeric aphylla* and *Calotropis procera* extracts, respectively. FTIR spectroscopy of nanoparticles described the presence of biomolecules which result in the reduction and stabilization of nanoparticles. SEM Scanning Electron Microscopy was performed to analyze shape of nanoparticles. The absorbance of nanoparticles solution was recorded using UV-Visible spectrophotometer. The spectrum was scanned in the range of 200-800 nm. Mn₃O₄ nanoparticles showed maximum inhibition in the growth of *Aspergillus niger* hyphae, both in vivo and in vitro.

Ishah9094@gmail.com