Bioproduction of Silver Nanoparticles by Myrtus Communis Leaf Extract and Their Effect on Plant Pathogenic Fungi in Vitro

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In this study, *Myrtus communis* was used for the bioproduction of colloidal silver nanoparticles (AgNPs). The resultant AgNPs were characterized by X-ray diffraction (XRD), UV-Visible spectroscopy and field-emission scanning electron microscopy (FESEM). The hump-like peaks were recorded near the wavenumber 422 nm and such peaks originated due to the electronic structures of silver tiny particles and silver nanoparticles. The four intensive peaks of XRD patterns indicated the crystalline nature and the face-centered cubic structure of the AgNPs. The average crystallite size of the AgNPs ranged from 19nm to 25nm. The FESEM image illustrates the good dispersion of the AgNPs and the spherical shape of the nanoparticles. The AgNPs were prepared to study antifungal activity against plant pathogenic fungi *Aspergillus niger*, *Rhizopus stolonifer* and *Neurospora crassain vitro*. Results showed that the AgNPs demonstrated high antifungal activity against these fungi with significant differences between treatments when compared with the control (without nanoparticles).

Keywords:

- Bioproduction
- nanoparticles
- *Aspergillus*
- *Rhizopus*
- *Neurospora*
- silver particles
- antifungal activity