

# Synthesis of Silver Nanoparticles by Leaf Surface Fungi Isolated from *Piper betle* L. and its Antimicrobial Potential Study <sup>†</sup>

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**Abstract:** Studies on the biodiversity of phylloplane and endophytic fungi on the leaf surfaces of the medicinal plant; *Piper betle* L. was made in our Microbiology laboratory, K.M. Govt. Institute for Postgraduate Studies and Research (Autonomous), Puducherry. The Agar plate method was used to isolate both the leaf surface and sub-surface fungi. During the study period, altogether twelve fungal species of seven genera of phylloplane and five species of endophytes were isolated from *Piper betle* L. by agar plate method. *Penicillium* sp., a dominant fungus, was chosen for the synthesis of silver nanoparticles. Silver nanoparticles (AgNPs) were synthesized from Ag<sup>+</sup> ions by treating with different extracts of the fungus with AgNO<sub>3</sub>. The appearance of yellowish-brown color in the conical flasks suggested the formation of AgNPs in dark and light conditions. The AgNPs were characterized by UV-Vis spectroscopy, which has proved to be very useful for the analysis of nanoparticles. *Candida albicans* was found most susceptible towards the AgNPs of *the fungus* in comparison to other bacterial strains. Among the bacterial strains, *Staphylococcus aureus* was more suffered than *V. parahaemolyticus* and *E. coli*. It was found in the present study that our process for the synthesis of nanoparticles was easy, safe, and economical to be readily used in the field of biomedicine.

**Keywords:** Silver nanoparticles; Leaf surface fungi; Antimicrobial potential; *Candida albicans*; Biomedicine.

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## Conflicts of Interest

The authors declare no conflict of interest.