

ABSTRACT

During this research work, two mushrooms were used for the biogenesis of AgNPs. These mushrooms were characterized, identified and illustrated on the basis of morpho-anatomical features. These two mushrooms were found to synthesize silver nanoparticles under different conditions. The biogenesis of AgNPs from *Termitomyces heimii* and *Macrocybe gigantea* was confirmed by UV-vis spectroscopy at different absorbance peaks. Presence of different compound such as phenols or alcohols was observed in both mushrooms by FTIR analysis. Size and spherical shape of nanoparticles was observed by SEM analysis at different magnification powers. Crystallite size of AgNPs from *Termitomyces heimii* and *Macrocybe gigantea* was measured to be 2.12 nm or 2.04 nm, respectively. Antimicrobial activity was performed against different strains of bacteria and fungi using agar well diffusion method. Gram positive as well as gram negative bacteria showed different zone of inhibitions at different concentrations of AgNPs. The AgNPs of both mushrooms showed highest zone of inhibition against *Klebsiella pneumoniae* (12.3 ± 0.46) at conc. 150 $\mu\text{g/ml}$. The AgNPs of *Macrocybe gigantea* (LR-101) showed the highest ZOI at (5.6 ± 0.27) against *Aspergillus flavus* at conc. 150 $\mu\text{g/ml}$ while the AgNPs of *Termitomyces heimii* (LR-48) showed the highest ZOI at (7 ± 0.47) against *Aspergillus parasiticus* at conc. 150 $\mu\text{g/ml}$. And these results were found to be highly significance ($p \leq 0.05$) by performing the ANOVA using SPSS software.