

ABSTRACT

In the present study, Chamney Forest, Miandam, Swat Valley, KP, Pakistan was explored for its fungal flora. During the investigation, 5 mushrooms belonging to 74 families were collected, characterized and biologically screened for their pharmacological activities (antimicrobial, antioxidant and anticancer potential). Fourier Transform Infrared spectroscopic analysis of five mushrooms *Cholorophyllum molybdites*, *Boletus reticulatus*, *Leccinum varricolor*, *Lactifluss volemus*, and *Neolentinus adhaerens* showed the presence of different antioxidant functional groups O-H, C-C, C-O, C-H, C-N, C-Br, S-O, C=C and N-H. *Cholorophyllum molybdites* was used for the green mycosynthesis of MnO MNPs. Different structural characterization of MnO MNPs i.e., XRD, UV Vis and FTIR was done. *C. molybdites* and MnO NPs, both of them were selected for further investigation of their role as antibacterial, antioxidant and anticancer agents. Antibacterial potential of methanolic sample was determined by disc diffusion method against four bacterial strains (*Escherichia coli*, *Staphylococcus aureus*, *Klebsiella pneumoniae* and *Bacillus subtilis*) at four different concentrations (100, 200, 300, 400 $\mu\text{g/ml}$). All the samples showed antibacterial potential. MnO MNPS also showed remarkable zone of inhibitions against all the bacterial strains. The antioxidant potential of *C. molybdites* and MnO NPs and all selected mushrooms was determined by using DPPH radical scavenging assay. The antioxidant potential of methanolic sample was determined by using 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay. Methanolic extract of *C. molybdites* showed 79% and MnO NPs showed 69% antioxidant potential. All testing samples showed remarkable antioxidant potential. The selected testing samples (*C. molybdites* and MnO NPs) were also investigated for its anticancer potential. The shielding effect of aqueous extract of testing samples was checked against CCl₄ induced hepatotoxicity in Balb C. mice The alteration in enzyme activities of blood plasma was observed as CCl₄ induced hepatotoxicity caused elevation in ALAT, ASAT, ALP, LDH and MDA while a decrease in catalase level was observed. Bilirubin content also increased in plasma. When selected testing samples were injected intraperitoneally, it ameliorated the damaging effect caused by CCl₄. Chamney Forest, Miandam, Swat Valley, KP proved to be a good fungal diversity spot. The selected mushrooms showed good biological screening properties which could be bench mark in pharmaceuticals as well.