ABSTRACT

In the present study, Batoot Forest, Kumrat Valley, KP, Pakistan was explored for its fungal flora. During the investigation, 10 mushrooms belonging to 7 families were collected, characterized and biologically screened for their pharmacoglogical activities (antimicrobial, antioxidant and anticancer potential). Mushrooms were characterized on the basis of morpho-anatomical characters. ZnO nanoparticles was made from *Cartinarius scabra* and screened for their pharmacoglogical activities (antimicrobial, antioxidant and anticancer potential). For detailed study of the ZnO nanoparticles different structural characterization XRD, UV Vis and FTIR analysis was done. Fourier Transform Infrared spectroscopic analysis analysis of five mushrooms (*A. maingibellaensis, H. occidentalis, R. adusta, R. vermilliona* and *C. scabra* showed the presence of different antioxidant functional groups like alcohols, phenols, carbonyl and halogens. Mushroom samples and ZnO myconanoparticles samples were selected for further investigation of their role as antibacterial, antifungal, antioxidant and anticancer agaents. Antibacterial potential of metahnolic extract was determined by disc diffusion method against four bacterial strains (*B*acillus *subtilis, Bacillus.meurellus, A. rhizosphrensis* and *Escherichia coli*) at five different concentrations (200, 300, 400, 500 µg/ml). All the samples showed good antibacterial potential, however, myconanoparticles showed remarkable zone of inhibitions against all the bacterial strains. Antifungal potential of the testing samples was determined by disc diffusion method against two fungal strains (*Aspergillus flavus* and *Mucor mucedo*). All the selected samples showed antifungal potential. The antioxidant potential of *C. scabra* and ZnO NPs was determined by using DPPH radical scavenging assay. All the samples showed remarkable antioxidant potential. The antioxidant potential of methanolic and chloroform extracts of selected mushrooms was determined. The selected testing samples were also investigated for its anticancer potential. The shielding effect of aqueous extract of testing samples was checked against CCl_4 induced hepatotoxicity in Balb C. mice The alteration in enzyme activities of blood plasma was observed as CCl_4 induced hepatotoxicity caused elevation in ALAT, ASAT, ALP, LDH and MDA while a decrease in catalase level was observed. It also caused an increase in bilirubin content while decline in plasma protein level was observed. When selected testing samples were injected intraperitoneally, it ameliorated the damaging effect caused by CCl_4.