

ABSTRACT

The assessment of the pharmacological efficacy of fungal extracts was conducted through the utilization of in vitro and in vivo experiments. The assays employed in vitro binding to illustrate the affinity of the biopharmaceutical towards the target. Additionally, in vivo investigations were conducted to ascertain the potential biological activity of the biopharmaceutical in suitable animal models. The aim of the study was to assess the antimicrobial, antioxidant, anti-inflammatory, antidiabetic properties and toxicity studies of four distinct fractions (chloroform, ethyl acetate, methanol and aqueous) of extract derived from Aspergillus terreus broth. Antibacterial activity was assessed by using disc diffusion method and E.coli showed maximum zone of inhibition of 13 mm when treated with methanolic extract. Salmonella typhi exhibited zone of 15 mm when treated with both ethyl acetate extract and aqueous extract. No antifungal activity was shown by any of the extracts. DPPH assay was executed to assess the antioxidant activity. Ethyl acetate extract showed highest percentage inhibition 75.12% and aqueous extract showed 38.54% inhibition at the concentration of 20 $\mu\text{g/mL}$ and 50 $\mu\text{g/mL}$ respectively. Anti-inflammatory activity was observed after 1, 3 and 5 hours following the treatment of extracts in mice. After 5 hours, highest percentage decrease was shown by ethyl acetate which was 65% and 26% and 27% by aqueous and methanol extract which was the lowest decrease in inflammation. Fungal extracts also exhibited antidiabetic activity. Highest blood glucose reduction was seen by ethyl acetate extract which was 24% and same as positive control Glibenclamide. Methanol and water extracts showed the reduction activity of 16%. Oral toxicity was not observed at the concentration of 2000 mg/mL . These findings indicate that the extracts derived from fungal broth possess bioactive chemicals that exhibit antibacterial, antioxidant, anti-inflammatory and antidiabetic properties.