Bioactivity of Tricholoma terreum: Antioxidant, Antiproliferative and Enzyme Inhibition Potential

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ABSTRACT

This study investigated the antioxidant, antiproliferative activities and enzyme inhibition potential of Tricholoma terreum (Schaeff.) P. Kumm., a common mushroom species. T. terreum extracts were obtained using ethanol and methanol solvents and tested for their bioactivity. Antioxidant activity was evaluated using DPPH (2,2-diphenyl-1-picrylhydrazyl) and FRAP (Ferric Reducing Antioxidant Power) assays with moderate activity observed. The ethanol extract showed values of 46.637±2.146 mg TE/g for DPPH and 60.683±1.530 mg TE/g for FRAP, while the methanol extract showed values of 30.987±1.298 mg TE/g for DPPH and 149.153±1.290 mg TE/g for FRAP. Additionally, total antioxidant status (TAS) of both extracts was measured and values were determined as 2.696±0.032 mmoL/L for ethanol extract and 2.302±0.040 mmoL/L for methanol extract. Total oxidant status (TOS) was also evaluated and values were 10.995±0.170 μmoL/L for ethanol extract and 12.483±0.213 μmoL/L for methanol extract. Anticholinesterase activity was evaluated by inhibition of acetylcholinesterase and butyrylcholinesterase enzymes and IC_{50} values were obtained as 58.06±1.21 μg/mL and 77.68±1.23 μg/mL for ethanol extract and 67.97±1.04 μg/mL and 84.85±0.88 μg/mL for methanol extract, respectively. In addition, inhibition of amylase and α-glucosidase was determined as ethanol extract showed 0.88±0.05 mmol ACAE/g for α-amylase and 1.39±0.02 mmol ACAE/g for α-glucosidase, while methanol extract showed 0.36±0.02 mmol ACAE/g and 0.75±0.03 mmol ACAE/g, respectively. Furthermore, antiproliferative activity was evaluated using MTT assay on cancer cell lines and ethanol extract showed significant inhibition indicating potential anticancer properties. These results suggest that T. terreum