Antioxidant and cytotoxicity activity of Cordyceps militaris extracts against human colorectal cancer cell line

ABSTRACT

Cordyceps militaris is famous for its medicinal effects and variety of bioactivities including antimicrobial, anti-inflammatory, antioxidant, immunomodulatory, or antitumor properties. The research's objective is to look into the antioxidant and cytotoxic effects of C. militaris extract (CME) against normal human colorectal HT-29 cancer cell line. The effects of CME and fresh Cordyceps militaris (CM) on the antioxidant activities were determined using total phenolic content (TPC), total flavonoid content (TFC), and 2,2-diphenyl-1-picrylhydrazyl (DPPH) analysis. The cytotoxic effects of various concentrations of CME on HT-29 cells were evaluated by 3-[4,5-dimethylthiazol-2-yl]- 2,5-diphenyltetrazolium bromide test. From the results, CME displayed strong activity of DPPH (83.8%, inhibitory concentration = 0.60 mg/ml), TPC (160 ± 0.74 mg gallic acid equivalent/100 g), and TFC (6.6 ± 1.13 mg rutin equivalent/100 g) relative to fresh CM. CME was found to be significantly more cytotoxic toward HT-29 cells with $p < 0.001$ in a dose-dependent manner with a cell growth inhibitory concentration of 50% of t1.53 mg/ml in contrast to cisplatin (3.11 mg/ml). The high antioxidant activities and cytotoxic effects of CME are probably due to the extract's high phenolic and flavonoid content. According to this report, CME's growth inhibitory activity on human HT-29 cells is driven by an apoptotic mechanism involved in it.