Antioxidant activity, total phenolic content and cytotoxic activity of various types of eggplants

ABSTRACT

The research was conducted to determine the free radical scavenging activity and total phenolic content of various types of eggplants and their effect on selected cancer cell lines in vitro. Free radical scavenging activity and total phenolic content were determined using DPPH free radical scavenging assay and the Folin-Ciocalteu method. The cytotoxic effects of eggplants ethanolic extracts were tested using MTT [3ï (4, 5-dimethylthiazolylï 2)ï 2, 5-diphenyltetrazolium bromide] assay against selected cancer cell lines such as non-hormone dependent breast cancer cell line (MDA-MB-231), cervical cancer cell line (CaOV3) and liver cancer cell line (HepG2). Nipples eggplant seed displayed the highest percentage of free radical scavenging activity with 95%, followed by long eggplant 94%, round eggplant 92%, pipit eggplant 91% and nipples eggplant 89%. The highest value for total phenolic content (mg GAE/100 g dry weight) was in the pipit eggplant (2,168 mg), followed by long eggplant (1,697 mg), round eggplant (1,539 mg), nipples eggplant seed (1,434 mg) and nipples eggplant (728 mg). Pipit eggplant displayed cytotoxic effects against MDA-MB-231, CaOV3 and HepG2 with IC50 (concentration causing 50% inhibition of the tumour cell line) value of 93.5, 6.15 and 35.4 ε g/ml, respectively. Round and nipples eggplants inhibited the proliferation of CaOV3 and HepG2 with IC50 value of 7.75 and 6.4 ε g/ml, respectively. Nipples eggplant seed displayed strong cytotoxic activity against CaOV3 and HepG2 with IC50 value of 7.1 and 2.63 ε g/ml, respectively. Cytotoxic properties of these fruits could be due to their high free radical scavenging activities and total phenolic content.

Keyword: Eggplants; Antioxidant activity; Total phenolic content; Cytotoxic activity; Cancer cell lines