In vitro bioactivities and phytochemicals content of vegetables from Sabah, Malaysia

ABSTRACT

This study aims to investigate potential of vegetables from Sabah with value-added benefits in nutraceuticals. Fifty-five samples of vegetables were collected from local market and tested for antioxidant activity using DPPH• assay. Four species with high DPPH• scavenging activity (>80%) which are Cosmos caudatus, Eryngium foetidum, Ipomoea batatas and Manihot esculenta Crantz were selected and subjected to different solvents extraction and tested to different scavenging assays (DPPH•, O2• and NO•), protein kinase phosphatase assay (GSK-3β, MKK1, and MSG5) and antibacterial tests. Ethanol extract of I. batatas (90.56%), boiled water extract of M. esculenta Crantz (62.77%) and extractable polyphenol extract of E. foetidum (50.93%) exhibits comparable scavenging activities to catechin for DPPH•, O2• and NO•, respectively. Polyphenols, phenolic acids, flavonoids and proanthocynidins are detected in all extracts at concentration between 0.001 mg/g to 0.52 mg/g. The highest total polyphenols content (0.40±0.01 mg GAE/g), total phenolics content (0.52±0.01 mg GAE/g), total flavonoids content (0.13±0.01 mg CE/g) and total proanthocyanidins content (0.12±0 mg CE/g) were obtained in extractable polyphenols of Cosmos caudatus. No extracts were observed as inhibitor for GSK-3β, MKK1 and MSG5. Inhibition of Pseudomonas aeruginosa (8.0 mm to 12.3 mm) was only obtained in extractable polyphenols and ethanol extracts. Extractable polyphenols of E. foetidum exhibit the largest inhibition of Pseudomonas aeruginosa (12.3 mm).