Cytotoxic and nitric oxide inhibitory activities of methanol extracts of Garcinia species.

ABSTRACT

The methanol extracts of 32 plant parts of 19 species of the genus Garcinia (Guttiferae) were collected from rainforests of the Malaysian Peninsula and the island of Sumatra, Indonesia, for evaluation of their in vitro cytotoxic and nitric oxide inhibitory activities. An end-point MTT cell viability assay was used to determine the 50% inhibitory concentration (IC50) of the extracts in three human tumor cell lines representing tumors of the breast (MCF-7), lung (NCI-H460) and prostate (DU-145). Griess assay was performed to assess the nitric oxide (NO) inhibitory activity. Of the 32 extracts, 27 showed cytotoxic activity in at least one of the three tumor cell lines used in this study. Four extracts, Garcinia opaca King (fruit), Garcinia maingayi Hook.f. (stem), Garcinia penangiana Pierre (leaf) and Garcinia urophylla Scortech.ex King (leaf) extracts showed the most potent and selective cytotoxic activity against MCF-7 cells (IC50 3-8 ?g/mL). The extracts from Garcinia cowa Roxb. (stem), Garcinia bancana Miq. (stem) and Garcinia malaccensis Hook.f. (leaf) showed moderate activity and selectivity towards non-small lung tumor cells. The extracts from Garcinia bancana (stem), Garcinia malaccensis (stem), Garcinia prainiana King (leaf), Garcinia rostrata Hassk.ex Hook.f. (stem and leaf), Garcinia cowa (stem) and Garcinia nervosa Miq. (leaf) exhibited inhibition against NO production without affecting the viability of LPS and IFN-?-induced RAW 264.7 macrophage cells. Among these, the most promising extracts were G. bancana (stem) and G. malaccensis (stem), as they showed the highest selectivity indices (>50) for NO inhibition. In conclusion, these data provide evidence that some of the Garcinia species could potentially contain potent and selective cytotoxic and anti-inflammatory agents.

Keyword: Breast cancer; Garcinia; Griess assay; In vitro cytotoxic; Lung cancer; MTT assay; Nitric oxide inhibition; Prostate cancer; Xanthones.