Cytotoxicity and immunomodulatory effects of damnacanthal and nordamnacanthal isolated from roots of morinda elliptica.

ABSTRACT

Morinda elliptica has been used traditionally as a medicine to treat various diseases in Malaysia and Southeast Asia. In this present study, the cytotoxicity and immunomodulatory effects of damnacanthal and nordamnacanthal isolated from the roots of Morinda elliptica were studied. Cytotoxic study was performed on human leukemia cell lines (HL-60) and mouse myelomonocyte leukemia (Wehi-3B) cell line, whereas immunomodulatory effect was evaluated by using lymphocytes proliferation assay on mice thymocytes and human peripheral blood mononuclear cells (PBMC). The production of extracellular human interleukin-2 (IL-2) and human interleukin-12 (IL-12) were also assessed by using the enzyme-linked immunosorbent assay (ELISA). The results indicated that both damnacanthal and nordamnacanthal inhibited the proliferation of HL-60 cells with the IC50 of 4.0 µg/mL and 20 µg/mL, respectively, and were able to activate mice thymocytes and human peripheral blood mononuclear cells (PBMC) at low concentration (0.47 µg/mL). Moreover, the production of extracellular human interleukin-2 (IL-2) and human interleukin-12 (IL-12) from both compounds-activated PBMC were prominently upregulated after 24 hours and the concentration remained almost constant up to 72 hours. Based on the results, both damnacanthal and nordamnacanthal can be cytotoxic and immunomodulatory agents which have the potential in cancer treatment.

Keyword: Morinda elliptica; Damnacanthal; Nordamnacanthal; Immunomodulation; Cytotoxicity.