Anticancer potential of Alternanthera sessilis extract on HT-29 human colon cancer cells

ABSTRACT

Objective: To identify the bioactive extracts from Alternanthera sessilis and investigate its cytotoxicity potential against colon cancer cells, HT-29. Methods: This study examined the effects of three parts (aerial, leaf, stem) of whole plant on HT-29 colon cancer cell lines. Three different extracts from the plant parts were prepared by maceration technique using 80% ethanol. The anticancer activities were determined using MTT, clonogenic, cell motility and AO/PI assay. The chemical composition profiling was analyzed by GC-MS. Results: Among three plant part extracts, leaf extract greatly suppressed the growth of colon cancer cells in time and dosage-dependent manner, followed by aerial and stem. The cytotoxicity results were rationalized with clonogenic, cell motility and AO/PI assay, where extract showed the most active activity compared to aerial and stem extracts. GC-MS analysis of leaf extract showed there were various recognized anti-cancer, anti-oxidant and anti-inflammatory compounds. Conclusions: Amid the screened extracts, the leaf extract exhibits the credible cytotoxic, anti-proliferative and apoptotic activity and hence, our findings call for additional research to conclude the active compounds and their mechanisms determining the apoptotic activity.

Keyword: Alternanthera sessilis; Colorectal cancer; Anticancer; HT-29; Apoptosis