

Oncolysis of breast, liver and leukemia cancer cells using ethyl acetate and methanol extracts of *Goniothalamus umbrosus*.

ABSTRACT

This current study, aims to investigate the ethyl acetate and methanol extracts of *Goniothalamus umbrosus* for their anticancer effects on several human cancer cells namely, the MCF-7 breast cancer, HT-29 colon cancer and CEM-ss leukemia cell lines using a 3 days MTT (3-(4 and 5-dimethylthiazol-2-yl)-2 and 5-diphenyltetrazolium bromide) assay. Morphological changes and probable mode of cancer cell death induced by bioactive *G. umbrosus* extract were examined. DNA laddering assay was performed to assess endonucleosomal fragmentation. The MTT assay results revealed that only the ethyl acetate extract has anticancer effects on human breast cancer cells (MCF-7). Half maximal Inhibitory Concentration (IC₅₀) of the ethyl acetate extract was found to be $24.5 \pm 0.12 \mu\text{g mL}^{-1}$. Both inverted and fluorescence microscopic studies demonstrated that treated MCF-7 breast cancer cells using IC₅₀ of the extract displayed a number of typical morphological changes. Appearance of membrane blebs, DNA condensation and fragmentation are significant signs of apoptosis, were observed. The above findings suggested that the ethyl acetate extract of *Goniothalamus umbrosus* has potential therapeutic effect towards human breast cancer cells that requires further investigations in future.

Keyword: *Goniothalamus umbrosus*; Cancer; Apoptosis; MCF-7; CEM-ss; HT29.