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Phytochemicals in *P. hysterophorus* have chemo-preventive potential to inhibit the growth of HL-60 cancer cells through cell cycle arrest

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Plants are being used in the treatment of cancer for a long time despite the availability of rich synthetic drugs even today. In the present study *in vitro* cytotoxic activity of *P. hysterophorus* L. (Asteraceae), a weed having vigorous growth potential was investigated against four human cancer cell lines viz., PC-3 (prostate), Colo-205 (colon), NCI-H322 (lung) and THP-1 (leukemia) cell lines by using SRB assay. Some extract fractions accounted for 50-98% growth inhibitory activity against different cancer cell lines. The potential cytotoxic extracts in SRB screening were further assayed for its anti tumor activity against HL-60 (promyelocytic leukemia) cancer cell line at different concentrations (10-100 µg/ml) using MTT assay. Extracts showed dose dependent growth inhibitory activity (up to 80%). Some of the extracts were active only at higher concentrations. For determining the mechanism of cell death in HL-60 cells, cell cycle analysis and mitochondrial membrane potential ($\Delta\Psi m$) assays were performed. Cell cycle progression was examined using fluorescence activated cell sorting (FACS) analysis. The sub-G1 DNA fraction exhibited about 50% increase in the camptothecin (5 µM) treated HL-60 cells while some *P. hysterophorus* extract treated cell lines demonstrated about 90% increment. Extracts showed about 20% loss in mitochondrial membrane potential ($\Delta\Psi m$) in HL-60 cell line indicating activation of apoptotic cascade by potential extracts. Camptothecin (5 µM) was used as positive control which under similar conditions showed about 50% decrease in $\Delta\Psi m$. *P. hysterophorus* extracts thus demonstrated chemo-preventive potential by inhibiting the growth of HL-60 cancer cells through cell cycle arrest.