Title: Cytotoxic and apoptotic effects of Persian herbal plants against the fibrosarcoma (WEHI-164) cell line: in vitro analysis

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Abstract: Abstract Background: Recently, Plant-derived extracts, as a Plant-derived chemotherapeutic anti-tumor drug introduce a new alternative source of effective cytotoxic anti-cancer agents against malignant tissues and cells due to their potential pharmacological activities. Ferulago Angulata DC (FA), Echinophora platyloba DC (EP), Salvia officinalis L (SO) and Chelidonium majus L (CM) plants from Persia were evaluated for their cytotoxicity and apoptotic effects on mouse fibrosarcoma cell line (WEHI-164) in comparison to mouse non-malignant cell line (L929). Methods: Cytotoxic activity and cell viability of methanolic extracts were assessed by 3-(4,5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) and trypan-blue assay on WEHI-164 and L929. Cell death ELISA was employed to quantify the nucleosome production result from nuclear DNA fragmentation during apoptosis and determined whether the mechanism involves induction of apoptosis or necrosis. The cell death was identified as apoptosis using terminal deoxy-nucleotidyl transferase (TdT)-mediated dUTP nick end labeling (TUNEL) assay. Results: The highest cytotoxic activity of extracts of Chelidonium majus L> Ferulago Angulata DC> Echinophora platyloba DC> Salvia officinalis L, respectively. Results were shown that these extracts decreased cell viability, inhibited cell proliferation, and induced cell death in a dose and time dependent manner, however did not exert any significant cytotoxic effect on mouse non-malignant cell line L929. Conclusion: So the extracts C. majus, F. Angulata, E. platyloba, S. officinalis were found to selectively and dose-dependently inhibit the proliferation of fibrosarcoma cell possibly via an apoptosis-dependent pathway.

crude extracts; cytotoxic activity; apoptosis; cancer; WEHI-164; herbal plants

Presentation: Poster