Evaluation of Rheum turkestanicum Janischew. root cytotoxic effects on human breast cancer cell line (MCF-7)

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Background and Aims: To evaluate cytotoxicity and apoptotic activity of Rheum turkestanicum Janischew. (polygonaceae) root three different extracts (ethyl acetate (EtOAc), n-hexane and H2O) on human breast cancer cell line.

Methods: Malignant cells were cultured in RPMI 1640 medium and incubated with different concentrations of plant extracts. Cell viability was quantitated by MTS assay. Apoptotic cells were determined using PI staining of DNA fragmentation by flow cytometry (sub-G1 peak). Apoptosis was confirmed morphologically by DNA ladder formation method.

Results: Ethyl acetate and n-hexane extracts were found to inhibit the growth of MCF-7 cells as a concentration and time-dependent manner with IC(50)=155 and 320µg/ml after 48 hr, respectively. apoptosis was evidenced by fragmented DNA ladder, and the accumulation of DNA in the sub-G(1) phase of cell cycle.

Conclusions: Both the extracts failed to induce a promising cytotoxic effect on MCF-7 cells. But further researches are needed to fully understand the possible anti-tumor properties.

Keywords: Rheum turkestanicum; Cytotoxicity; Apoptosis