Cytotoxic effect of methanolic fractions of Scrophularia oxysepala on MCF-7 human breast cancer cell line

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Background: Cancer is a major public health problem in both developed and developing countries. It is the second largest common disease spread world-wide. Drug toxicity and resistance to chemotherapeutic agents make a struggle to treat cancer. For this reason, initial research focuses on traditional medicines or herbal formulations. As we know, breast cancer is the most commonly occurring cancer among women (about 25%). So, the cytotoxic effect of methanolic fractions of Scrophularia oxysepala was investigated in human breast cancer MCF-7. Scrophularia oxysepala plant was collected from Eastern Azarbaijan province, Iran. This is the first time that cytotoxic effect of Scrophularia oxysepala fractions and cell death mechanism of it, is studied.

Methods: The MCF-7 and L929 cells were seeded in 96-well culture plates in the presence of different concentrations (30, 50, 100, 200, 300 μg/μl) at 12, 24, 36 hours and then results were followed to determine cytotoxic effects on viability and apoptosis by MTT, TUNEL and DNA fragmentation.

Result: The obtained results declared that certain concentrations have cytotoxic effect on MCF-7 cell line and induce apoptosis while L929 cells, as normal cell line, remained intact.

Conclusion: Increased concentration of the fractions and treating time reduced cell viability. Our data showed that methanolic fractions of Scrophularia oxysepala have an apoptotic effect on MCF-7 cells and it might be an effective agent in cancer treatment.

Keywords: Scrophularia oxysepala fractions, MCF-7, cytotoxicity, apoptosis, MTT assay