



Apoptosis enhancement in MCF-7 breast cancer cell line by *Salvia sahendica*

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Abstract: Herbal extracts have long been a productive source of treatment for cancer, which is estimated to become the most important reason of death in the worldwide. Therefore, there is a continuing necessitate for improvement of novel anticancer drugs.

The current study reports the extraction, characterization and evaluation of antitumor effects of *Salvia sahendica* fragments in MCF-7 cell line.

HPLC analyses of the petroleum ether extract of the roots of *S. sahendica* afforded several compounds which their structures were characterized using NMR spectroscopy. The antiproliferative properties of these compounds were evaluated by MTT assay. Subsequently, apoptosis detection assays (DAPI staining, Annexin V, EB/AO) were done. Furthermore, the investigation of gene expression profile by real-time PCR.

MTT assay illustrated highest anti-proliferative activity of the compounds **I**, **II** and **III** with the IC₅₀ values of 8.6, 21 and 14.2 µg/ml at 48 h, respectively (p<0.005). Real-time PCR demonstrated a significant (p<0.05) activation of genes that are involved in apoptosis (Bcl-2, Caspase 9, Bax and Akt).

To conclude, all trial data amplified the fact that compound **III** has potential role in activation of apoptosis through the PI3K/AKT pathway.

Keyword: *Salvia sahendica*, Cancer Therapy, Breast Cancer