

## Molecular and biochemical evaluation of anti-proliferative effect of (*Cichorium endivia*, L.) phenolic extracts

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Polyphenolic compounds are widely distributed in the vegetable kingdom and are therefore consumed regularly in the human diet. Medicinal plants are considered to be the most hopeful way for cancer treatment. The *Cichorium endivia*, L. plant materials were collected from different regions in Tanuma, Saudi Arabia. Methanol extraction was carried out and the HPLC analysis showed that, the extract containing four main compounds with different concentrations. The anticancer activity of the plant root extract was examined on three different cell lines (hypatocarcinoma cells, breast cancer cells and colon cancer cells). The extract degrees of activity was measured by determining cytotoxicity for the three cell lines compared with anticancer drug 5 FU (5-fluorouracil). The gene expression for the DNA cancer markers; P53, Bcl2, TNF and interleukin IL-4, IL-6 and IL-2 were examined using real time PCR. The expression of the P53 was high both in cells treated with FU and root extract but the expression in colon cancer was lower than liver cancer and breast cancer in successive manner. Expression of Bcl2 was high in cell lines treated with root extract compared with the FU, yet this expression still was low compared with the control ones. The TNF expression was high in the cells treated with the phenolic root extract but the expression of the TNF was high in HPG2 cells and decreased in both HTC116 and MCF7 respectively. The expression level of IL-2, IL-4 decreased in the examined cell lines treated with both root extract and with 5FU as well. In case of the IL-6 expression was high in cells treated with the root extract compared with the treated cells with 5FU and control cell lines. Thus, *Cichorium endivia*, which contains a combination of phenolic compounds, represents an enjoyable means of anticancer especially for Hypatocarcinoma.