

Abstract

Breast cancer is the most common diseases in the world. Many efforts have been done to treat breast cancer, including methods such as surgery, radiation, and chemotherapy. Clinical efficacy of chemotherapy is limited due to its side effects, toxicity and drug resistance. Thus, there is an increasing interest for using herbal preparations as a promising source of new anti-cancer drugs because of their safety profile and efficient pharmaceutical potentials. In addition, natural compounds are suggested as valuable resources for human cancer chemopreventives in order to inhibit the initiation and progression of human cancers. *Citrullus Colocynthis* has cytotoxic effects against cancer. However, the molecular mechanism of cell death in cancer cells is not clear. In this study, effect of hydro alcoholic extract of *Citrullus colocynthis* fruit on the viability and experssion level of *caspase-3* –a gene involved in the induction of apoptosis- in MCF-7 cell line was investigated. For this purpose, MCF-7 breast cancer cells were treated by different concentrations of ethanol extract for 24, 48 and 72 h. Extract effect on cell viability was assessed by trypan blue staining. RNA extraction was performed, and after the construction of cDNA, expression of *caspase 3* was analysed by Real-Time PCR. The obtained showed a noticeable dose and time dependent reduction in viability of *Citrullus colocynthis* treated compared to the control samples. Real-Time PCR results showed that the expression of *caspase 3* at 48 and 72 hours after extract treatment was significantly increased compared to the control cells. So it can be concluded that with increasing concentration of the plant extract and time at 48 and 72 h expression of *caspase 3* was increased. *Citrullus Colocynthis* is suggested as a potent natural source for treatment of breast cancer.

Key words: Breast Cancer ,*Citrullus colocynthis*, *Caspase3*



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**The Thesis Submitted for the Degree of M.Sc
(in the field of Genetics)**

**Effect of hydro alcoholic extract of *Citrullus colocynthis*
fruit on *caspase 3* gene expression in MCF-7 breast cancer
cell line**

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January 2015