Abstract

Breast cancer is the most common cancer, causing deaths among women and men each year. Breast cancer treatments have side effects and drug resistance may occur, therefore finding more effective drugs with fewer side effects is necessary to extend the life of these patients. So researchers are attracting to use medicinal plants without side effects. One of the mechanisms of anticancer drugs action is killing cancer cells by inducing apoptosis. Studies have shown that the *Nigella sativa* has cytotoxic and apoptotic properties beacase of the compounds such as thymoquinone and linoleic acid. *Caspase-3* genes, is one of the genes involved in apoptosis pathway. The purpose of this study was to evaluate the cytotoxic effects of *Nigella sativa* extract on the viability and caspase-3 gene expression changes in MCF7 breast cancer cells. Therefore MCF7 cells were treated with different concentrations of ethanol extracts of *Nigella sativa* (0, 200, 400 μg/mL) for 24, 48 and 72 h. Effect of extract on cell viability and caspase-3 gene expression were analyzed by trypan blue staining and Real time PCR, respectively. The viability results showed that *Nigella sativa* extract-treated cells compare to control cells showed morphological changes of cell death. *Nigella sativa* extract at concentrations of 200 and 400 μg/mL significantly reduced the viability of cancer cells at different times. Real time PCR results showed that the expression of *caspase-3* under different concentrations of extract (200 and 400 μg/ml) significantly increased compare to the control. Based on the results, *Nigella sativa* can be used for treatment of breast cancer.

Keywords: breast cancer, Nigella sativa, Real time PCR, *caspase-3*

University of Zabol
Graduate School
Faculty of Sciences
Department of Biology

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Effect of *Nigella sativa* hydro alcoholic extract on *caspase3* gene expression in MCF7 breast cancer cell line

Supervisors:
Dr. S. Esmaeilzadeh Bahabadi
Dr. M. Mazaheri

Advisors:
Sh. Najafi
F. Dahmardeh Ghaleno

By:
F. Moshtaghi

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