

Effect of linoleic acid of *Nigella sativa* on MDA-MB-231 human breast cancer cells.

Abstract

Background: Breast cancer is one of the main life-threatening diseases which a woman may face during her life. Several lifestyle factors such as weight gain, obesity, fat intake and decreased level of physical activity are associated with breast cancer risk. In vitro and vivo studies showed that, Linoleic acid (LA) is one of the main fatty acids composition of *Nigella sativa*. The objective was to investigate inhibitory and anti-cancer effects of Linoleic acid on the MDA-MB-231 human breast cancer cells. Methods: The apoptosis and cytotoxic activity assay was used in order to find toxic effects and the results were supported by flow cytometry (Cell cycle analysis). The results showed the cytotoxic effect of Linoleic acid on the breast cancer cell can be considered as an anti-cancer effect of LA. Results: According to our findings, when the concentration of lionleic acid was increased, compared with the concentrations currently being reported, it showed an anti-cancer effects. The IC₅₀ was 84.72µl/ml. There was a significant ($p < 0.05$) effect between the treatment groups which are more than IC 50 and the control group. Conclusion: We came to this conclusion that Linoleic acid has an inhibitory effect on human breast cancer cell lines which can be due to its two double-bandings molecular structure.

Keyword: Linoleic acid; *Nigella sativa*; MDA-MB 231.