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## Proliferation inhibitory effects of peppermint oil on human breast cancer cell lines

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**Background:** Essential oils and their exclusive scent ingredients showed cancer preventive activity when examined on various human cancer cell lines containing human liver tumor, pulmonary tumors, colon cancer, gastric cancer, breast cancer, leukemia and others.

**Objectives:** The goal of this trial was to determine the anti-proliferation activity of peppermint essential oil on the induction of apoptosis (programmed cell death) and cell cycle advancement in human breast carcinoma cells.

**Methodology:** Human breast carcinoma cells (estrogen receptor (ER)-positive (MCF-7) and -negative (MDA-MB-231) were used. Apoptosis was assessed by MTT assay and Propidium iodide (PI) and Hoechst 33342 staining. The migration of cancer cells were assessed using scratch assay. The genes involved in cell cycle control and apoptosis were evaluated utilizing Real Time PCR.

**Results:** The results showed that essential oils from peppermint inhibited the growth of both MCF-7 and MDA-MB231 at 350 and 550 µg/ml. Apoptotic cells were observed when the treated cells were stained with propidium iodide and Hoechst 33342 under fluorescence microscope. An up-regulation of apoptotic genes *p53* and *Bid* as well as elevation of *Bax/Bcl2* ratio was observed.

**Conclusion:** The results concludes that peppermint oil may protect against breast cancer by leading to cell cycle arrest and inducing apoptosis. It requires to be appraised in human trials.

### Biography

Seyedeh Zeinab Taheri Rouhi is presently a Research Assistant in the Department of Molecular Medicine, University Malaya. She is currently pursuing her last semester in master of nutritional science at the University of Putra Malaysia, waiting for her viva examination. She has 3 papers under process. She is interested in doing research in diabetes type 2, cancer and obesity areas.

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