Induction of apoptosis by eugenol in human breast cancer cells.

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Source

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Abstract

In the present study, potential anticancer effect of eugenol on inhibition of cell proliferation and induction of apoptosis in human MCF-7 breast cancer cells was investigated. Induction of cell death by eugenol was evaluated following MTT assay and monitoring lactate dehydrogenase released into the culture medium for cell viability and cytotoxicity, giemsa staining for morphological alterations, fluorescence microscopy analysis of cells using ethidium bromide and acridine orange and quantitation of DNA fragments for induction of apoptosis. Effect of eugenol on intracellular redox status of the human breast cancer cells was assessed by determining the level of glutathione and lipid peroxidation products (TBARS). Eugenol treatment inhibited the growth and proliferation of human MCF-7 breast cancer cells through induction of cell death, which was dose and time dependent. Microscopic examination of eugenol treated cells showed cell shrinkage, membrane blebbing and apoptotic body formation. Further, eugenol treatment also depleted the level of intracellular glutathione and increased the level of lipid peroxidation. The dose dependent increase in the percentage of apoptotic cells and DNA fragments suggested that apoptosis was involved in eugenol induced cell death and apoptosis might have played a role in the chemopreventive action of eugenol.

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