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Influence of Gingerol on the Proliferation and Apoptosis in Human Breast Cancer Cells

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Background/Aim: As a dietary condiments, spices, or herbal medicine, ginger (Zingiber officinale), which consists of pungent ingredients such as shogaol, paradol, [6]-gingerol (gingerol), etc., has been frequently and heavily consumed. Gingerol (1-[4'-hydroxy-3'-methoxypheny]-5-hydroxy-3-decanone) has been recently reported to manifest various pharmacological activities such as anti-inflammatory, analgesic, anti-pyretic, anti-emetic, and cardiotonic effects. However, the effect of gingerol on the cell proliferation and death in human breast cancer cell model was not elucidated yet. This study attempted to observe the influence of gingerol on the proliferation and apoptosis in human breast cancer cell lines.

Methods: Human breast cancer cells (MCF-7 cell-line) were used for the experiment. MTT assay, proliferation experiment, and apoptotic assay were conducted in these cells treated with the wide range of doses of gingerol for the various period of time.

Results: 20% decrease of cell growth, in a dose-dependent fashion, was observed at 24 hours after treatment of gingerol in the MTT assay, which assesses cellular viability. Gingerol treatment of MCF-7 cells for 48 hours caused 50 % decrease in the experiment of cell proliferation. Gingerol also induced a dose-related apoptosis at 48 hours after drug treatment.

Conclusion: These results suggest that gingerol may inhibit cell proliferation and induce apoptosis in human breast cancer cells.