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Antineoplaston induces G(1) arrest by PKCalpha and MAPK pathway in SKBR-3 breast cancer cells.

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Source

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Abstract

Antineoplastons such as A10 include naturally occurring peptides and amino acid derivatives that control the neoplastic growth of cells. The mechanism underlying this antitumor effect was investigated using the breast cancer cell line, SKBR-3. Cells treated with A10 were monitored for any changes in cell cycle, expression of protein kinase C (PKC), or intracellular signal transduction, particularly phosphorylation of mitogen-activated protein kinase (MAPK). The A10 markedly inhibited SKBR-3 proliferation due to arrest in the G(1) phase. A10 down-regulated the expression of PKCalpha protein, resulting in inhibition of extracellular signal-regulated kinase (ERK) MAPK phosphorylation. This increased the expression of p16 and p21 protein, with resultant inhibition of Rb phosphorylation, leading to G(1) arrest. This study has defined a pathway in which A10 arrested SKBR-3 cells in the G(1) phase via PKCalpha and MAPK. Our findings indicate that the antineoplaston A10 antitumor effect could be utilized as an effective therapy for breast cancer patients.

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