

The protective effect of soybean phytochemicals on androgen responsive human prostate cancer cells LNCaP is likely mediated through modulation of hormone/cytokine-dependent pathways

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Abstract

Background: Population studies suggested that consumption of a soy rich diet provides protective effects against several chronic diseases, including prostate cancer. However, the active components in soy as well as the mechanisms of action of soy's protective effects remain unclear. It would be important to elucidate these questions to support the use of soy in the prevention of chronic disease.

Methods: A cell culture model and molecular techniques were used as tools to identify a molecular signature induced by soy-derived phytochemicals.

Results: Soy phytochemicals inhibit growth of androgen responsive prostate cancer cells. Global gene expression analysis using DNA microarray and real time PCR analysis identified multiple pathways affected by the soy-derived phytochemicals genistein, daidzein, equol, and glyceollins in the androgen responsive human prostate cancer cell LNCaP. These pathways included androgen receptor-dependent pathways, insulin-like growth factors pathways, and cell cycle-related pathways. Soy-derived phytochemicals modulated these pathways in a concentration-dependent fashion.

Conclusion: Taking into consideration the physiological achievable concentration of diet-

derived soy phytochemicals, we propose the concentration-dependent cancer protective effect is likely mediated through modulation of hormone/cytokine-dependent pathways.