

Effectiveness of Plant Flavone Apigenin *versus* Methoxy-Apigenin in Prostate Cancer

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Prostate cancer is a major public health problem worldwide and is the second leading cause of death in the United States. Radiation and chemotherapy remains the major treatment options for most prostate cancer patients, however tumor attain resistant leading to failure of radiation and chemotherapy. Targeted therapies may negatively affect patients' quality-of-life, pose financial burden and perhaps not always be successful. Dietary agent such as apigenin (4',5,7-trihydroxyflavone), a plant flavone has shown to possess anticancer properties and alters pathways that regulate tumor cell invasion and metastasis. Recent studies highlight apigenin's efficacy in reversing drug resistance in cancer stem cells and significantly enhancing the effects of chemotherapy. Nevertheless, the shortcoming of apigenin is its rapid degradation and clearance from systemic circulation without reaching the target tissue. Therefore, modification in apigenin structure could lead to the development of more effective derivatives. We investigate the efficacy of methoxy-apigenin, which is an addition of a methoxy group to apigenin, in targeting prostate cancer. In this study, we compared the effect of apigenin (Api) and methoxy-apigenin (M-Api) on the growth and proliferation of two metastatic prostate cancer cell lines. Androgen-responsive human prostate cancer C4-2B cells and androgen-refractory PC-3 cells were treated with varying concentrations of Api or M-Api (0.3125 μ M to 20 μ M) followed by MTT and crystal violet assay to investigate the effect on cell proliferation. Treatment of cancer cells with M-Api showed a marked decrease in cell viability and was more potent than Api in both cell lines. Crystal violet assays demonstrate similar findings on both cancer cell lines. Our results demonstrate higher effectiveness of M-Api over Api and warrants further investigation.