Public Abstract

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Title: Apigenin: Chemopreventive and chemotherapeutic potential against progestin-dependent breast cancer

Hormone replacement therapy (HRT) is commonly prescribed to post-menopausal women to alleviate the symptoms of menopause. Accumulating clinical evidence shows that combined progestin/estrogen HRT increases the risk of breast cancer compared to administration of estrogen alone, indicating that progestins promote breast cancer. Our laboratory focuses on screening and identification of naturally-occurring and synthetic compounds that can be used to prevent and /or treat progestin-dependent breast cancer.

In this study we examined the preventive and therapeutic potential of apigenin, a compound abundant in fruits and vegetables, and focused on its ability to prevent the unwanted side-effects of medroxyprogesterone acetate (MPA), a clinically used progestin commonly marketed as depo provera. Initially we determined the effectiveness of apigenin in cultured human breast cancer cells, which grow more aggressively (in vivo) in the presence of progestins. We found that apigenin prevented MPA-induction of vascular endothelial growth factor (VEGF), which plays an important role in tumor blood vessel development and is essential for developing tumors. These observations suggest that apigenin might inhibit tumor blood vessel growth and thereby arrest tumor progression.

Using two different rodent models we tested the capacity of apigenin to both prevent MPA-dependent tumors and treat established tumors derived from human breast cancer cells. Apigenin prevented tumor development in rats administered a chemical carcinogen and MPA. In immuno-compromised mice inoculated with human breast cancer cells, apigenin suppressed MPA-driven growth of established tumors. Overall, our study shows that apigenin has great potential as a clinical agent for preventing and treating progestin-dependent breast cancer.