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Effect of baicalein on regulation of a phase II enzyme in human prostate cancer cell line (PC-3)

Prostate cancer is an excellent candidate disease for chemo prevention because it is typically diagnosed in elderly males, therefore even a modest delay in the neoplastic development achieved through pharmacological or nutritional intervention could result in a substantial reduction in the incidence of this clinically detectable disease. Phytoestrogens are found in many plants, which are commonly used, in traditional medicine. These compounds may be both agonists and antagonists of estrogen receptors in humans. These estrogenic compounds may influence prostate cancer cell growth and because of this, herbal therapies have been developed. Oxidative stress can greatly impact the development of many diseases including cancer thus it is important to understand the regulation of enzymes that protect against oxidative stress. Phase II detoxification enzymes (glutathione S-transferase and quinone reductase) many of which are regulated by the ARE, are known to protect cells from oxidative stress. Our hypothesis is some phytoestrogens and baicalein may up regulate Phase II enzymes as QR and GST which are responsible for combating the oxidative stress that is considered as one of the key factors for cancer induction. Human prostate cancer cell line (PC-3) was treated with six concentrations of baicalein. (0, 5, 10, 15, 25 and 50 uM) over 3 days. QR enzyme levels were measured in the treated cells and compared to the control (untreated) cells. This study will hopefully provide evidence to test if phytoestrogens may be working through a QR mechanistic pathway to prevent prostate cancer.