

Poster #33

Effect of Glycosylation on Soy Flavonoid Anticancer and Antioxidant Activity

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Flavonoids are found in soy plants and products as a mixture of aglycone and glucoside forms. The effect of glycosylation on flavonoid anticancer and antioxidant activity has been elucidated here through in vitro tests with the aglycone/glucoside pairs of genistein/genistin, daidzein/daidzin, glycitein/glycitin, and luteolin/luteolin-7-O-glucoside. A parallel study measuring the effects of extraction techniques, gastric digestion, and storage on the aglycone/glucoside ratio of these same flavonoids is presented in a complementary study.

Anticancer activity has been measured with two human breast cancer cell lines (MCF7 and NCI/ADR-RES) and an immortalized normal human breast cell line (MCF12A) over a 48 hour exposure period in serum-containing media. Serum-containing media has been employed in order to focus on anticancer activity rather than estrogenic effects. Antioxidant activity has been quantified via discolorization of the DPPH free radical system.

Both aglycone and glucoside forms of the studied compounds exhibit anticancer activity, but the glucoside forms consistently show less than a third of the aglycone anticancer activity on a molar basis. On the other hand, antioxidant activities of the glucoside forms appear to be equal to or greater than the aglycone forms on a molar basis. These results suggest that the relative levels of aglycone and glucoside forms of flavonoids may be a factor in the health benefits of soy products.

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