#5377 ANTAGONIST STEROID HORMONE ACTIVITY OF FLAVONOIDS AND RELATED COMPOUNDS IN AN *IN VITRO* TISSUE CULTURE SYSTEM.

Rachel Rosenberg-Zand, D. J Jenkins, and E. P Diamandis, *Mount Sinai Hosp, Toronto, ON, Canada, and Univ of Toronto, Toronto, ON, Canada*

Flavonoids, polyphenolic compounds concentrated in fruits, vegetables, legumes, tea and red wine, have been previously demonstrated to have agonist steroid hormone activity, which is related to their diaryl nucleus and positioning of hydroxyl groups. In this present study, we investigated the antagonist (blocking) steroid hormone activity of 75 flavonoids and structurally-related compounds, including antiestrogenic, antiandrogenic and antiprogestational activity. Flavonoids and related compounds were tested as putative blockers on BT-474 human breast cancer cells at concentrations of 10^{-5} to 10^{-8} M, with estradiol, norgestrel and dihydrotestosterone used as agonists. ICI 182,780 (antiestrogen), mifepristone (antiprogestin) and nilutamide (antiandrogen) were used as positive controls, and anhydrous ethanol was a negative control. pS2, an estrogen-regulated protein, and prostate-specific antigen (PSA), regulated by androgens and progestins, were quantified in tissue culture supernatant using ELISA-type assays developed in-house. Of the 75 compounds tested, several showed antiestrogenic and/or antiprogestational activity at 10^{-5} M. More significantly, the soy isoflavones biochanin A and genistein, and several other flavonoids showed antiandrogenic activity, which was dose-responsive down to 10^{-8} M. This previously unrecognized antiandrogenic activity holds promise in elucidating how some plant foods, such as soy, may be protective in prostate cancer, and may help in future drug and nutraceutical development for prevention and treatment of prostate, breast and other cancers.