The Effects of Phytoestrogens, Resveratrol, and Lycopene on Agrobacterium tumefaciens Induced Tumors

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Although medical advancements continue to create new drugs and ways to treat and prevent cancer, an estimated one in four deaths within the US is attributed to this disease. Some studies have suggested that eating more foods containing certain bioactive compounds may help prevent cancer. In this experiment, the bioactive compounds phytoestrogens, resveratrol, and lycopene were tested using potato, beet, and carrot tumor disc assays. Phytoestrogens are commonly found in soy products and oats, resveratrol resides in grapes and peanuts, and lycopene is found in tomatoes and grapefruit. Agrobacterium tumefaciens, a known cause of a plant cancer known as Crown Gall's disease, was used to induce tumors on the disc assays since this experimental design is an acceptable model for studying tumor growth. Disc preparation involved following the procedure outlined in Trigui et al. (2015), and tumors were counted after 21 days for the potatoes and after 10 days for the carrots and beets. The results indicate that none of the three bioactive compounds had any effect on the number of tumors produced when compared to controls. The research instead suggested that there was a statistically significant increase in tumor growth with phytoestrogen and lycopene using both a one and two-tailed t-test. Our findings discredit many of the supposed anti-cancer supplements containing these substances, which claim that these compounds will help prevent cancer and imply that overconsumption may increase the chance of cancer.