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Certain glucosinolates produced naturally in Brassicaceae yield chemicals that induce phase II anti-carcinogenic enzymes upon degradation by myrosinase. The incorporation of selenium (Se) into fertilizers in an effort to increase its dietary availability in plants may adversely effect the production of these glucosinolates. Rapid cycling Brassica oleracea plants were grown hydroponically in 0.5 strength Hoagland’s nutrient solutions under controlled light, temperature, and humidity. Arrangement of the reservoirs in which the plants were grown consisted of a completely randomized block design with four replications and selenate at micromolar concentrations of 0.0, 0.75, 1.5, 2.25, and 3.0. Nutrient solutions were refreshed weekly. Just prior to anthesis (31 days), plants were harvested and the fresh weight of the roots, shoots, and leaves were recorded. Plant material was then analyzed for nutrient content by inductively coupled plasma atomic emission spectroscopy and glucosinolate content by high-performance liquid chromatography. The production of a number of glucosinolates found in B. oleracea (glucobrassicin, progoitrin, and neoglucobrassicin for example) was hindered by the incorporation of selenate in nutrient solutions. However, the concentrations of two anti-carcinogenic inducing glucosinolates (sinigrin and glucobrassican) was not reduced. Sulfur and selenium concentrations within plant leaf tissues increased significantly with increasing selenium concentrations. These results suggest that the incorporation of selenate into fertilizers as a means of nutritional supplementation in Brassica crops will not negatively impact their pre-existing anti-carcinogenic properties. In addition, B. oleracea appears to have a mechanism by which uptake of sulfur is increased in the presence of selenium.

**Poster 505**

**Varietal Variations in Bran Tocopherol and Tocotrienol Contents of Rice Plants**

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The rice bran has been known to contain both tocopherols and tocotrienols having antioxidant and cholesterol-lowering activity. The 8 vitamins of vitamin E: alpha (α)-, beta (β)-, gamma (γ)-, delta (Δ)-
tocopherols (T) and tocotrienols (T3) were extracted from 15 rice varieties and their contents were quantified with an HPLC system. Tested varieties exhibited total vitamin E contents ranging from 82.5 to 199.4 ppm with an average of 128.7 ppm. All the tested varieties showed higher total tocotrienol contents than total tocopherol contents, and Japonica type rice varieties showed higher vitamin E contents than Indica variety. Among 8 vitamins, g-T3 exhibited highest composition (up to 74.5%), while only 1% level of b-T and d-T3 could be found. No d-T and b-T3 were observed in all tested varieties.