

Title Changes in the level of glucosinolates in broccoli florets (*Brassica oleracea* var. *Italic*) during storage following postharvest treatment with UV-C

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Abstract

Broccoli is a popular vegetable noted for its content of health-beneficial compounds such as glucosinolates (GLS) which are secondary metabolites derived from amino acids. GLS are the precursors of bioactive compounds with anti-cancer properties such as sulforaphane and indole-3-carbinol. Secondary metabolites often accumulate in plants in response to abiotic stresses. The objective of this work was to examine whether GLS could be enhanced in broccoli florets by pre-storage exposure to UV-C. Broccoli florets treated with UV-C using two doses (hormetic dose of 1.2 kJ/m^2 and a higher dose of 3.6 kJ/m^2) were subsequently stored at 4°C and high relative humidity (about 95%) for 14 days. Inflorescences were sampled on day 0, 1, 4, 7 and 14, and were analyzed for GLS. The GLS were separated by LC, identified by mass spectrometry, and were quantified by UV detection at 224 nm. The levels of glucosinolates tended to decrease during storage at 4°C . The effect of UV-C on the levels of glucosinolates in broccoli depended on the dose. UV-C tended to enhance 4-methoxyglucobrassicin, 4-hydroxyglucobrassicin and glucoraphanin, but depleted the level of glucobrassicin at 1.2 kJ/m^2 compared with the control.