

**Title** Effect of allyl isothiocyanate on antioxidant enzyme activities, flavonoids and post-harvest fruit quality of blueberries (*Vaccinium corymbosum* L., cv. Duke)

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### **Abstract**

The effect of allyl isothiocyanate (AITC) on antioxidant enzyme activities, flavonoid content, and fruit quality of blueberries var. Duke (*Vaccinium corymbosum* L.) was evaluated. Results from this study showed that AITC was effective in maintaining higher amounts of sugars and lower organic acids compared to untreated fruit during storage at 10 °C. However, AITC reduced antioxidant enzyme activities [superoxide dismutase (SOD), guaiacol peroxidase (G-POD), glutathione-peroxidase (GSH-POD), ascorbate peroxidase (AsA-POD), dehydroascorbate reductase (DHAR), monodehydroascorbate reductase (MDAR) and glutathione reductase (GR)] and non-enzyme components, ascorbate (AsA) and glutathione (GSH). AITC treatments also reduced the amount of phenolic acids (chlorogenic acid, myricetin 3-arabinoside, quercetin 3-galactoside, quercetin 3-arabinoside, and kaempferol 3-glucoside) and anthocyanins (delphinidin 3-galactoside, delphinidin 3-glucoside, delphinidin 3-arabinoside, petunidin 3-galactoside, petunidin 3-glucoside, petunidin 3-arabinoside, malvidin 3-galactoside, and malvidin 3-arabinoside) during storage at 10 °C. The results from this study indicate that AITC does not promote antioxidant property or scavenge constitutive reactive oxygen species (ROS), but maintain blueberry fruit quality through other mechanisms.