

**Title** Effects of postharvest light and ABA treatments on the composition of late-harvested white cranberry fruit

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### **Abstract**

The effects of light and abscisic acid (ABA) on the postharvest ripening of late-harvested white cranberries (*Vaccinium macrocarpon* Ait.) were determined. White 'Stevens' cranberry fruit were hand-harvested from 3 commercial bogs in November 2004 in Aylesford, Nova Scotia, Canada. Samples of 30 fruit were sprayed to the point of run-off with solutions of 0.1 mM natural ABA, 0.1 mM methyl 8'-acetylene ABA (ABA analog), or water (control). After drying, fruit were held in a single layer at 20°C with or without 300  $\mu\text{mol m}^{-2} \text{s}^{-1}$  light from a combination of fluorescent and incandescent bulbs. After 14 days, fruit were analyzed for anthocyanin, phenolic, sugar, acid, ABA, and ABA metabolite concentration and antioxidant capacity. Storing cranberries in light resulted in visibly more red fruit with a 4-fold higher concentration of anthocyanins than fruit held in the dark. Fruit held in light also had 28% more phenolics and 24% higher antioxidant capacity than fruit held in the dark. The ABA and ABA analog treatments had no significant effect on anthocyanin or phenolic concentration or antioxidant capacity. The concentration of glucose, the predominant sugar, was not significantly affected by light or ABA treatments. However, light increased fructose and sucrose concentrations 202% and 167%, respectively in fruit not treated with ABA or the ABA analog (control). This effect of light was reduced by the ABA and ABA analog treatments. Similarly, light increased the concentration of quinic, malic, and shikimic acids 62%, 100% and 140%, respectively, in control fruit. However, light-induced differences were again reduced by the ABA and ABA analog treatments. As would be expected, the ABA treatment increased ABA concentrations in the fruit 3.6-fold when compared to control fruit. Light decreased the ABA concentration 27% in the control and 202% in the ABA treated fruit. The role of light and ABA in the postharvest ripening of cranberry fruit are discussed.