

Title Pre-harvest and postharvest ascorbic acid behavior in Elstar and Jonagold apples
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Abstract

Ascorbic acid (AA) or vitamin C, respectively, is essential in human nutrition because of its well known health and disease prevention benefits. Apples can be an significant source of dietary vitamin C. This experiment follows the AA content of two important commercial apple cultivars, 'Elstar' and 'Jonagold', from a few weeks directly before harvest and postharvest in regular air at two different temperatures: for up to three weeks at 20°C and for 12 weeks at 1°C. In addition, the influence of the ethylene inhibitors AVG applied pre-harvest and 1-MCP applied postharvest on the changes in AA was studied. In both apple cultivars the amount of AA found a few weeks before harvest was approximately constant. However, AVG treatments applied some four weeks pre-harvest to apples on the tree resulted in around 10% higher AA content at-harvest. Postharvest AA degradation in both cultivars was higher at 20°C with the AA content of 'Elstar' decreasing by some 60% to 80% and 'Jonagold' decreasing by some 30% to 60% in the three weeks following harvest. However, fruit held at 20°C plus 1-MCP treated maintained a higher AA content. After three weeks at 20°C the apples treated with 1-MCP alone or with AVG plus 1-MCP, showed nearly double the amount of AA compared to the untreated control or fruit treated only with pre-harvest AVG. The postharvest degradation in AA was around 40% for 'Elstar' and 'Jonagold' after 12 weeks storage at 1°C. In both cultivars, 12 weeks storage at 1°C the apples treated with 1-MCP alone or with AVG plus 1-MCP showed around 10% more AA than the untreated control. In general, apples treated with AVG plus 1-MCP or, to a similar extent, treated with 1-MCP alone showed highest postharvest AA content.