Title Effect of controlled atmosphere storage on internal ethylene, alpha-farnesene, total esters, and total phenolic concentrations of apples

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Abstract

Three varieties of apples were harvested from a research orchard and stored in cold storage (CS), controlled atmosphere (CA), and low-oxygen (LO) CA conditions. 'McIntosh' apples showed scald in November if stored at 20°C, and in March if stored in CS and CA storage at 3°C. 'Empire' apples showed no scald during storage. 'Delicious' apples showed scald in March if stored in CS at 0°C. Higher internal ethylene levels were found in January than during earlier or later months of the storage period. CA and LO storage reduced the magnitude of high ethylene in January. When sampled from the same storage conditions, apples sampled in March had higher total esters and Alpha-farnesene than apples sampled in November. When sampled in March, the LO stored apples had lower total esters than the CS and CA stored apples. In general, there was a positive linear relationship between the total esters and alpha-farnesene concentrations in apples. Apple peel had almost double the amount of total phenolic concentrations compared to apple flesh. 'Empire' apples had less than half of the total phenolic concentrations in both the flesh and the peel than 'McIntosh' and 'Delicious' apples.