Title Fruit quality and ACC oxidase activity in 'Rubinstar' apples treated with 1-MCP

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Abstract

The effect of 1-MCP treatment on some quality parameters, internal ethylene concentration and activity of ACC oxidase in 'Rubinstar' apples stored in normal and controlled atmosphere conditions was evaluated. After harvest and cooling down, fruit were treated with 1-MCP in a concentration of 0.500 µl L^{-1} (season 2001/2002) or 0.625 µl L^{-1} (season 2002/2003) for 24 hours. Treated and untreated apples were stored for 120 and 180 days in the cold storage rooms at 2±0.5°C under normal atmosphere (NA) conditions or controlled atmosphere (CA) with 2.5-3 % O_2 and 2.5-3 % CO_2. After storage and after shelf life (additionally 7 days at 18°C) internal ethylene concentra¬tion (IEC), flesh firmness (FF), total soluble solids (TSS), and titratable acidity (TA) were recorded. In 2001/2002 the activity of ACC oxidase was also determined. 1-MCP strongly inhibited ACC oxidase in fruit following storage in NA and CA conditions. The inhibition was also noted after 7 days of shelf life. IEC was significantly lower for the 1-MCP treated fruit, both directly after storage in NA or CA and after shelf life. The application of 1-MCP delayed softening in 'Rubinstar' apples stored in NA and CA conditions. After storage in NA, TA was higher in 1-MCP treated fruit than in untreated. A similar effect was also observed for CA stored apples, but was not always statistically significant. There was no clear effect of 1-MCP treatment on total soluble solids content in stored 'Rubinstar' apples.