

Title Changes in nutritional properties of minimally processed apples during storage
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Citation Postharvest Biology and Technology, Volume 39, Issue 3 , March 2006, Pages 265-271
Keyword Golden Delicious; Fresh-cut; Dipping; Modified atmosphere packaging; Ascorbic acid;
Total polyphenols; Antioxidant activity

Abstract

The effects of an antioxidant dipping treatment (in an aqueous solution of 1% ascorbic acid (AA) and 1% citric acid for 3 min) and of modified atmosphere (90% N₂O, 5% O₂ and 5% CO₂) packaging (MAP) on some functional properties of minimally processed apples have been investigated. In particular, AA and total polyphenol (TP) contents and the overall antioxidant power of the product were monitored during 8 days of low temperature storage. Colour, texture and some chemical indices associated with the ripening stage of the product (titrable acidity and soluble solids content) were also evaluated. As a consequence of the anti-browning treatment, the AA content of dipped samples was about 20-fold higher than not treated samples at the beginning of storage and remained higher until the sixth day of refrigeration. Moreover, the dipping treatment resulted in an increase in the apple slice antioxidant activity, while MA had a negative effect on AA levels. As shown by the positive correlation between the AA and TP results, TP levels were higher for treated samples compared to those not treated over the whole storage period, because of the reducing action of AA that prevented a high level of TP degradation. Results of the other physico-chemical parameters investigated confirmed the synergistic preservative effect on the colour of MA, together with the dipping treatment, while structural decay of fruit tissue was evident due to the anti-browning chemical agents used.