

Effect of carboxymethyl chitosan-gelatin-based edible coatings on the quality and antioxidant properties of sweet cherry during postharvest storage

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Scientia Horticulturae 289: 110462. (2021)

Abstract

The effects of various carboxymethyl chitosan (CMCS)-gelatin (GL) based edible coating combinations with calcium chloride (CaCl_2) and/or ascorbic acid (AA) on the quality and antioxidant properties of sweet cherry (*Prunus avium* L. cv. "Red Agate") were investigated. Sweet cherries were treated with tap water (control), 2 % CaCl_2 , CMCS-GL, CaCl_2 + CMCS-GL, CaCl_2 -CMCS-GL, or AA- CaCl_2 -CMCS-GL for 2 min and dried at ambient temperature. All fruit were stored at 0 ± 0.5 °C under Relative Humidity (RH) of 85–90 % for 30 d, and 23 ± 1 °C, RH 40-50 %, for a further 3 d. Weight loss, fruit firmness, soluble solids content (SSC), titratable acidity (TA), SSC/TA, AA, skin color characteristics (L^* , chroma, and hue angle), total phenolics compounds (TPC), total anthocyanins concentration (TAC), and antioxidant activity (DPPH and ABTS⁺ radical scavenging capacity) were measured, in addition to fruit decay ratio, pedicel browning incidence, and pedicel moisture content. AA- CaCl_2 -CMCS-GL treatment decreased fruit decay ratio, weight loss, respiration rate, and pedicel browning incidence; slowed the increase of SSC and SSC/TA; maintained high fruit firmness, pedicel moisture content, TA, AA, TPC, TAC, and antioxidant activity. Fruit coated with AA- CaCl_2 -CMCS-GL exhibited better skin color with higher L^* , chroma, and hue angle values throughout the storage period. AA- CaCl_2 -CMCS-GL treatment is a promising management strategy to control the quality of sweet cherries during postharvest storage.