

Title Changes in quality and phenolic antioxidants in dark purple American eggplant (*Solanum melongena* L. cv. Lucía) as affected by storage at 0 °C and 10 °C

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Abstract

Many beneficial effects associated with fruit and vegetable consumption are related to the presence of antioxidants, which could be greatly affected by postharvest storage conditions. Eggplants or aubergines (*Solanum melongena* L.) are among the top vegetables in terms of antioxidant content. In this work, we evaluated the effect of two postharvest temperature regimes on deterioration and antioxidants of dark purple American eggplants (cv. Lucía). Fruit were stored at 0 or 10 °C for 0, 3, 5, 10 or 14 d and weight loss, electrolyte leakage, chilling injury, and pulp browning were evaluated. We also followed DPPH and Folin–Ciocalteu reacting substances and the content of chlorogenic and quinic acid by HPLC. Although weight loss was reduced in fruit held at 0 °C, higher electrolyte leakage and chilling injury manifested as surface scalds and pulp browning were found. Antioxidants (AOX) measured with the DPPH radical and with the Folin–Ciocalteu reagent increased during the first 3 d of storage at 0 °C, but afterwards significant degradation was found. In contrast, a gradual but continuous accumulation of AOX was detected in fruit stored at 10 °C. The slow rate in the reaction between DPPH and eggplant samples suggested that the main changes during postharvest storage were due to modifications in phenolic compounds. The major phenolic detected by HPLC was chlorogenic acid (ChA), an ester between caffeic (CA) and quinic acids (QA), which accumulated in fruit maintained at 10 °C, increasing by 60% after 14 d of storage. No free CA was found at any storage temperature or time, suggesting that its biosynthesis is activated simultaneously with the production of ChA. Free QA showed minor changes at 0 °C as pulp lightness decreased, indicating that ChA rather than CA may be the main substrate for browning reactions. Changes in eggplant fruit antioxidants during storage at chilling and non-chilling temperatures are discussed.