

Title Changes in red pepper antioxidants as affected by UV-C treatments and storage at chilling temperatures

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Abstract

Chilling injury (CI) is one of the main factors limiting refrigeration in several horticultural commodities of subtropical and tropical origin such as pepper. Short UV-C treatments before low temperature storage have been shown to reduce CI. In this work we wanted to test whether or not the reduced susceptibility to CI in UV-C treated fruits was associated with increased levels of antioxidant compounds and enzymes. Red peppers (*Capsicum annuum* L.) were treated with UV-C radiation (10 kJ/m^2) and stored at $0 \text{ }^\circ\text{C}$ for 21 d. During storage we analyzed chilling injury development, ascorbic (AA) and dehydroascorbic acids and DPPH radical scavenging capacity. We also followed superoxide dismutase (SOD), catalase (CAT), ascorbate peroxidase (APX) and guaiacol peroxidase (GPX) activities. CI increased rapidly when the fruit was stored for longer than 14 d, but was significantly lower in UV-C treated peppers. Exposure to UV-C did not alter fruit color but reduced weight loss. Although AA and DPPH radical scavenging capacity were lower in the control, this occurred towards end of storage, when CI was already advanced. In contrast, SOD, CAT and APX activities were higher in UV-C treated fruits during the first 2 weeks of storage when the symptoms became visible. Results show that UV-C exposure prevents CI and weight loss in red pepper and suggest that this might be related to increased activity of antioxidant enzymes.