

Title Seed browning of hot peppers during low temperature storage
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Abstract

Fresh hot pepper (*Capsicum annuum* L.) fruit were harvested on days 15, 20 or 25 after flowering (DAF) and were stored at 5 and 10 °C. Seed browning was severe in fruit stored at 5 °C, but only if harvested at 15 DAF. Severe browning was positively correlated with visible cell damage, the rate of electrolyte leakage, initial levels of free phenolics, and levels of thiobarbituric acid (TBA) reactive compounds. Browning was related to initial higher levels of saturated fatty acids and lower levels of unsaturated fatty acids. Browning was also positively correlated with higher initial activities of polyphenol oxidase (PPO), and continuously higher activities of phenylalanine ammonia lyase (PAL), superoxide dismutase (SOD), and lipoxygenase (LOX). In contrast, browning was negatively correlated with the activities of catalase (CAT) and peroxidase (POD). The results suggest that loss of membrane integrity in young seeds is a cause of browning at low temperature, and that the higher levels of unsaturated fatty acids of older seeds might protect against chilling-induced browning. The negative correlation of browning with CAT and POD might indicate that these enzymes protect against chilling injury.