Effect of chilling temperatures on physiological properties, phenolic metabolism and antioxidant level accompanying pulp browning of peach during cold storage

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Abstract

The aim of this experiment was to assess the effect of chilling temperatures on the quality, phenolic metabolism as well as antioxidant capacity accompanying pulp browning (PB) development of peach fruit over the long-term refrigerated storage. Fresh peaches were exposed to chilling storage at 0, 2, 4, 6 °C for 30 or 50 d. Pulp browning index, TSS, TA, vitamin C, phenolics content and antioxidant activity were assessed, along with PAL and PPO enzymatic activity. Our results indicated that lower temperatures (0 and 2 °C) retarded the development of PB and maintained the fruit appearance during refrigerated storage. The storage life based on fruit quality was longer at 0 or 2 °C than at 4 or 6 °C. Additionally, peaches exposed to 4 or 6 °C accumulated higher amounts of phenolics and antioxidant activity than those exposed to 0 or 2 °C to overcome the more seriously cold stress. In conclusion, for short storage life or immediate consumption, keeping peach fruit at warmer temperature (4 or 6 °C) is favorable for obtaining high antioxidants. However, if the goal is extending the cold storage period of the fruit, keeping the fruit at 0 or 2 °C is recommended.