

# Influences of ice-temperature storage on cell wall metabolism and reactive oxygen metabolism in Xinjiang (Diaogan) apricot

Wanting Yang, Yuxing Liu, Yueying Sang, Yanyan Ma, Minrui Guo, Guorong Bai, Shaobo Cheng and Guogang Chen

Postharvest Biology and Technology, Volume 180, October 2021, 111614

---

## Abstract

Ice-temperature storage is a new refrigeration method with temperatures ranging from sub-zero to the freezing point of the product being stored. However, few reports have evaluated the effects of ice-temperature (IT) storage on the cell wall metabolism and reactive oxygen metabolism of Xinjiang-grown Diaogan apricots. In this study, to determine the effects of ice-temperature storage on cell wall metabolism and reactive oxygen metabolism in Diaogan apricots, apricots were stored at  $-1.5\text{ }^{\circ}\text{C}$  to  $-2.0\text{ }^{\circ}\text{C}$  (ice temperature, IT),  $0\text{ }^{\circ}\text{C}$ – $1\text{ }^{\circ}\text{C}$  (low temperature), and  $10\text{ }^{\circ}\text{C}$  (control) for 70 d with sampling and evaluation every 10 d. Compared to storage at low temperature and  $10\text{ }^{\circ}\text{C}$ , IT storage (1) better maintained the firmness, ascorbic acid content, pectin content, and cellulose content of the fruit; (2) suppressed the activities of polygalacturonase and cellulase; (3) inhibited the rate of weight loss, respiration rate, ethylene production, plasma membrane permeability, and malondialdehyde accumulation; and (4) improved the activities of peroxidase, catalase, superoxide dismutase, and ascorbate peroxidase, thereby inhibiting the accumulation of hydrogen peroxide and superoxide anion during storage. Overall, the results show that IT storage is an effective way to improve the storage quality and antioxidant capacity of Diaogan apricots.