

Title Hydrogen peroxide treatments inhibit the browning of fresh-cut Chinese water chestnut
Author Litao Peng, Shuzhen Yang, Qiong Li, Yueming Jiang and Daryl C. Joyce
Citation Postharvest Biology and Technology, Volume 47, Issue 2, February 2008, Pages 260-266
Keywords Browning inhibition; Chinese water chestnut; Fresh-cut; Hydrogen peroxide

Abstract

Use of hydrogen peroxide (H_2O_2) as a potential anti-browning treatment for fresh-cut Chinese water chestnut (CWC) was investigated. Fresh-cut CWC was treated with 0.15, 0.3, 0.6 or 0.9% H_2O_2 , placed into trays that were loosely over-wrapped with plastic film, and stored at 4 °C. Samples treated with water were used as the control. Surface discoloration, eating quality, disease incidence, and nutrition compositional attributes were evaluated. Phenolic content and activities of phenol metabolism-associated enzymes were monitored. H_2O_2 treatments suppressed surface discoloration and decay, and delayed changes in contents of total soluble solids and titratable acids. The treatments also delayed increases in total phenolic contents and reduced activities of phenylalanine ammonia lyase (PAL), polyphenol oxidase (PPO) and peroxidase (POD). The enhanced beneficial effects were observed when higher concentrations of H_2O_2 were applied to fresh-cut CWC. *In vitro*, H_2O_2 was shown to inhibit PPO and POD activities, which suggested that dysfunction of phenolic-related metabolic enzymes could contribute to browning inhibition. In view of these promising results, further research is warranted to elucidate mechanism of browning inhibition by H_2O_2 in fresh-cut CWC.