

Title Effects of Chitosan Coating with Citric Acid and Potassium Sorbate on Postharvest Decay and Browning of Longan Fruit during Cold Storage

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Abstract

The efficacy of chitosan (Cts) in combination with citric acid (CA) and potassium sorbate (PS) on quality retention in the longan was evaluated as an alternative to SO₂ fumigation. Fresh longan fruits were dipped in the solutions of 1.2% Cts+3.0% CA+3.0% PS at two levels of pH solution: 2.8 and 3.3 as compared to those being dipped in coating component; 3.0% CA+3.0% PS (pH 2.4) alone. After being dipped, the fruits were air-dried, packed in foam tray wrapped with 11µm thick PVC film and then stored at 4±1°C, 90% RH. The non-treated fruit (negative control) and SO₂ fumigation (positive control) were used as control. The result revealed that except for SO₂, dipping fruits in Cts+CA+PS (pH-3.3) significantly delayed pericarp browning. The result was indicated by the lowest browning index and the highest pericarp color values (L*, C* and h°) for 32 days. In the mean time, the deferment of pericarp browning effect for fruits treated with Cts+CA+PS (pH 2.8), coating component (CA+PS) and the control fruit was only for 24, 20 and 28 days, respectively. Fruits coating with Cts+CA+PS (pH 3.3) showed reduced decay, pericarp pH, weight loss, PPO activity, total phenol loss and retained excellent fruit color acceptability including eatable quality during cold storage and a transfer to simulate marketing shelf life at ambient condition. In contrast, the fruits with SO₂ showed the worst edible quality because of off-odor effects. Chitosan along with CA+pS (pH 3.3) could well prevent sorbic acid degradation in pericarp when compared to those applying CA+PS alone without chitosan.