

**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 SO<sub>2</sub> fumigation. Fresh longan fruits were dipped in solutions of 1.2% Cts + 3.0% CA + 0.3% PS at a pH of 2.8 or 3.3 and compared against those dipped in a solution of 3.0% CA + 0.3% PS at a pH of 2.4. After being dipped, the fruits were air-dried, packed in foam trays wrapped with 11 µm thick PVC film and then stored at 4 ± 1°C, 90% RH. The non-treated fruit (negative control) and SO<sub>2</sub> fumigated fruit (positive control) were used as controls. The result revealed that except for SO<sub>2</sub> fumigation, dipping fruits in Cts + CA + PS at a pH of 3.3 significantly delayed pericarp browning. This conclusion was indicated by the lowest browning index and the highest pericarp color values (L\*, C\* and h°) after 32 days. The delay in pericarp browning for fruits treated with Cts + CA + PS at a pH of 2.8 and fruit treated with CA + PS and the control fruit was 24, 20 and 28 days, respectively. Fruits dipped in Cts + CA + PS at a pH of 3.3 exhibited decreased decay, pericarp pH, weight loss, PPO activity, total phenol loss and retained excellent fruit color and eating quality during cold storage and a subsequent shelf life test at ambient conditions. In contrast, the fruits fumigated with SO<sub>2</sub> showed the poorest eating quality because of off-odors. Chitosan along with CA + PS (pH 3.3) could well prevent sorbic acid degradation in pericarp of fruits when compared with application of CA + PS alone.