Evaluation of the use of hydrochloric acid on fruit quality and consumer acceptability of fresh longans during cold storage

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Abstract

Dipping in hydrochloric acid (HCl) for improving fresh longan fruit quality and consumer acceptance was investigated as an alternative to sulphur dioxide (SO_2) fumigation. The fruit with panicle attached was placed in 11.5 kg commercial perforated plastic basket. The first experiment was carried out to reduce the contact time during dipping and rinsing process by increasing the concentration of HCl. The evaluation of different HCl application techniques showed that dipping in 6.4% HCl (pH 0.03) for 5 min then draining for 10 min without rinsing in water and stored immediately in cold room provided the best compromise between controlling fruit browning and decay and maintaining eating quality. Another experiment was to find out the optimum storage temperatures after dipping in HCl. The fruit placed in four baskets (46 kg in total weight) was dipped in 200 L of 6.4% HCl for 5 min and drained for 10 min. They were stored at 3, 10 and 30°C for 30 days. This treatment was compared with the fruits treated with SO_2 treatment. It was found that the fruits treated with HCl and SO_2 held at fluctuating temperature (30°C) decayed after five and ten days. Dipping in HCl and storage at 3°C was most suitable to store longan. This condition decreased pericarp browning and disease incidence and maintained consumer acceptance for 30 days; however, SO_2 treatment had the highest score for consumer acceptance. There was no significant difference in total soluble solid, titratable acidity and flesh pH in HCl and SO_2 treatments during storage. This HCl treatment is a potential tool to control postharvest losses and therefore increase the market life of fresh longans.