

Title Quality, storage life and chilling injury incidence of *Carica papaya* L. cv. Frangi after postharvest hot water treatment

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Citation Abstracts of 7th International Postharvest Symposium 2012 (IPS2012). 25-29 June, 2012. Putra World Trade Centre (PWTC), Kuala Lumpur, Malaysia. 238 pages.

Keywords papaya; chilling injury

Abstract

The papaya (*Carica papaya* L.) fruits are juicy with good aroma and sweet taste and a high nutritional quality. However, all these qualities are only available when the fruit is consumed in its fresh state. The freshness and nutritional quality of the fruit will start to decrease with chilling injury due to prolonged storage. Currently, there is a growing demand for fresh tropical fruits with the lowest pesticide residue. This experiment was initiated to determine the effect of hot water treatment as a postharvest measure to reduce chilling injury incidence during the storage of papaya. Papaya fruits cv. Frangi was harvested at mature green stage from Lanchang, Pahang, Malaysia. The fruits were treated with hot-water at 42 °C for 30 minutes and then immediately transferred to 49 °C for 20 minutes. Fruits were stored at temperatures of 6 and 12 °C with 98% humidity for 21 days. At seven days interval, the fruit quality characteristics and chilling injury incidence were measured. Treatments included control and hot-water treated fruits in two different storage temperatures, with three replications. Fruit weight loss, peel and pulp color, ethylene production and respiration rates were evaluated by nondestructive methods. Firmness, soluble solids concentration, titratable acidity, pH and ascorbic acid were determined with destructive methods. The results showed that there were no significant interaction effects between treatments on peel and pulp lightness (L*) value. Firmness, ethylene and carbon dioxide production rates, showed a significant interaction effects between hot water treatment and storage duration. Firmness decreased as the storage duration increased, but at 6 °C firmness reduction occurred at a slower rate. In the control, and hot-water treated fruits, carbon dioxide production rate increased and after the second week, the control fruits had a higher CO₂ production rate. Ethylene production decreased after the second week in treated fruits, while the control fruits showed a normal increase during storage. Hot water treatment was able to reduce papaya chilling injury during storage and could be a useful method to prolong storage life of this new papaya hybrid.