

Thesis Title Effects of Salicylic Acid and Hot Water Treatments on Postharvest Quality of 'Nam Dok Mai Si Thong' Mango

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ABSTRACT

The efficacy of different concentrations of salicylic acid (SA) and hot water treatment (HW) on postharvest quality of mango cv. Nam Dok Mai under cold storage at 13°C was evaluated. Mango (120 fruit) was divided into four different treatments including HW (49°C, 10 min), 1 mM SA + HW, 2 mM SA + HW and untreated fruits served as control treatment. After treatment, fruit was packed in paper boxes and stored at 13°C. Analyzes were performed at 5-day intervals for 20 days. Fruit firmness, weight loss, skin color (chroma and hue angle), total soluble solids (TSS), acidity (%) and percentage of disease incidence were measured. The results showed that fruits immersed in 2 mM SA + HW retained their firmness significantly. Weight loss was increased during storage in all treatments. The highest weight loss was observed in HW treatment with 10% weight loss, while 2 mM SA + HW and 1 mM SA + HW were 6%. The skin color of untreated fruits showed deep yellow color at the end of storage while treated mangoes showed lighter yellow color. In color indices, the results showed the highest value of hue angle in the treated fruits while the untreated control showed the highest chroma value. TSS was high in the control while TA showed high value in the sample with 2 mM SA + HW.

In addition, effect of SA and hot water treatment on physiological and biochemical attributes of mango fruit during storage was investigated. Postharvest quality (color, firmness, TSS and TA), bioactive compounds (total phenolic compound (TPC), vitamin C and carotenoid contents), percentage, disease incidence were observed under ambient (25°C) and cold storage (13°C). The treatments were separated as the following: (1) control (untreated) (2) HW (3) 2 mM SA (4) 2 mM SA+HW. At 13°C, the color indices, hue angle was high in the treated fruit while, chroma was the highest value on the untreated control. TSS was high in the control while TA increased in the sample treated with SA + HW. The result showed that the fruits treated with SA + HW retained their firmness significantly. Regardless of treatment, weight loss was increased throughout storage. Disease incidence was significantly lower in SA + HW treated fruits during storage. The content of bioactive compounds such as TPC and vitamin C remained higher in the treated fruits, while the content of carotenoids was higher in the control fruits, but not significantly. At 25°C, the color indices hue angle was high in the treated fruits and chroma was increased in the untreated control fruits. TSS decreased in treated fruits, while TA decreased in untreated control fruits. Firmness decreased throughout the storage period irrespective of treatment. However, weight loss was less in fruit treated with SA + HW compared to control. The incidence of diseases was also lower in the fruits treated with SA + HW than in the control. The treatment, especially SA 2 mM + HW application subsequent by storage at 13°C, could be used commercially as postharvest treatments for Nam Dok Mai mango.

Keywords: Hot Water Treatment, Mango Fruit, Postharvest Quality, Salicylic Acid