

Papaya treatment with putrescine maintained the overall quality and promoted the antioxidative enzyme activities of the stored fruit

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Abstract

Papaya is an emerging, profit generating fruit of Pakistan having high nutritional value. It has very limited shelf life which limits its long distance transport and resulted in high postharvest losses. Putrescine has great potential to maintain the firmness, quality of fruit and reduce the losses. Therefore, the role of putrescine for balancing fruit firmness, enzyme activities and variations in biochemical properties of Red lady papaya fruit were evaluated during storage. Mature unripe papaya fruit were subjected to different concentrations of PUT (0 mM, 1 mM, 2 mM, 3 mM) and then stored at 12 °C temperature and 90–95% RH for 28 days. Fruit firmness, weight loss, antioxidant enzyme activities (CAT, SOD and POD), total phenolic, total antioxidants and other biochemical attributes were studied on weekly basis. Fruit firmness was substantially higher in putrescine treated fruits along with less weight loss % during storage. TSS and ripening index were higher in control fruit, while they were lower with PUT treatment. 2 mM PUT suppressed the decay incidence during whole storage period which was almost 2.9 times less than control fruit, similarly the activity of CAT enzyme was maximum (6.94 U/mg protein), POD (1.07-fold higher than control) and SOD was also higher in the same treatment. Total antioxidants and total phenolic contents were at upper limits in fruit treated with 2 mM PUT during storage. It can be concluded that 2 mM PUT is helpful for extending the shelf life of papaya fruit by suppressing fruit softening, fruit decaying and by enhancing the enzyme activities and maintaining good keeping quality during storage.