Overall quality maintenance of grapefruit during cold storage using pre-storage neem leaf extract dipping

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Abstract

The present studies were conducted to investigate the effects of different concentration of neem leaf extract (NLE) (control, 10%, 20% and 30%) on physiological, biochemical, antioxidant properties, and fruit quality attributes of Shamber grapefruit during cold storage at 10 °C up to 43 days. Weight loss, peel weight, juice weight, rag weight, ascorbic acid, total sugars (TS), reducing sugars (RS), non-reducing sugars (NRS), total soluble solids (TSS), titratable acidity (TA), TSS/TA ratio and enzyme activities such as superoxide dismutase (SOD), peroxidase (POD) and catalase (CAT) were determined. NLE treatments showed significant effect on postharvest quality attributes of Shamber grapefruit. NLE-treated grapefruit (30%) reduced the weight loss (16%), and retained maximum peel weight (9.02%), juice weight (25.56%) and rag weight (19.21%) than untreated control fruit. Moreover, high level of ascorbic acid, TSS, TA, and lower level of TS, RS and NRS were observed in NLE (30%) treated fruits. Enzymatic activities of SOD, POD and CAT of stored grapefruit were highly significant in NLE (30%) treated grapefruit during storage period compared to control. In conclusion, pre-storage NLE (30%) application was the most effective in maintaining various physiochemical properties such as weight loss, ascorbic acid, TS, RS, NRS, TSS, TA, TSS:TA ratio and increasing the antioxidative responses (SOD, POD and CAT) up to 43 days by extending the shelf life of Shamber grapefruit.