

Postharvest gum Arabic and salicylic acid dipping affect quality and biochemical changes of ‘Grand Nain’ bananas during shelf life

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Abstract

Effects of gum Arabic (GA) (5 and 10%), salicylic acid (SA) (1 and 2 mM) and their combination (10% GA plus 1 mM SA) postharvest dipping on quality and biochemical changes of ‘Grand Nain’ bananas were studied during shelf life (SL) conditions (20 ± 2 °C, 60–70% RH) for 9 days. All treatments, especially 10% GA plus 1 mM SA, decreased weight loss than control. GA at both rates retained higher peel green color than other treatments during SL. GA at both rates and SA at high rate retained higher firmness only after 6 days of SL. Total soluble solids (TSS) concentration increased during SL and was lower at both rates of GA and high rate of SA than control. Titratable acidity (TA) concentration decreased during SL and was higher at both rates of GA, low rate of SA and GA plus SA treatments than control. Peel browning index gradually increased during SL and was lower at high rate of GA than control. Membrane stability index (MSI) decreased during SL and was higher at both rates of GA than other treatments after 6 and 9 days of SL. Total phenols and flavonoids concentrations in peel and pulp and vitamin C in pulp fluctuated during SL and showed no consistent response to applied treatments. As overall, GA retained higher total phenols and flavonoids concentrations, whilst SA showed no clear effects. Free radical scavenging capacity (FRSC) of both peel and pulp increased during SL and was higher at GA and SA treatments than control. The relations of such biochemical changes with α -amylase, xylanase, polygalacturonase, peroxidase and polyphenoloxidase activities were discussed. In conclusion, GA treatment especially at 10% retained quality of ‘Grand Nain’ bananas during SL and being suggested as natural alternatives to synthetic chemicals.