

## ABSTRACT

This study evaluated the effect of treatment with gum Arabic edible coatings on shelf life and quality parameters of mangoes during 20 days at room temperature. Apple variety of mangoes of uniform size were obtained from small holder farms in Makueni County, Kenya and dipped in various concentrations of gum Arabic solutions [0, 10, 15 and 20% (w/v)] for 1 h, ensuring the coating solution uniformly covered the surface. Control fruits were dipped in distilled water only. The fruits were then air-dried on trays, packed in cardboard boxes and stored at room temperature ( $23 \pm 2$  °C) and normal relative humidity (45-60%). Changes in weight loss, ascorbic acid content,  $\beta$ -carotene, total soluble solids (TSS), titratable acidity (TA) and pH were determined using standard methods. Gum Arabic coatings (all levels) significantly ( $p < 0.05$ ) reduced weight loss, delayed increase in TSS and development of  $\beta$ -carotene, while retaining ascorbic acid in the mangoes during storage compared to the controls. Gum Arabic treatments resulted into higher TA that corresponded with low pH in the mangoes compared to the control. Ripening was slower with gum Arabic treatments and a shelf life of 15 days was obtained for gum Arabic-treated mangoes compared to less than 10 days for the control. Gum Arabic coatings demonstrated gas and water vapour barrier properties, hence extending the shelf life of mangoes while maintaining quality. Gum Arabic treatment can therefore serve as an alternative preservation method for mangoes at farm and transit levels without affecting quality parameters; giving farmers more revenue and reducing post-harvest losses.

**Keywords:** Edible coatings; Gum Arabic; Mangoes; Post-harvest losses.