

## ABSTRACT

Breadfruit (*Artocarpus altilis*), a starchy tropical fruit with a good source of fiber and minerals requires postharvest management to overcome its climacteric and chilling-sensitive issues. The combined effects of chitosan edible coating and rosemary essential oil on the quality of fresh-cut breadfruits were investigated. The objectives of this study were to investigate the protective potential of coatings and the effect during cold storage. Breadfruit slices were immersed in 1% (w/v) chitosan solution with and without 0.1% rosemary essential oil. Quality properties such as weight loss, flesh and skin color, firmness, total soluble solids, and total antioxidant activity were evaluated at several storage period points at 10°C storage for nine days. Results indicated that refrigerated breadfruits had successfully maintained overall physical properties compared to standard samples stored at ambient temperature. Moreover, the single-chitosan and chitosan-rosemary samples improved the preservation of breadfruit slices compared with the control as represented by lower weight loss, retained physical properties, and increase in total antioxidant activity by the end of storage period. The mechanism underlying the protective potential exhibited by chitosan is owing to the filmogenic, antimicrobial, antifungal, and internal gas modification properties which led to delayed ripening and senescence of the fruit slices. Consequently, the incorporation of rosemary essential oil performed the synergistic effect with chitosan which resulted in intensification of water barrier, anti-senescence, and antioxidant activity properties. These findings suggest that chitosan incorporated with rosemary essential oil provides great advantage and can be used commercially for prolonging the shelf life of breadfruit.

**Keywords:** *fresh-cut breadfruit, chitosan, rosemary, postharvest quality, antioxidant*