Abstract

The purpose of this study was to investigate the potential for postharvest calcium treatment to extend the shelf-life of breadfruit (*Artocarpus altilis*). In a first experiment, different calcium doses were compared in their effects on breadfruit. Fruits were dipped in $CaCl_2$ solutions (0, 2, 5, 10%) for different time periods (0.5, 1, 3, 6, 12 hours) under ambient conditions and subsequently stored at 16 °C. In a second experiment, phenol content of the skin was studied in relation to skin browning following calcium treatment and storage at 16 °C.

The results show that calcium content of breadfruit pulp and skin linearly increases with longer incubation time and $CaCl_2$ concentration. Despite weight changes following incubation, all fruits lost weight at a faster rate during storage than the controls in air. Calcium treatment promoted skin browning which was associated with an increase in total phenol content. There was a trend for the 2% $CaCl_2$ treatment for 3, 6 and 12 hours to delay softening as evaluated by touch. High calcium doses (5, 10%) caused an osmotic shock and promoted chilling injury in the fruits which became abnormally hard during storage and presented surface pitting and desiccation. Total soluble solids accumulation was not delayed by $CaCl_2$ treatment. Soluble pectin was the largest pectic fraction detected in the pulp followed by protopectin and calcium pectate. A trend for a decrease in the soluble pectin/calcium pectate ratio was observed with increasing $CaCl_2$ concentrations. Penetrometric evaluation of whole breadfruit did not correlate well with firmness as perceived by touch.

The results show that the benefits of postharvest calcium treatment on the shelf-life of breadfruit stored at 16 °C are only marginal, and do not justify its use. Browning and chilling injury remain the limiting factors for postharvest preservation of fresh breadfruit.