

Effects of modified atmosphere packaging on the physicochemical characteristics of ciku (*Achras sapota* L) at various storage temperatures

ABSTRACT

The physicochemical changes in ciku during storage at various temperatures and the effect of various techniques of modified atmosphere packaging (MAP) at 5, 10, 15°C and ambient were examined by monitoring fruit texture, weight loss, soluble solids content, pH, sucrose, fructose, glucose, pectin, tannin, ascorbic acid and microbial infection. Under MAP, ciku could be stored for 4 weeks at 10°C and 3 weeks at 15°C, while without MAP the storage life was shorter by 1 week. Packaging in low-density polyethylene film (LDPE) was highly effective in maintaining the texture and weight of cold-stored fruits. Fruits stored at 5°C experienced chilling injury, observed as their inability to ripen properly, even after 3 days at room temperature in the presence of 50 g kg⁻¹ calcium carbide. The ascorbic acid content was highest in vacuum-packed fruits followed by the other LDPE packagings. LDPE packaged fruits also received the highest sensory scores for taste, colour, texture and overall acceptability in cold-stored ciku. The unsealed nature and heating involved in shrink wrapping did not favourably affect the storage life of ciku. MAP alleviated the chilling injury which occurred in ciku stored at 10°C but not at 5°C.

Keyword: Ciku; Modified atmosphere packaging (MAP); Low-density polyethylene (LDPE); Cold storage; *Achras sapota* L