

Pericarp hardening of mangosteen (*Garcinia mangostana* L.) fruit as affected by modified atmosphere packaging and 1-methylcyclopropene

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Abstract

The effects of modified atmosphere using cling wrap (0.012 mm) and polyethylene bags (0.0417 mm) as well as the use of 1000 nL.L⁻¹ 1-methylcyclopropene (1-MCP) in an airtight container for 4 h on light purple with green streaks (M1) and reddish purple (M2) mangosteen fruit were determined. Regardless of fruit maturity, weight loss was highest in the control treatment followed by 1-MCP, cling wrap and polyethylene (PE) bags, respectively. In both M1 and M2 fruit, browning and shriveling of the sepals (rating of 2) as well as visual quality (rating of 4) were delayed by more than 7 d, respectively, when cling-wrapped, held in PE bags or treated with 1-MCP. Electrolyte leakage was significantly lesser in treated fruit compared with the control at 15 d after treatment (DAT). Lignin content increased in all treatments during storage with lower levels observed in treated fruit. Pericarp firmness was significantly higher in the control lot at 9 DAT (M2) and 12 DAT (M1) with fruit in the three treatments showing very slight increases in firmness. Relative to the untreated control, the onset of pericarp hardening, disease occurrence and shelf life termination were significantly delayed by modified atmosphere packaging and 1-MCP by up to 43%. Except for lignin content at 12 DAT, there was however no significant difference among the two fruit maturities as well as among the three treatments (cling wrap, PE bag, and 1-MCP) in terms of days to pericarp hardening, days to disease occurrence, and shelf life.