Title 1-MCP extends the storage and shelf life of mangosteen (*Garcinia mangostana* L.) fruit

Author Phatchara Piriyavinit, Saichol Ketsa and Wouter G. van Doorn

Citation Postharvest Biology and Technology, Volume 61, Issue 1, July 2011, Pages 15-20

Keywords Mangosteen; ACC; ACC oxidase; ACC synthase; Ethylene production; Peel colour; Respiration; Ripening; Storage life

Abstract

Mangosteen (*Garcinia mangostana* L.) fruit were harvested when the peel (pericarp) was light greenish yellow with scattered pinkish spots. Fruit were exposed to 1 μL L^{-1} 1-methylcyclopropene (1-MCP) for 6 h at 25 °C and were then stored at 25 °C (control) or 15 °C. The 1-MCP treatment only temporarily delayed softening of the fruit flesh, during storage. Storage life, defined as the time until the pericarp was dark purple, was much longer in fruit stored at 15 °C than in fruit stored at 25 °C. It was also longer in 1-MCP treated fruit (storage life at 15 °C: control 18 d, 1-MCP-treated fruit 27 d). The 1-MCP treatment also increased the length of shelf life, defined as the time until the pericarp turned blackish purple or showed calyx wilting, at 25 °C. 1-MCP treatment reduced ethylene production. It also reduced pericarp levels of 1-aminocyclopropane-1-carboxylic acid (ACC), and the pericarp activities of ACC synthase (ACS) and ACC oxidase (ACO). In the fruit flesh, in contrast, 1-MCP did not affect ACC levels and ACS activity, but the treatment reduced ACO activity. Taken together, both the storage life and the shelf life of the fruit were extended by the 1-MCP treatment. A decrease in ACO activity largely accounted for the effects of the 1-MCP on ethylene production in the pericarp.