

Title Fatty acid and sugar composition of avocado, cv. Hass, in response to treatment with an ethylene scavenger or 1-methylcyclopropene to extend storage life

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Abstract

This study reports on the effect of 1-methylcyclopropene (1-MCP) and a newly developed palladium (Pd)-promoted ethylene scavenger (e + ® Ethylene Remover) on changes in firmness, colour, fatty acids and sugar content of early and late season avocado (*Persea americana* Mill.), cv. Hass, during storage at 5 °C and subsequent ripening at 20 °C. The e + ® Ethylene Remover effectively delayed ripening of avocado stored at 5 °C. 1-MCP was more effective at inhibiting ripening, but, in contrast to e + ® Ethylene Remover, it impaired subsequent ripening. Fatty acid profile of late season fruit remained unchanged in response to treatments or storage time, whilst that of early season fruit was slightly, yet significantly, different according to treatments and storage time. Substantial amounts of perseitol were found in all fruit. In contrast, mannoheptulose was only present at high concentration in early season fruit whilst it was quasi-absent in late season fruit. Where ripening was inhibited in response to 1-MCP treatment, significantly more mannoheptulose and better maintenance of perseitol was found vs. controls. Similarly, but to a lesser extent and concomitant with trends in firmness retention and colour changes, e + ® Ethylene Remover led to greater maintenance of mannoheptulose and perseitol than that of controls. This is the first piece of research comparing effects of ethylene removal vs. ethylene action blocking on physical and biochemical changes in avocado cv. Hass and supports the view that C7 sugar metabolism could be an important feature of the avocado fruit-ripening process.