

Title Cell wall modification in 1-methylcyclopropene-treated post-climacteric fresh-cut and intact papaya fruit

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Citation Plant Growth Regulation, 65, Number 3, 485-494, 2011

Keywords Papaya; Post-climacteric; 1-MCP; Cell wall

Abstract

Papaya is a climacteric fruit in which ripening is greatly regulated by ethylene often associated with stress responses such as wounding. The changes in cell wall compositions in papaya fruit at an advanced stage of ripening under stress conditions including chilling temperature of 5°C and wounding employed as fresh-cut and how these changes were affected by an ethylene action inhibitor of 1-methylcyclopropene (1-MCP) were examined in the study. The recovery of ethanol-insoluble solids, total soluble sugars, water-soluble polyuronides, neutral hemicelluloses, and neutral sugars of rhamnose, arabinose, mannose and glucose were not affected by 1-MCP or fresh-cut processing. The fresh-cut processing, however, caused a higher loss of total polyuronides and the neutral sugar galactose while increasing the recovery of chelator-soluble polyuronides. Few significant differences due to 1-MCP application were recorded in the recoveries of alkali-soluble polyuronides, hemicellulosic polyuronides extracted with 4% KOH, and the neutral sugar xylose. Modifications of cell wall polyuronides and hemicelluloses in ripe fresh-cut papaya fruit exhibited mostly similar patterns to those in intact ripe papaya fruit under the chilling temperature of 5°C while minimally affected by 1-MCP.

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