Title Effect of 1-methylcyclopropene (MCP) on papaya fruit ripening

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Abstract

Papaya fruit during ripening exhibit a climacteric rise of respiration and ethylene production. Ethylene is involved in the initiation and coordination of ripening related-processes such as internal and skin color development, softening, and flavor and aroma development. Methylcyclopropene (MCP) is novel gas that acts as an inhibitor of ethylene action and delays the ripening in many climacteric fruit. The objective of this study was to characterize the physiological response of papaya fruit to MCP treatment. 'Rainbow' papaya color break fruit (<10% skin yellowing) were treated with 100 nL. L^{-1} MCP for 12 hrs and stored at 21 to 22ºC. The onset of ethylene production and the rise in the respiration rate was delayed and suppressed in MCP-treated fruit. MCP-treated fruit had a significant delay of about 7 days in softening and skin color development but little effect on total soluble solids (TSS) and weight loss. Papaya when treated with MCP at the color break stage showed a rubbery texture during ripening while fruit treated with more than 30% skin yellowing ripened normally. The disruption in softening that lead to the rubbery texture may be due to selective loss of cell wall hydrolyases.