1-Methylcyclopropene treatment alters fruit quality attributes and targeted metabolites in ‘Wonhwang’ pears during shelf life

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Abstract

‘Wonhwang’ pears are susceptible to the development of cortex and core browning after harvest. The effects of 1 μL L^{-1} 1-methylcyclopropene (1-MCP) treatment on fruit quality, internal browning incidence, and targeted metabolites were evaluated in fruit stored at 25 °C for up to 30 d. Flesh firmness was higher in 1-MCP-treated fruit than in untreated fruit during storage; however, shrivelling increased in response to 1-MCP treatment. 1-MCP treatment delayed the changes in colour variables in core tissues but not in peel and cortex tissues, delayed cortex and core browning, and increased shrivelling. 1-MCP-treated fruit had higher sucrose, dehydroascorbic acid, alanine, threonine, and γ-aminobutyric acid contents and lower fructose and glucose contents than untreated fruit. The effects of 1-MCP on the physiological and metabolomic responses of fruit were detected using heatmap matrixes and by principal component analysis.