

Title Effect of 1-methylcyclopropene on the expression of genes for ascorbate metabolism in postharvest broccoli

Author Gang Ma, Lancui Zhang, Masaya Kato , Kazuki Yamawaki, Tatsuo Asai, Fumie Nishikawa, Yoshinori Ikoma and Hikaru Matsumoto

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Abstract

The effects of 1-methylcyclopropene (1-MCP) on ascorbate (AsA) metabolism in two cultivars of broccoli (*Brassica oleracea* L. var. *italica*), ‘Haitsu’ and ‘Ryokurei’, were studied and the possible molecular mechanisms are discussed. The results showed that 1-MCP treatment delayed the yellowing and suppressed ethylene production. Meanwhile, the AsA content declined to a lower level in the control during storage, and the reduction of AsA was significantly suppressed by the treatment with 1-MCP in the two cultivars. Gene expression analyses by real-time PCR showed that 1-MCP treatment down-regulated the expression of *BO-APX1* and *BO-APX2*, and up-regulated that of *BO-DHAR* and *BO-GLDH* compared with the control. The regulation of this gene expression might contribute to the suppression of AsA reduction by the 1-MCP treatment in ‘Haitsu’ and ‘Ryokurei’ broccoli. The results arising from this study might provide new insights into the possible mechanism, by which treatment with 1-MCP delayed senescence.