

Title Responses of tree-peony cultivars to exogenous ethylene and 1-MCP
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Abstract

Different types of cultivars including 'Luo Yang Hong' which presents an ethylene burst and 'Xue Ying Tao Hua' which keeps a relatively low and stable ethylene production during postharvest opening and senescence were chosen to investigate the responses of their postharvest behavior and ethylene related enzymes activity to continuous exposure to the exogenous ethylene and its action inhibitor, 1-MCP. The effects of 12, 24, 36, 48, 60 and 72 h treatment with $10 \mu\text{l L}^{-1}$ ethylene and $1 \mu\text{l L}^{-1}$ 1-methylcyclopropene (1-MCP) on the flower opening index, diameter, ethylene production and the 1-aminocyclopropane-1-carboxylic acid (ACC) contents, ACC synthase (ACS) and ACC oxidase (ACO) activities of the two cultivars were examined. While the ethylene treatments hastened the flower opening of 'Luo Yang Hong', 1-MCP retarded it. ACS activity and ACC content of 'Luo Yang Hong' were also increased by exogenous ethylene and inhibited by 1-MCP in this cultivar. ACO activity of the same cultivar was affected, however not to the extent of the above parameters. Oppositely, in the cultivar 'Xue Ying Tao Hua', neither ethylene nor 1-MCP played a role as significant as that in 'Luo Yang Hong' for all above parameters. The results demonstrated that cut flower of 'Luo Yang Hong' does respond to the exogenous ethylene and its action inhibitor 1-MCP during the earlier stage of opening, whereas cut flowers of 'Xue Ying Tao Hua' might have other ways of opening regulation rather than ethylene action way. This might be the attribute of the multi-genetic background of different cultivars.