

Volatile content variation in the petals of cut roses during vase life

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Abstract

Volatile content during postharvest is a critical factor affecting the quality of rose products. However, changes in the volatile content of cut rose flowers during vase life have not yet been identified although the maturity of flower petals may result in the significant changes of volatile profiles. The present study investigated volatile changes in the petals of two rose varieties, 'Fuego' exhibited to longer vase life and 'Red eagle', during vase life. 'Fuego' petals contained 31 volatiles, of which 12 increased and 11 decreased in content during vase life. 'Red Eagle' petals contained 37 volatiles, of which 9 increased and 19 decreased. The major components that increased during vase life included 2-ethylhexan-1-ol and phenylmethanol in 'Fuego' and hexan-1-ol and 2-phenylacetaldehyde in both cultivars, whereas the major components that decreased during vase life included methyl butanoate in 'Fuego', 3,5-dimethoxytoluene in 'Red Eagle', and 2-methylhexane in both cultivars. The total volatile content was maintained in 'Fuego' petals during the 6-day vase life, despite the changes in the content of individual volatile compound. By contrast, the total volatile content of 'Red Eagle' petals significantly decreased during vase life. Additionally, the volatile compounds that increased in content were relatively small molecules ($\leq C_8$), whereas those that decreased in content during vase life were relatively large molecules ($\geq C_9$). These results suggest that the analysis of volatile changes during vase life contribute to the harvest time selection of rose flowers and the determination of petal stages used for essential oil in many rose varieties.