Title Methyl jasmonate enhances color and carotenoid content of yellow-pigmented cut rose flowers

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Abstract

Various yellow-pigmented cut rose (*Rosa hybrida*) cultivars such as 'Frisco' show color fading. The color intensity of this cultivar increased during the first two days of vase life and gradually decreased thereafter. Application of methyl jasmonate (MJ) following harvest retained the petal color intensity throughout vase life. Additional spray treatments enhanced this effect. Carotenoids were found as the major pigment of this cultivar. The middle whorl petals of MJ-treated flowers had a significantly higher carotenoid content than control flowers throughout vase life, while in the outer whorl, the difference in carotenoid content was significant only after the second day of vase life. HPLC analysis of petal extracts revealed various carotenoids that were affected by the MJ treatment, including β-carotene. When applied in the presence of the carotenoid biosynthesis inhibitor, norflurazon (NF), MJ delayed carotenoid degradation between days 2-6, suggesting that its main effect is associated with reduced carotenoid breakdown. Our results suggest that MJ retains petal color mainly by delaying carotenoid degradation. The possibility that MJ also induces carotenoid synthesis is not ruled out and requires further study.