

Title The anatomy and physiology of spray cut chrysanthemum pedicels, and expression of a caffeic acid 3-O-methyltransferase homologue

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Abstract

The spray cut chrysanthemum (*Chrysanthemum grandiflorum* (Ramat.) Kitamura) is a popular cut flower species. As pedicel rigidity is a key component of its postharvest quality, the morphology, anatomy and physiology of the pedicel at various stages of flower bud development were compared in two contrasting chrysanthemum cultivars. The pedicel of the cultivar with the better vase life ('H5') showed a higher proportion of vascular elements throughout all floral stages, and higher lignin and relative water contents during stages II and III. A cDNA encoding caffeic acid 3-O-methyltransferase (*CgCOMT*) was isolated from chrysanthemum. It comprises a 1065 bp opening read frame, predicted to encode a 355 residue polypeptide. The deduced peptide sequence of the *CgCOMT* product is very similar to that of COMT proteins isolated from other plant species, and shares the S-adenosylmethionine substrate binding motif LVDVGGGXG. Expression analysis by qRT-PCR showed that *CgCOMT* was expressed throughout the plant, but was particularly prominently in the stem. Its transcription increased with the development of the pedicel, and was higher in 'H5' than in 'QX101', the cultivar with the lesser vase life. This observation was consistent with the differences in rigidity of their pedicels.