Abstract

A cDNA encoding a putative ethylene receptor (DG-ERS1) was isolated from chrysanthemum [*Dendranthema grandiflorum* (Ramat.) Kitamura] using a combination of reverse transcription PCR (RT-PCR), cDNA library screening and 5′-RACE techniques. The cDNA (2427 bp) contained an open reading frame of 1920 bp coding for 640 amino acids. The predicted DG-ERS1 protein has an amino-terminal ethylene sensor domain and a histidine kinase domain, but lacks a receiver domain. The DG-ERS1 protein has 72, 70 and 69% similarity to *Arabidopsis* ERS1, tomato Never ripe (NR) and carnation DC-ERS2, respectively. Real time PCR analysis revealed that *DG-ERS1* mRNA was present in a large amount in ligulate corollas (hereafter, petals for short) and mature leaves of an ethylene-sensitive cultivar 'Seiko-no-makoto' at the full-opening stage of the flower, and the amount decreased with time or in response to a 12-h ethylene treatment. In an ethylene-insensitive cultivar 'Iwa-no-hakusen', the amount of *DG-ERS1* mRNA in petals was one-fourth and that in mature leaves was only one-twentieth of the amount in 'Seiko-no-makoto' at the full-opening stage, and its amount in both tissues scarcely changed with time or in response to a 12-h ethylene treatment. These findings suggest the involvement of DG-ERS1 in the perception of ethylene in cut chrysanthemum plants, especially in those of 'Seiko-no-makoto' cultivar.