

Title Ethylene-influenced flower opening and expression of genes encoding *Etrs*, *Ctrs*, and *Ein3s* in two cut rose cultivars

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Abstract

Exogenous ethylene inhibits floral opening in cut rose (*Rosa hybrida*) cv. Kardinal and slightly promotes opening in cv. Samantha. We investigated ethylene production following short exposure to exogenous ethylene, and the expression of ethylene receptor genes (*ETR*) and genes in the ethylene signal transduction pathway (*CTR* and *EIN3*).

In cv. Kardinal the ethylene production rate was much higher than in cv. Samantha, following ethylene treatment. The expression of *ETR* fragments was not much affected by ethylene in cv. Kardinal but was up-regulated in cv. Samantha. Data from the literature suggest that *ETR* is a negative regulator. The up-regulation of *ETR*, after ethylene treatment, indicates that the sensitivity to ethylene is down-regulated in Samantha but not in Kardinal. No clear effect of ethylene was found on the expression of fragments of *CTR* and *EIN3* genes. It is concluded that the inhibition of floral opening in cv. Kardinal, and its absence in cv. Samantha, can apparently be explained by a differential effect of ethylene on the expression of genes for the ethylene receptor.