

Title Reduced leaf senescence in chrysanthemum transformed with a mutated ethylene receptor gene: toward generation of compositae leafy vegetables with a longer shelf-life

Authors S. Satoh, T. Narumi, M. Watanabe, R. Aida and A. Ohmiya

Citation ISHS Acta Horticulturae 712: 467-472. 2006

Keywords *Dendranthema grandiflorum*; transformation

### Abstract

Compositae plants include leafy vegetables such as lettuce, garland chrysanthemum, chicory and butterbur. These vegetables are vulnerable to leaf senescence, resulting in yellowing, browning and rotting of the leaves. One way of preventing senescence is the generation of transgenic vegetables with reduced leaf senescence. We generated chrysanthemum plants transformed with a mutated ethylene receptor gene (*mDG-ERS1(etr1-4)*), derived from a chrysanthemum ethylene receptor (*DG-ERS1*) cDNA. Cultured plantlets of the transformants showed a reduced sensitivity to ethylene resulting in reduced leaf yellowing after exposure to exogenous ethylene. When shoots detached from soil-grown plants were subjected to natural senescence, the transformants showed reduced senescence as compared with those of the non-transformed control. These results suggest that the mutated ethylene receptor gene *mDG-ERS1(etr1-4)* can be used to generate transgenic Compositae vegetables with leaves green for a longer time and thus having a longer shelf life.