

Title *Kalanchoe blossfeldiana* transformed with rol genes exhibits improved postharvest performance and increased ethylene tolerance

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Abstract

Kalanchoe blossfeldiana transformed with *rol* genes, termed root-inducing (Ri) lines, which had been produced through transformation using *Agrobacterium rhizogenes* wild-type strain ATCC15834, were tested for their postharvest performance. Flower longevity, ethylene sensitivity and display quality varied among control and chemical growth retarded plants and the Ri lines. Both chemical growth retardation and transformation with *rol* genes reduced the number of flowers in comparison to control plants. Detached single flowers of the two Ri lines tested, Ri line 306 and 331, had a longevity, defined as the stage where the flowers were 70% open, of 32 and 34 d, respectively, whereas chemical growth retarded and control plants had a longevity of 28 and 26 d, respectively. Ri line 331 had the significantly longest display life of 34 d to reach the stage of losing the ornamental value of the whole plant, defined as 10% wilted flowers. The corresponding display life of control and chemical retarded plants and plants of Ri line 306 was 25 d. The opening of the flowers was more synchronous in the Ri lines than control plants. Exposed to ethylene, the flowers of the Ri lines exhibited reduced responsiveness whereas chemical growth retarded and control plants were sensitive. Possible mechanisms behind the improved postharvest performance of plants transformed with *rol* genes are discussed.