Title Effect of pre- and postharvest salicylic acid treatment on physio-chemical attributes in relation to vase-life of rose cut flowers

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Abstract

The naturally short vase-life of cut rose flowers, leads to difficulties with long-distance transportation and subsequent marketing. This study was conducted to determine whether application of salicylic acid (SA) pre- and postharvest could improve vase-life of cut rose flowers of the 'Black Magic' variety. Aqueous solutions of 50–200 μM salicylic acid were sprayed on roses grown in a controlled greenhouse about two weeks before harvest and flowers were cut and kept in a vase solution of SA (50–400 μM) to examine SA effects on the vase-life, flower development and senescence, increase/decrease of relative fresh and dry weight, vase solution uptake and activity of an antioxidant enzyme, catalase (CAT). All of these attributes were positively affected by SA treatment. The vase solutions containing SA showed a significant increase in cumulative uptake, relative fresh weight, and CAT activity. Generally, CAT activity in intact and cut flowers decreased during the flower bud development with the lowest activity present at petal senescence. However, SA retarded the decrease of CAT activity during senescence both in flowers and leaves compared to the water control. Postharvest SA application prolonged vase-life in cut rose flowers by improving the reactive oxygen species (ROS) scavenging capacity related to CAT activity and by better regulation of the water balance.