

**Title** The effectiveness of antioxidants in the control of senescence of cut leaves of *Hosta* 'Minima glauca'

**Author** E. Skutnik, J. Rabiza-Swider and A. Lukaszewska

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### Abstract

Leaves of *Hosta* sp., are often used as the florist greens in cut flower arrangements. Their rate of senescence is of commercial and aesthetic concern. Given that the oxidative stress is involved in senescence of plant tissue, we have tested the effects of several low molecular weight antioxidants, such as BHA, vitamin E, vitamin C and a combination of vitamin C and flavonoids in a commercial preparation, on the postharvest longevity of *Hosta* leaves. Antioxidants were applied as a 24 h pulse conditioning after which leaves were transferred into distilled water; controls were untreated and kept in distilled water. Of all combinations tested, only 0.001 and 0.010 mmol•dm<sup>-3</sup> vitamin E treatments increased leaf longevity. In subsequent tests, we tested the effects of 0.001 mmol•dm<sup>-3</sup> vitamin E and 0.1 mmol•dm<sup>-3</sup> benzyladenine (BA), a cytokinin known to prolong postharvest longevity in *Hosta*, on processes related to the oxidative stress. In controls, the level of hydrogen peroxide during the experiment increased threefold and the activities of peroxidase and catalase were higher. Conditioning with vitamin E, reduced the hydrogen peroxide increase by 18% relative to controls, while the catalase activity increased by 21% and that of peroxidase decreased by 24%. Leaves conditioned with BA contained the lowest amount of hydrogen peroxide: on average 27% less than the water control and 11% less than after the vitamin E treatment. The activities of catalase and peroxidase were 10% higher and 40% lower than in the control leaves, respectively. These results indicate that oxidative processes are associated with senescence of cut *Hosta* leaves and that applied vitamin E is involved in its control, but additional studies are needed before practical recommendations can be made as regards the use of this antioxidant.