

**Title** Treatment with chlorine dioxide extends the vase life of selected cut flowers  
**Author** Andrew J. Macnish, Ria T. Leonard and Terril A. Nell  
**Citation** Postharvest Biology and Technology, Volume 50, Issues 2-3, November 2008, Pages 197-207  
**Keywords** Bacteria; Chlorine dioxide (ClO<sub>2</sub>); Cut flowers; 8-Hydroxyquinoline sulfate (8-HQS); Vase life; Vase solution

### Abstract

The accumulation of bacteria in vase water is often associated with premature senescence in many cut flower species. In the present study, we tested the efficacy of aqueous chlorine dioxide (ClO<sub>2</sub>) to extend flower display life by preventing the build-up of bacteria in vase solutions. The addition of 2 or 10 µL L<sup>-1</sup> ClO<sub>2</sub> to clean deionized water extended the vase life of *Alstroemeria peruviana* ‘Senna’, *Antirrhinum majus* ‘Potomic Pink’, *Dianthus caryophyllus* ‘Pasha’, *Gerbera jamesonii* ‘Monarch’, *Gypsophila paniculata* ‘Crystal’ and ‘Perfecta’, *Lilium asiaticum* ‘Vermeer’, *Matthiola incana* ‘Ruby Red’ and *Rosa hybrida* ‘Charlotte’ flowers by 0.9–13.4 d (7–77%) relative to control (i.e. 0 µL L<sup>-1</sup> ClO<sub>2</sub>) stems. The beneficial effects of ClO<sub>2</sub> treatment were associated with a reduction in the accumulation of aerobic bacteria in vase water and on cut surfaces of flower stems. ClO<sub>2</sub> treatment was also effective in maintaining or extending the vase life of *A. majus* ‘Potomic Pink’, *Dendratherma × grandiflorum* ‘Albatron’, *G. paniculata* ‘Perfecta’ and *M. incana* ‘Ruby Red’ flowers even when stems were placed into water containing 10<sup>11</sup> CFU L<sup>-1</sup> bacteria. The efficacy of 10 µL L<sup>-1</sup> ClO<sub>2</sub> in vase water containing 0.2 g L<sup>-1</sup> citric acid and 10 g L<sup>-1</sup> sucrose to extend the display life of *G. jamesonii* ‘Lorca’ and ‘Vilassar’ flowers was equal to or greater than other tested biocides (i.e. aluminum sulfate, dichloroisocyanuric acid, 8-hydroxyquinoline sulfate, Physan 20™, sodium hypochlorite). Taken collectively, the results of the present study highlight the potential of aqueous ClO<sub>2</sub> for use as an alternative antibacterial agent in flower vase solutions.