

Effects of calcium oxide nanoparticles on vase life of gerbera cut flowers

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Abstract

Gerbera flowers are positioned amongst the most marketed cut flowers worldwide due to their attractive appearance. Their shelf-life is typically short (7-12 days) owing to stem bending that determines its commercial value. Postharvest treatments based on vase solutions with calcium compounds (e. g., CaO, Ca (OH)₂, CaCO₃, CaCl₂) are applied to avoid stem bending. The aim of this research was to evaluate the effectiveness of vase solutions based on calcium oxide nanoparticles (CaO-NP) on the postharvest quality of gerbera (*Gerbera jamesonii* L. cv. 'Forza'). The treatments consisted in distilled water (negative control), 2000 mg·L⁻¹ calcium chloride (positive control, CaCl₂, 0.2 %), 0.1 % glycerol, and 50, 100 and 150 mg·L⁻¹ of CaO-NP; glycerol (0.1 %) was applied to maintain the CaO-NP dispersed. Results indicated positive effects of CaO-NP on stem firmness, decreasing stem bending, as well as reducing the weight loss and preserving the diameter of the gerbera flowers. Moreover, gerberas treated with CaO-NP preserved their visual quality, and chlorophylls content. The action of CaO-NP did not modify phenolic compounds and antioxidant capacity. Thus, the application of CaO-NP can be considered as an efficient alternative vase solution to preserve gerbera flowers during postharvest.