

Title Postharvest longevity and quality of cut carnations, 'Pax' and 'Tabor', as affected by silver nanoparticles

Author Somayeh Hamed Chaman, Mostafa Arab, Mahmoud R. Roozban, Noor A. Ahmadi, Gholamreza Taghavi

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Abstract

Carnation (*Dianthus caryophyllus* L.) is one of the most important cut flowers around the world. In cut-flower production, improvement of postharvest longevity and quality besides minimizing wastes are considered as strategic objectives. These kinds of flowers are sensitive to microbial contamination in vase solution, which leads to shortening their vase life as a result of stem vessels blockage on the cut surfaces. Silver nanoparticles (SNP) are novel antimicrobial agents in extending postharvest longevity of cut flowers. Antimicrobial effects of SNP are due to structural changes in bacterial cell membrane and finally cell death. In this experiment, the effects of 4 concentrations of SNP including 0 (Control), 5, 10 and 20 $\mu\text{l l}^{-1}$ beside silver nitrate at 100 $\mu\text{l l}^{-1}$, in continuous solution, all with 4% sucrose were evaluated on postharvest longevity and quality of two cut carnations, 'Pax' and 'Tabor'. Electrolyte leakage (EL), chlorophyll content, turbidity solution, relative fresh weight (RFW) and solution uptake were also the other traits assessed. The results showed that use of continuous solution containing 5 $\mu\text{l l}^{-1}$ SNP, could increase the vase life of cut carnations up to 8.7 and 5.8 days in 'Pax' and 'Tabor' cultivars respectively. Application of SNP at 5 $\mu\text{l l}^{-1}$ increased the postharvest quality in both varieties too.