

**Title** Evaluation of nano silver particles and conventional biocides on microbial flora and proliferation within 'Cherry Brandy' rose vase solution

**Author** Mohammad Mahdi Jowkar, Nader Hassanzadeh

**Citation** Abstracts of 7<sup>th</sup> International Postharvest Symposium 2012 (IPS2012). 25-29 June, 2012. Putra World Trade Centre (PWTC), Kuala Lumpur, Malaysia. 238 pages.

**Keywords** Aluminum sulfate; *Bacillus subtilis*; hydroxyquinoline citrate; calcium hypochlorite; sodium hypochlorite; *Trichoderma harzianum*

### Abstract

Water relation interruption and stress are major causes of vase life reduction and senescence in cut flowers. The mentioned is mostly due to microorganism proliferation in the vase solution which leads to vascular occlusion and solution uptake reduction. In order to study the biocidal effect of nano silver particles and some conventional biocides, 'Cherry Brandy' roses were treated in a completely randomized design with: colloid of nano silver particles, citric acid, aluminum sulfate, hydroxyquinoline citrate (HQC), calcium hypochlorite ( $\text{Ca}(\text{ClO})_2$ ), sodium hypochlorite ( $\text{NaOCl}$ ), tap water, or sterilized distilled water (control). Nano silver, HQC and  $\text{Ca}(\text{ClO})_2$  were the most effective treatments in controlling microbial proliferation followed by aluminum sulfate. Two yeasts, 6 fungi, and 26 bacterial colonies were isolated from different vase solutions. Among the isolated fungi, one isolate was *Trichoderma harzianum* and the five other were different strains of *Fusarium solani*. Identified bacterial isolates were *Bacillus sp.*, *Coccus spp.*, *Streptomyces sp.*, *Pectobacterium sp.*, *Burkholderia sp.*, and *Pseudomonas sp.* Identified *Bacillus sp.* isolates were *B. polymexa*, *B. subtilis*, *B. megaterium* and *B. circulans*. Results suggest nano silver application as a biocidal preservative solution for rose cut flowers as this compound is as effective as other conventional biocides and beside that it has ethylene antagonistic effects and therefore retards senescence in ethylene sensitive cut flowers.