Title Effects of three different nano-silver formulations on cut *Acacia holosericea* vase life

Author Jiping Liu, Kamani Ratnayake, Daryl C. Joyce, Shenggen Heand Zhaoqi Zhang

Citation Postharvest Biology and Technology, Volume 66, April 2012, Pages 8–15

Keywords Antimicrobial; Cut foliage; Hydraulic conductivity; Nano-silver; Water relations

Abstract

The relative efficacies of three chemically different nano-silver (NS) formulations were evaluated for their potential to extend the vase life of short-lived cut *Acacia holosericea* foliage. The novel proprietary formulations were neutral NS, acidic NS and ionic NS. They were characterised in terms of particle size, pH value, colour and odour. The NS treatments were applied as vase (lower concentrations) or pulse (higher concentrations) solutions. Among the treatments compared, neutral NS as a 4 mg L^{-1} vase solution or as a 40 mg L^{-1} 24 h pulse treatment and acidic NS as a 0.5 mg L^{-1} vase solution or as a 5 mg L^{-1} 24 h pulse treatment significantly ($P \leq 0.05$) extended the vase life of *A. holosericea*. Vase life extensions over the deionised water (DI) controls were associated with better maintenance of relative fresh weight and vase water uptake, suppression of bacterial growth in the vase water and stem-end, and delaying stem blockage. In contrast, ionic-NS applied as a 0.5 or 1 mg L^{-1} vase solution treatment or as a 5 or 10 mg L^{-1} pulse treatment caused severe phytotoxicity to cut *A. holosericea* stems. The results suggest that NS treatments, especially neutral NS and acidic NS pulse treatments, could be a potential postharvest technology for commercial application to cut *A. holosericea*.