Title Essential oils and silver nanoparticles (SNP) as novel agents to extend vase-life of gerbera (*Gerbera jamesonii* cv. 'Dune') flowers

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Abstract

The aim of this study was to evaluate the efficacy of silver nanoparticles (SNP) and essential oils as novel antimicrobial agents in extending the vase-life of gerbera (*Gerbera jamesonii* cv. 'Dune') flowers. The vase-life of flowers held in a solution containing 5 mg L^{-1} SNP plus 6% sucrose was found to be significantly higher than with 8-HQC (8-hydroxyquinoline citrate) or control treatments. However, the vase-life was not different to that of flowers held in similar concentrations of silver nitrate. All gerbera flowers held in SNP solutions showed significantly higher relative fresh weight than the control. Vase-life of gerbera flowers was extended by addition of either 50 or 100 mg L^{-1} carvacrol and either 1 or 2 mg L^{-1} SNP from 8.3 to 16 d. In addition, the relative fresh weight and solution uptake of gerbera flowers were increased by addition of 100 mg L^{-1} essential oils and 1 or 2 mg L^{-1} SNP as compared to that of control flowers. Our results suggest the potential application of essential oils or SNP as novel alternatives to common chemicals used in preservative solutions for gerbera flowers.