

**Title** Dark storage induced leaf senescence in pot *pelargonium* and senescence inhibition by treatment with silver nanoparticles

**Author** Mehrnaz Hatami, Abdoalla Hatamzadeh, Mahmood Ghasemnezhad, Reza Hassan Sajedi

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### Abstract

Dark-induced senescence occurs during storage and shipment of many agricultural products, such as *Pelargonium* cutting and pot plants. The present investigation was aimed to study the effect of silver nanoparticle as inhibitor of ethylene action in pot *Pelargonium* during dark storage for 5 days in 20±2°C. The plants treated with (0, 20, 40, 60) ethephon as releasing ethylene hastened the onset of visible leaf yellowing in 'Blue wonder', 'Foxy' 'Flower fairy' and 'Anthuny'. Conversely, 60 ppm silver nanoparticle markedly delayed the onset of leaf senescence in all the cultivars. Leaf senescence induced by dark storage and ethephon were closely associated with lipid peroxidation as well as decrease in membrane stability index (MSI). Application of silver nanoparticles (SNP) to *Pelargonium* pot plants before dark treatment prevented chlorophyll breakdown and 'Anthuny' show more significant difference than others. Lipid peroxidation increased in control plants with diminished MSI in all cultivars. Morphological analysis indicated that petal abscission, leaf drop and leaf senescence were low in treated plants. So, spraying silver nanoparticle before dark storage pot plants like *Pelargonium* could delay petal abscission via modulating ethylene.