
ABSTRACT:

This study investigated the influence of cytokinins, gibberellins, sucrose and silver thiosulphate on water relations and post-harvest physiology of cut tuberose (*Polianthes tuberose* L.) flowers. Tuberose flowers held in de-ionised water (DIW) had a vase life of 13 days with 63% floret opening. Addition of gibberellins (*GA*$_{4+7}$) in the vase solution had no effect on vase life or floret opening along the spike. Pulsing of the cut flowers with 10% sucrose for 24 hr before transfer to DIW improved their vase life by 4 days and improved the floret opening by 21% above DIW controls. Addition of Benzylaminopurine (BA) at low concentrations (25-50 mgL$^{-1}$) improved vase life of the cut tuberose stems while higher concentrations (75-100 mgL$^{-1}$) gave no improvement. A 24 hr pulse in 10% sucrose improved the vase-life by 3.6 days and floret opening by 13%. Pulsed stems transferred to holding solutions containing various concentrations of BA improved vase life by an extra 3 days at BA concentration of 25 mgL$^{-1}$. Higher BA concentrations gave no significant (P>0.05) improvement over the pulsed stems. However, floret opening was greater at 25 and 50 mg L$^{-1}$ BA (P<0.05). Of all treatments, STS gave the greatest improvement of vase life at 7 days longer than DIW control and 3.5 days longer than the sucrose-pulsed solutions. Very high (88%) floret opening was observed in cut stems held in STS. There was a general decrease in water uptake by tuberose stems over time. Lowest rates of water uptake were noted in all treatments after 8 days. Among the treatments, the lowest water uptake was recorded in the DIW control and in *GA*$_{4+7}$ treatments. Greatest uptake was in 10% sucrose + 25 mgL$^{-1}$ BA. Transpiration losses were greatest for 25 mgL$^{-1}$ BA and least for 10% sucrose. Differences among treatments in transpiration losses were noted only in the first 10 days. In general, water deficit was noted in cut flowers held in DIW and in *GA*$_{4+7}$ after day 6, while stems in BA treatments manifested symptoms from day 8. The cut flowers pulsed in 10% sucrose and held in 25 and 50 mg L$^{-1}$ BA and in 2 mM STS only showed water deficit status from day 12 of their vase life. Overall results suggest that STS, BA and sucrose can help improve tuberose vase life and floret opening through improvement of the water balance.