Efficacy of sodium nitroprusside, a nitric oxide donor, on vase life and postharvest attributes of gladiolus spikes

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Abstract

Senescence is the major physiological process that influence the quality of cut flowers. Among cut flowers, gladiolus known for its glamour, perfection and colorful spikes occupies leading position in Indian as well as international markets. Thus, in the present investigation, evaluation of sodium nitroprusside (nitric oxide, NO donor) as holding solution on biochemical and physiological parameters affecting postharvest life of gladiolus spikes (varieties: Punjab Glad-1 and Punjab Glad-2) was done. Gladiolus spikes harvested at tight bud stage were kept in different solutions viz. 50, 100, 150, 200 mg L^{-1} sodium nitroprusside (SNP); 2% sucrose and 400 mg L^{-1} aluminium sulphate; water as control. The holding solution of 100 mg L^{-1} SNP extended the vase life of Punjab Glad-1 from 7 days in control to 13 days and Punjab Glad-2 from 6 days in control to 11 days. The results revealed that holding solution @SNP 100 mg L^{-1} improved membrane stability index and relative water content, increased total soluble sugars, total soluble proteins, catalase and peroxidase activity during floret development more in Punjab Glad-1 than Punjab Glad-2 that enhanced the number of floret opened at one time, percent floret opened, floret size, solution absorbed and ultimately vase life. Thus, 100 mg L^{-1} SNP as a holding solution could improve the postharvest quality of gladiolus spikes by influencing biochemical and physiological attributes.