

Nitric oxide effectively curtails neck bending and mitigates senescence in isolated flowers of *Calendula officinalis* L.

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Abstract

In recent years, there has been a considerable and renewed upsurge in research to ascertain the physiological and biochemical role of Nitric oxide (NO) in plants. The present investigation is focused to study the role of NO on neck bending associated with senescence and postharvest performance in isolated flowers of *Calendula officinalis*. The flower buds harvested at one day before anthesis stage were supplied with sodium nitroprusside (SNP) as a source of NO at different concentrations viz., 50, 100, 150 and 200 μM . A distinct set of flowers held in distilled water designated the control. The investigation revealed that SNP delayed the senescence in flowers of *C. officinalis* significantly manifested by prolonged longevity. The maximum longevity of 12 days was recorded in flowers supplemented with 100 μM SNP. The flowers held in distilled water (control) displayed early senescence symptoms and lasted for 6 days only. Our research suggested that improved flower longevity by SNP was commensurate with delayed neck bending, inhibition of bacterial growth in the vase, increased solution uptake, high membrane stability, besides an up-regulated activities of antioxidant enzymes in the tissue samples. In addition, the treated flowers exhibited increased content of sugar fractions, total phenols and soluble proteins in the petal tissues compared to control. Further, 100 μM SNP was observed as most effective treatment and increased the longevity of flowers by 6 days. The concentration above 150 μM provoked early senescence compared to control, whereas concentration lower than 100 μM was less efficacious in improving the postharvest life and longevity of cut *Calendula* flowers.