

Do natural leaf extracts involve regulation at physiological and biochemical levels to extend vase life of gladiolus cut flowers?

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Scientia Horticulturae 282: 110042. (2021)

Abstract

Gladiolus is among the most versatile cut flowers and available in an array of colors. However, it has a relatively short vase life, associated with increased postharvest losses and decreased quality. Commercially, synthetic chemicals are applied to enhance its postharvest vase life, but in general they are not environmentally friendly. The current research aimed to evaluate whether natural plant extracts can serve as effective preservatives to extend the postharvest vase life of gladiolus spikes. There is no record in the literature of the use of leaf extract of *Calotropis procera* as a vase-life extender for cut flowers, though its leaf extract has been shown to have antimicrobial, antioxidant and insecticidal activity. In contrast, leaf extract of *Moringa* sp. and *Mentha* sp. are commonly known to extend the vase life. The leaf extracts of *Moringa olifera*, *Mentha piperita* and *Calotropis procera* at 2 and 4% were used in holding solutions to compare their effects on vase life, physiological and metabolic activities of gladiolus cut spikes. In current results, *Calotropis procera* leaf extract (CPLE) at 2% exhibited maximum vase life up to 14.50 days, open florets (64 %) and RFW (40%) in comparison to *Moringa olifera* leaf extract (MOLE) and *Mentha piperita* leaf extract (MPLE). Similarly, maximum RWC (41 %), MSI (30 %), and CAT (66%), POX (74 %), SOD (57 %) and reduced bacterial count (64%) was also recorded in 2 % CPLE than MOLE and MPLE over untreated spikes. The cut spikes preserved in 2% MOLE described maximum Chl *a*, (71%), Chl *b* (64%) and Car (49%) contents than CPLE. Hence, CPLE at 2% appears to be an effective natural preservative to prolong the vase life of gladiolus cut spikes.