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Influence of floral preservatives on scape bending, biochemical changes and post harvest vase life of cut gerbera (*Gerbera jamesonii bolus* ex. Hook.)

P. PRASHANTH, R. CHANDRA SEKHAR AND K. CHANDRA SEKHAR REDDY

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See end of the article for authors' affiliations

Correspondence to:
P. PRASHANTH
Department of Floriculture, College of Horticulture, Kothakota, MAHABUBNAGAR (A.P.) INDIA

ABSTRACT

Vase life of cut gerbera is often terminated by bending of the flower stalk, called as scape bending, a premature senescence. However, the senescence of cut gerberas can be deferred by the use of floral preservatives in vase solution. The cut gerberas held in different holding solution combinations differed significantly on water relations, 8-HQS 200 ppm + $AgNO_3$ 20 ppm + sucrose 5% significantly increased the vase life (12.32 days) over control (4.56 days). The synergistic effect of 8-HQS and $AgNO_3$ which in turn kept the tissue water potential at higher levels (-5.683 bars) and reduced the scape bending curvature (0.000 degrees). Increase in total sugars and reducing sugars in the flower scapes of gerbera, increased the osmotic potential of the flower heads, thus improving their ability to absorb water and maintain turgidity. The positive water relations in 8-HQS 200 ppm + $AgNO_3$ 20 ppm + sucrose 5% made better utilization of sugars, proteins and lowered peroxidase activities in gerbera scapes thereby leading to longest vase life.

Key words : Gerbera, Floral preservatives, Scape bending, Postharvest, Vase life

Gerbera is a genus of ornamental plants from the sunflower family (Asteraceae) and is most commonly used cut flower world wide in floral arrangements and as a common flower in bouquets. A critical aspect of any cut flower postharvest quality is longevity and even, cut gerbera longevity is often limited by bending of the flower stalk, called as scape bending, a premature senescence, apart from normal senescence. van Doorn (1997) observed that bending of the gerbera scapes may be produced by low turgor. Scape bending which is the indication of loss of vase life of gerbera cut flower may be due to lower water potential and changes in physiological and biochemical components in the flower. A known fact is that, use of chemical preservatives in the vase solution influence postharvest life of cut flowers. An effective flower food *i.e.*, a preservative solution should contain three basic components to extend the life of the cut flowers. A sugar to provide energy to the flower, a biocide to kill the bacteria and other organisms, and an acidifier to lower the pH of the water which makes the water wetter thereby increases and maintains the uptake of water and nutrients by the flower (Coake, 1997). Hence, the present work was conducted with a view to study the combinational effect of floral preservatives in extending the post harvest life of cut gerbera by reducing the scape bending.

MATERIALS AND METHODS

The present study was conducted in Department of Horticulture, College of Agriculture, Acharya N.G. Ranga Agricultural University, Rajendranagar, Hyderabad, during December 2004 to February 2006. The gerbera cultivar 'Yanara' used in the experiment were obtained from a commercial polyhouse located 50 km away from the University campus. The flowers were harvested from one year old mother plants at the commercial harvest stage (ray florets 3/4th opened) in the morning hours between 6.30 to 7.30 a.m. by pulling the scapes of 50 to 60 cm from the crowns. Immediately after harvest 5 – 10 cm of basal woody portion was cut under deionized water, packed, then placed in water and transported through truck within one hour to the laboratory. The flowers were precooled at 4 ± 2^0C for about 4 h and then immediately unpacked, sorted to uniform length and quality of capitulum, in order to maintain uniformity within the replications. Flower scapes were trimmed under water to 40 cm. The aqueous solutions of the preservatives such as 8-hydroxy quinoline sulfate (8-HQS), Silver nitrate ($AgNO_3$), Ascorbic acid (AA) and sucrose were prepared by dissolving required quantity in required volume of distilled water.

The experiment was designed in completely randomized design with factorial concept; each treatment was replicated thrice with five flowers per replication. Same treatments were repeated for destructive sampling, for physiological and biochemical studies and all the treatments were conducted twice for confirmation of the results. The treatment combinations studied in the