



RESPONSE OF DIFFERENT PRESERVATIVES ON VASE LIFE OF GERBERA (*GERBERA JAMESONII*) CUT FLOWER

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ABSTRACT

An experiment was laid out in completely randomized design with 10 treatments, each repeated 3 times comprising of total 30 unit conducted at the PG Laboratory, Department of horticulture , R.B.S. College, Bichpuri Agra (U.P) during winter season of 2020. Different treatments under observations were tap water (T₀) , distilled water (T₁) , sucrose 2.0 % (T₂) , sucrose 4.0% (T₃) , sodium benzoic acid 100 ppm (T₄), sodium benzoate 200 ppm (T₅), cow urine 50% (T₆) and coconut water 50 % (T₇) sucrose 2.0 % + 200ppm aluminum sulphate (T₈) sucrose 2%+citric acid 100 ppm (T₉). On the basis of data recorded during experiment, treatment sucrose 2 % + aluminum sulphate 200ppm (T₉) was found superior most among all the above mentioned preservatives to increase the flower quality and vase life of gerbera spikes during winter season. The effect of sucrose 2 % + aluminum sulphate 200 ppm recorded significantly maximum fresh weight change (12.51gm) , size of flower (7.98cm) petal dropping (52.55 %) , solution uptake (181.66ml) , flower with bend neck (11.19 days) , physiological loss in weight (11.09gm) and vase life of gerbera spike (15.72 days) . Although other preservatives were also found better than the tap water (control)

Key word: - vase life, gerbera, sucrose, aluminium sulphate, sodium benzoate.

INTRODUCTION

Gerbera (*Gerbera jamesonii*) a dwarf herbaceous perennial plant is a member of asteraceae family. The flowers are known as head or capitulum. Gerbera species bear a large capitulum with striking, two- lipped ray florets in yellow, orange, white, pink or red colours. The capitulum, which has the appearance of a single flower, is actually composed of hundreds of individual flowers. The morphology of the flowers varies depending on their position in the capitulum. It is a dwarf herbaceous perennial plant. Cut flowers are more complex which require special attention in developing, handling techniques. These cut flowers are sensitive to microbial contamination at the same base or in the vase solution, shortening their vase life (Van, *et al.*,2000).To enhance the vase life of

gerbera, there is a need of ensuring good quality by proper determination of proper harvesting stage, adopting improved technology and through keeping in vase by using different chemicals. addition of chemical preservatives to the vase solution increases the vase-life of cut flowers Information on use of preservative for prolonging vase life of gerbera is still lacking therefore, the present investigation was carried out.

METHODS AND MATERIALS

The experiment was carried out during winter season of 2020 under the laboratory conditions in the horticulture department PG laboratory of, Raja Balwant Singh College, Bichpuri (Agra). Flower of gerbera variety "stenja" were harvested in December 2020 when the outer ray florets were completely elongated and two rows of diseflorets were completely developed. The flowers were collected around 6.00 am, immediately placed in water and transported to the experimental location without any delay. Flowers of uniform shape and size were selected for the experiment and the stems were re-cut leaving 40 cm from the flower head prior to placing them in the treatment solution (Table 1). Conical flask (500 ml) were used for the experiment, the treatment solution were prepared freshly and dispensed into the conical flask and flowers with 40 cm stems were subsequently placed in the solutions. The Agra tract has a tropical and sub-tropical climate with hot dry summers and severe winters. The mean minimum temperature descends up to about 1-2⁰ C with occasional frosts/or freezing during winter.

Table-1 Treatment solutions used in the experiment:

<u>Treatments</u>	<u>Notations</u>
Tap water	T ₀
Distilled water	T ₁
Sucrose 2.0%	T ₂
Sucrose 4.0%	T ₃
Sodium benzoate 100 ppm	T ₄
Sodium benzoate 200 ppm	T ₅
Cow Urine 50%	T ₆
Coconut water 50%	T ₇
Sucrose 2.0%+200ppm Aluminium Sulphate	T ₈
Sucrose 2.0%+100ppm citric acid	T ₉

Result and Discussion

The result showed significant effect of sucrose 2%+100ppm citric acid (T₉) for uptake of vase solution followed by sucrose 2%+100ppm Aluminium sulphate (T₈) and coconut water 50% (T₇) solution uptake was better for maintaining freshness and turgidity of cut flowers. Maximum days of freshness and turgidity of scapes was noted visibly concentration of (T₉) Sucrose 2%+100ppm citric acid (10.00 day) as compared to all treatments holding the solutions of preservatives. Similar finding were also found by Tarannum et al., (2014) in carnation and Sweta et al., (2018) in tuberose flowers, Amith et al. (2014), Masooda et al. (2015),

Heidarnezhadian *et al.* (2017) and Bhambhu (2018), in *Gerbera jamesoni*. The next best treatment in this respect was (T₈) Sucrose 2.0%+ 200ppm Aluminiumsulphate than the rest of the treatments. However, minimum days (5) days was noted with the holding solution of tap water (T₀) followed by distilled water (T₁) sucrose 2.0% (T₂) and sucrose 4% (T₃). At the cut stem portion, microbial growth causes gum deposition and vascular occlusions leading to loss of membrane integrity and increasing permeability that blockage to solution uptake. The water uptake was increased when sucrose 4% and citric acid 100ppm were added to vase solution. The results of experiment regarding up take of solution are in close proximity to the results obtained by Afroz *et al.*, (2015) in tuberose flowers, in tuberose flowers and Amith *et al.* (2010) in *Gerbera* (*Gerbera jamesonii*) flower.

Table-2 Fresh weight, head diameter (cm), Disc diameter (cm), uptake of solution (ml/spike), neck bend and vase life

Treatments	% weight loss	End of vase life of head diameter (cm)	End of vase life of disc diameter	Total uptake (ml/spike)	Days to neck bend	Vase life (days)
T ₀ Tap water	48.23	3.10	1.94	25.00	5.00	7.00
T ₁ Distilled water	47.78	3.14	2.36	50.00	5.00	8.00
T ₂ Sucrose 2.0%	46.45	3.19	2.40	31.70	5.00	8.00
T ₃ Sucrose 4.0%	42.39	3.12	2.57	31.70	5.00	9.00
T ₄ Sodium benzoate 100 ppm	45.17	3.53	2.66	53.00	6.00	9.00
T ₅ Sodium benzoate 200 ppm	47.99	3.92	2.70	45.00	6.00	10.00
T ₆ Cow Urine	44.91	4.08	2.97	50.00	7.00	11.00
T ₇ Coconut water 50%	45.63	4.39	3.09	53.30	8.00	12.00
T ₈ Sucrose 2.0%+200ppm Aluminium Sulphate	39.63	4.40	3.15	53.30	9.00	13.00
T ₉ Sucrose 2.0%+100ppm citric acid	42.11	4.45	3.53	57.00	10.00	14.00
SEm±	0.48	0.47	0.47	1.45	0.30	0.31
CD at 5%	1.84	NS	NS	4.28	0.90	0.98

CONCLUSION

Among all the preservatives tested in the present experiment, the holding solution of sucrose 2.0%+100ppm citric acid proved better than rest of the treatments in respect of the turgidity, freshness, and longevity of

Gerbera cut flower. Hence, it could be used as floral preservative for extending the vase life of Gerbera cut flowers.

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