SHORT COMMUNICATION

EFFECT OF PULSING WITH CHEMICALS ON POST-HARVEST QUALITY OF GLADIOLUS (*GLADIOLUS HYBRIDUS* HORT.) CV. PEATER PEARS

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Abstract : An experiment was conducted to find out the effect of pulsing solutions on postharvest life of gladiolus cv. Peater Pears cut spikes. Among all the pulsing treatments , treatment, T_4 (20% Sugar + 200ppm STS + 200 ppm GA3) gave maximum vase life, floret size, minimum days to open basal floret, maximum floret longevity, floret opening percentage while treatment T_7 (20% sucrose + 300 ppm Al_2SO_4 + 200 ppm GA_3) attained maximum number of floret, floret weight and floret open at a time during the study.

Keywords : Gladiolus, Pulsing, Spike, Vase life

INTRODUCTION

Gladiolus, belongs to the family Iridaceae, is an important boulbous flower plant, grown for its fascinating spikes, which open gradually from base to the top. It is cultivated all over the country to meet out increasing cut flower demand. Gladiolus cut flowers are highly perishable and vulnerable to large postharvest losses. The spikes last for only 6-7 day when placed in water (Murali and Reddy, 1993) which is too less a postharvest life for marketing of gladiolus for distant market. With increasing demand of floriculture products in and out of the country, there is a need to provide suitable transport system and post-harvest conditions. Moreover, due to physiological and pathological effects during the post-harvest handling approximately 20% of the total fresh products are lost in between the time of transportation. Therefore, by growing the volume of export of floricultural products the research focuses on post-harvest methods are in demand. (Usman Farooq *et al*. 2004; Panhwar 2006) Therefore, the present investigation was conducted to find out the effective pulsing solution duration to prolong the vase life of gladiolus cv. Peater Pears.

MATERIAL AND METHOD

The present investigation was carried out at the Department of Horticulture, S.V.B.P.U.A. & T., Meerut, during 2013-2014. The spikes were harvested in the early morning hours when lower most 1-2 florets showed colour and later on brought to the laboratory in bucket containing water. The maximum and minimum laboratory temperatures fluctuated between 20-25 °C and 17-20 °C, respectively during the course of experimentation.
The uniformity in spike length was maintained by giving a slant cut 25 cm below the lower most floret. The spikes were placed in different pulsing solutions including control (Tap water) for 24 after that the spikes were kept in deionized water for vase life studies except control. The experiment was laid out in a completely randomized design (CRD) consisting of nine treatments *viz.*, T_1-20% Sugar + 100ppm STS. T_2 -20% Sugar + 200ppm STS, T_3-20% Sugar + 200ppm STS + 100ppm GA_3,T_4 -20% Sugar + 200ppm STS + 200ppm GA_3, T_5-20% Sugar + 300ppm Al_2SO_4, T_6-20% Sugar + 300ppm Al_2SO_4 +100ppm GA_3, T_7, 20% Sugar + 300ppm Al_2SO_4 +200ppm GA_3. T_8, 20% Sucrose+ 200ppm 8HQC and T_9, control (with tap water), and were replicated three times. Observations were recorded on vase life, floret size, days to open basal floret, floret longevity, number of floret open at a time, floret opening percentage, floret weight and floret open at a time percentage.

RESULT AND DISCUSSION

All pulsing treatments were found to be superior over control for majority of the characters in terms of postharvest quality of gladiolus cut spikes (Table1). The maximum vase life (7.49 day) was observed under the treatment T4 followed by (7.29 days) under the treatment T5 and it was minimum (3.75 days) observed in control. It may be due to the exogenous supply of sucrose which replaced the depleted endogenous carbohydrate, utilized during the postharvest life of flower and thereby enhanced vase life (Kumar, 2005).Similar results also reported by Kumar *et al*. (2007) in gladiolus. Significant variation was observed among the treatments in terms of floret size and it was maximum (6.97 cm) observed in the treatment T_4 followed by (6.83 cm) under the treatment T_8 and minimum floret size (4.30 cm) was observed under control. Sucrose with STS and GA_3 had shown significant effect on days to open basal floret and it was minimum (1.37 days) recorded in treatment T_4 and the maximum days to open basal floret (3.40 days) noted under the treatment T_9 when spikes were kept in tap water. Treatment T_4 attained maximum (3.72 days) floret

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longevity followed by (3.59 days) under the treatment T_7 and it was minimum (1.62 days) reached under control. It is well known that sugar supply, increases the longevity of many cut flowers, since they act as a source of nutrition for tissues approaching carbohydrate starvation. It my also act as osmotically active molecule thereby leading to the promotion of subsequent water relations (Ichimura, and Hismatsu, 1999). Treatment T_7 produced maximum number of florets open at time and treatment and T9 exhibited minimum number of florets open at time. Floret opening percentage was also affected by different treatments and treatment T_4 showed maximum floret opening percentage and control exhibited minimum number of floret opening percentage. The increase in florets opening and longevity by mineral salts might be due to the fact that mineral salts increase the osmotic concentration and pressure potential of the petal cells thus improving their water balance and quality of cut flower spike (Halevy, 1976). The use of sugar and GA_3 has also been earlier reported useful for gladiolus (De *et al., 1996).* Among the treatments showed significant variation in terms of floret weight and found that treatment T_7 gained maximum floret weight (14.52 gm) which was found statistically at par with treatment $T_{4,}$ (14.16 gm) and minimum floret weight (10.85 gm) found in control. Floret open at a time in percentage also differed each other among the treatments and treatmentT7 gave maximum floret open at a time (36.87 percent) followed by, (35.42 percent) under the treatment T4 and minimum floret opening percentage at a time (16.06 percent) recorded in control. The increase in florets opening and longevity by mineral salts might be due to the fact that mineral salts increase the osmotic concentration and pressure potential of the petal cells thus improving their water balance and quality of cut flower spike (Halevy, 1976).

Table 1. Effect of pre storage (pulsing) on post harvest quality of gladiolus

	Treatment	Vase life	Floret size(cm)	Days to open basal floret	Floret longevity (days)	No. of floret at a time	Floret opening %	Floret wt.(gm)	Floret open at a time %
T_1	20% Sugar + 100ppm STS	5.40	5.59	1.89	3.10	5.35	60.47	13.67	30.87
T_2	20% Sugar + 200ppm STS	@6.27	5.92	@@1.93	3.33	5.69	64.07	13.85	31.73
T_3	20% Sugar + 200ppm STS + 100ppm GA_3	6.78	6.19	@1.65	3.39	6.65	66.65	13.92	33.16
T_4	20% Sugar + 200ppm STS + 200ppm GA_3	**7.49**	**6.97**	**1.37**	3.72	7.06	77.87	14.16	35.42
T_5	20% Sugar + 300ppm Al_2SO_4	7.29	6.65	1.46	3.18	6.36	63.80	13.33	31.67
T_6	20% Sugar + 300ppm Al_2SO_4 +100ppm GA_3	@6.21	5.85	@1.67	3.09	6.99	64.53	12.64	32.83
T_7	20% Sugar + 300ppm Al_2SO_4 +200ppm GA_3	@6.17	6.18	@@1.93	3.59	**7.23**	72.17	**14.52**	**36.87**
T_8	20% Sucrose+ 200ppm 8HQC	5.65	6.83	@@1.95	2.92	6.69	64.75	11.46	30.86
T_9	Control	3.75	4.30	3.40	1.62	3.90	32.16	10.85	16.06
	MSE	**0.022**	**0.015**	**0.089**	**1.069**	**0.801**	**0.854**	**0.104**	**0.120**
	CD at 5%	**0.121**	**0.099**	**0.243**	**0.844**	**0.731**	**0.755**	**0.264**	**0.283**

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