

EXTENDING POSTHARVEST LIFE OF *Anthurium andreanum* cv. TROPICAL CUT FLOWERS ON PULSING WITH SUCROSE CONCENTRATIONS.

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ABSTRACT

Anthurium (*Anthurium andreanum*) is an internationally important cut flower, which are contributing largely to the floricultural industry and flower arrangements due to its beauty and increased postharvest life. Pulsing is a postharvest treatment in harvested flowers in which vase life is enhanced using sucrose solution. During export of flowers pulsing is carried out to reduce the wilt and enhance the vase life. Pulsing in holding solutions are one such operations which is helpful to hold the flowers for a longer duration. The present investigation was carried out to study the effect of pulsing treatments with different sucrose concentrations on the vase life of cut spikes in *Anthurium andreanum* cv. Tropical. The experiment was conducted in Completely Randomized Design with with six treatments for pulsing with sucrose and replicated thrice. Pulsing solution with sucrose 10% enhanced water uptake (ml) in cut flowers, reduced wilting and quality of flower remain longer by lowering spadix blackening, spathe blueing and loss of glossiness of spathe (days). vase life (days) has been increased during the postharvest life as the result of using 10% sucrose.

Keywords: Anthurium, Sucrose, vase life

INTRODUCTION

Anthurium belongs to the Araceae family. These beautiful tropical plants are grown for their showy cut flowers and attractive foliage. *Anthurium* flowers are produced and sold as ornamental flowers throughout the world (Croat, 1980). The plant produces blooms throughout the year, one bloom emerging from the axil of every leaf. Flowers are usually harvested once a week at three quarters maturity (Cibes, 1957). *Anthurium* is an internationally important cut flower, which can contribute largely to the floricultural industry by virtue of its colour variation and long vase life. It is one of the most important cut flower worldwide due to its attractive form. Different factors affect the vase life of cut flowers are chemical and physiological factors such as the content of stored foods of flower, humidity, light, and temperature of the place where vase is kept. Factors affecting water uptake such as air embolism and duration of vascular occlusion contribute to cut flower senescence in *Anthurium* flowers. Vascular occlusion is a mechanism for and as a result of water stress that induces senescence in *Anthurium*. Vase life of cut flowers is also determined by their genetic makeup (Nowak and Rudnicki, 1990). Varieties as well as cultivars differ in their vase life (Nowak and Rudnicki, 1990, Bhattacharjee, 1999, Singh *et al.*, 2002, Singh and Singh, 2002). Important factor which helps the vase life is its content of stored foods.

Flowers are very soft in nature. They are perishable in nature and start losing beauty and quality rapidly once harvested. So to maintain its beauty and quality, Pulsing is a solution in some extent. Pulsing is a postharvest treatment in flower crops in which vase life is enhanced using sucrose solution on harvested flowers. Pulsing of flowers before storage helps to improve storage life of flowers (Arora and Singh, 2002). Sucrose act as a source of energy required for the continuation of the vase life of the cut flowers and also helped for the improvement in the keeping quality value of *Anthurium* cut flowers.

Among all the different types of sugars, sucrose has been found to be the most commonly used sugar in prolonging the vase life of cut flowers. Pulsing is one such operation which is helpful to hold the flowers for a longer duration. In this context, present investigation was carried out to study the effect of pulsing by different sucrose concentrations on the vase life of cut spikes in *Anthurium andreanum* cv. Tropical.

MATERIAL AND METHODS

The experiment was conducted at Flora-tech floriculture unit at Kottarakara, kollam Dist, kerala state, India during April 2013 to find out the best concentration of sucrose for extending the vase life of anthurium cut flowers and the variety used for the study was Tropical. The experiment was conducted in a Completely Randomized Design with six treatments for pulsing and replicated thrice. For the study on pulsing solutions, the cut stems were harvested when 60-75 per cent flower was open in the spadix and immediately subjected to treatments mentioned below. Each treatment have three flowers with each flower as one replication. Observations on various parameters of postharvest life were recorded on Water uptake (ml), water loss (ml), spadix blackening, spadix necrosis, spathe blueing, loss of glossiness of spathe (days), loss in weight (%) and vase life. The treatment for pulsing solutions were as follows

- T1 - Distilled Water
- T2 - Sucrose @ 2%
- T3 - Sucrose @ 4%
- T4 - Sucrose @ 6%
- T5 - Sucrose @ 8%
- T6 - Sucrose @ 10%

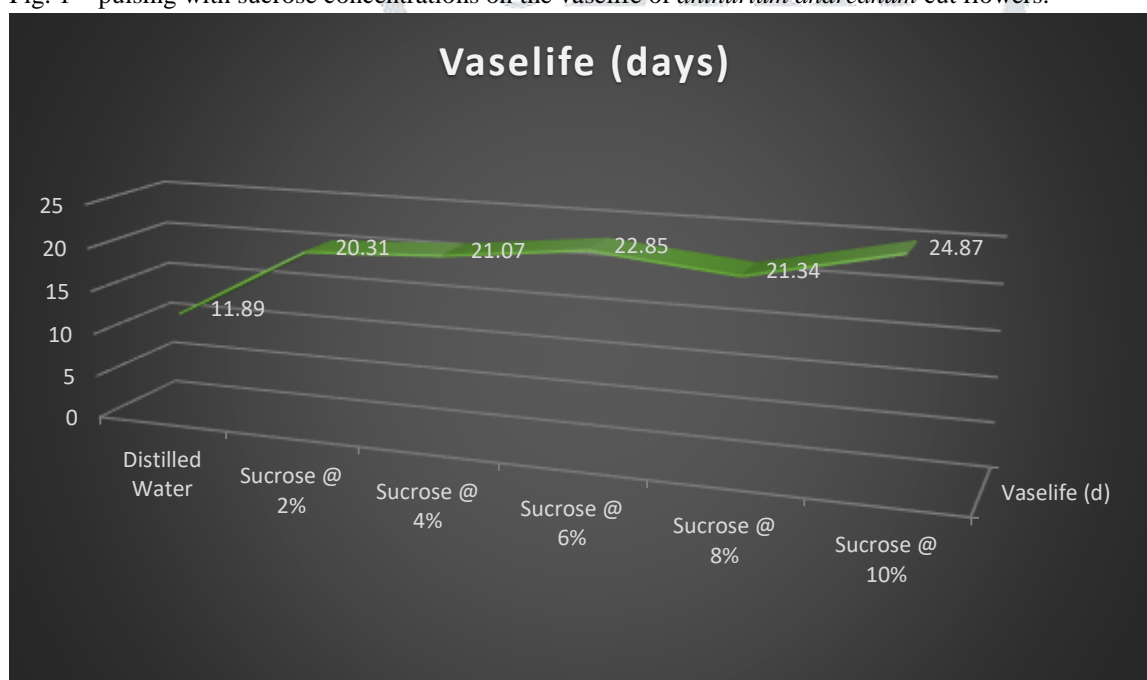
RESULTS AND DISCUSSION

The experiment was carried out in *Anthurium andreanum* cv. Tropical and the results of pulsing treatment with sucrose concentrations in cut spikes are presented and discussed. Significant effect of different pulsing solutions were observed on various aspects of postharvest life of cut Anthurium flowers. All the pulsing treatments showed improved results than the flowers kept in distilled water. Among the different concentrations of sucrose used, T₆ Sucrose @ 10% recorded the maximum results on the quality and enhanced the postharvest life of Anthurium cut flowers (Table 1). The data on water uptake, loss in weight show the positive role on the flowers in keeping it in good condition for longer time. similar result were obtained by Serek *et al.* (1996). It is well known that sucrose supply increases the longevity of many cut flowers, since sucrose can act as a source of nutrition for tissues approaching carbohydrate starvation, flower opening and subsequent water relations (Kuiper *et al.*, 1995), similar finding were obtained by Lalonde *et al.* (1999); Nichols (1973); Ichimura, 1998). Sucrose act as a source of energy required for the continuation of the vase life of the cut flowers (Halevy and mayak, 1981), and may also act as osmotically active molecule, thereby lead to the promoting of subsequent water relations and lengthening their vase life.

The results revealed that the pulsing treatment with Sucrose @ 10% delayed spadix blackening (19.89 days), spadix necrosis (19.63 days), spathe blueing (20.62 days) and loss of glossiness (18.57 days) and recorded an increased vases life 24.87 days (Fig 1). Sucrose act as a source of energy required for the continuation of the vase life of the cut flowers. Control treated with distilled water shown faster deterioration of flowers and reduced vases life. Considering the experimental results it can be concluded that the increased results in 10% sucrose with a significant improvement in vase life of anthurium cut flowers. Days taken for spadix necrosis as well as Days taken for spathe blueing and Vase life has been increased during the postharvest life on Sucrose @ 10% treatment.

Table 1 – pulsing with sucrose concentrations on postharvest life of *anthurium andreanum* cut flowers.

Treatments	Water uptake (ml)	Loss in weight (%)	Water loss (ml)	Spadix blackening (days)	spadix necrosis (days)	Spathe blueing (days)	Days taken for gloss loss
T ₁ – distilled water	11.21	15.92	13.46	11.51	10.98	12.49	13.25
T ₂ – Sucrose @ 2%	19.79	13.61	23.81	17.5	17.28	18.55	16.97
T ₃ - Sucrose @ 4%	19.67	12.43	22.83	18.02	17.70	19.06	17.21
T ₄ - Sucrose @ 6%	20.23	11.62	24.04	16.87	18.29	18.52	17.03
T ₅ - Sucrose @ 8%	18.45	11.92	24.82	19.03	18.51	19.85	17.92
T ₆ - Sucrose @ 10%	22.82	10.13	25.72	19.89	19.63	20.62	18.57
SE (d)	1.23	0.74	1.19	0.59	0.63	0.70	0.58
CD (p=0.05)	2.45	1.58	2.32	1.25	1.42	1.50	1.26

Fig. 1 – pulsing with sucrose concentrations on the vasselife of *anthurium andreanum* cut flowers.

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