



# RESEARCH ARTICLE: EFFECTS OF CHEMICAL SOLUTION AND LEAF TREATMENT ON CUTTING FLOWER TWIG OF *HYMENOCALLIS LITTORALIS* (JACQ.) SALISB. FOR VAST LIFE

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## Abstract:

*Hymenocallis littoralis* (Jacq.) salisb flower is belongs to Amaryllidaceae family. It is commonly referred as Beach spider lily. It is an ornamental and medicinal plant. Beach spider lily cut flower is use for post-harvest shelf life. For present study Tap water, Distil water, Sucrose, Citric acid, Potassium sulphate and leaf extract are used to improve the longevity of *Hymenocallis littoralis* (Jacq.) salisb cut flower. Sucrose prolong the vast life of cut flowers. Potassium sulfate provide excellently for dressing indoor flowers. Best result 5days obtain with Sucrose compare to control tap water and distil water. Treatment of *Lantana camara* leaf extract get best result compare to control tap water.

## Key words:

*Hymenocallis littoralis* (Jacq.) Salisb flower, Tap-water, Distil water, Sucrose, Citric acid, Potassium sulfate, Leaf extract

## Introduction:

Flowers are most beautiful gift of nature. India is the second largest producer of flowers after China (Mathur *et al.*, 2013). For human's life flowers have always remained an integral part and they are very important in the Indian traditional way of life (Jagreeti gupta and R.K. Dubey., 2018). In the earlier times, most of cut flower remain in water but now a day, many floral preservatives to prolong the vase life of cut flowers (Muhammad Akbar Anjum *et al.*, 2001). Cut flowers quality is an important parameter for both export and domestic markets (Ruby Patel *et al.*, 2016). Floral preservative is the most practicable and economical method for improving the post-harvest life of cut flower (Salunkhe *et al.*, 1990).

In cut flower vase life water stress is most common cause (Halevy and A.H., 1976). In chrysanthemums and carnation flowers concentration of salts in water approaches 200 ppm and in Gladiolus flower 700 ppm is harmful (Waters., 1968). If flower placed in a suitable floral preservative they are remain fresh longer

(Nowak *et al.*, 1990). For cut flower sucrose has most commonly use to prolong the vase life (Khalid M. Elhindi., 2012).

Tribal peoples of Navsari, Dang and Valsad Districts of South Gujarat *Hymenocallis littoralis* flowers use in marriage function as Garland, Gajara and Veni. These plants are suited for herbaceous border, border plantings in the garden, with the water channels and the boundary walls. It is cultivated for its fragrant, white and spidery shaped spectacular showy flowers. *Hymenocallis littoralis* flower is an ornamental and medicinal plant (Ramadoss Karthikeyan *et al.*, 2016).

## Materials and Methods:

The experiment was conducted in Department of Botany, School of science, Gujarat University, Ahmedabad, Gujarat. *Hymenocallis littoralis* (Jacq.) salisb flower was selected as plant material for the study. *Hymenocallis littoralis* (Jacq.) salisb fresh flowers grown in the Gujarat University campus were used for the experimental work. The cutting flowers twig were placed away from direct sunlight. Flowers are wash with water, twigs are cut slant, all flowers twig size was kept same. Flowers were kept in tap water, distil water, sucrose solution, citric solution acid and potassium sulphate solution. Tap water and distil water are treated for control. Data was recorded regularly at interval 24 hours. Transpiration loss, water uptake, water balance, fresh weight and % fresh weights was calculate every day (Venkatarayappa *et al.*, 1980). Two experiment Chemical solutions (Sucrose, Citric acid, Potassium sulfate) and leaf extract (*Ocimum tenuiflorum*, *Adhatoda vasica*, *Calotropis procera*, *Lantana camara*) are use for present study. Tap water and distil water are use as control.

### Experiment 1: (Chemical solutions)

T<sub>1</sub>: Tap water (250ml)

T<sub>2</sub>: Distil water (250ml)

T<sub>3</sub>: Distil water (250ml) + Sucrose (0.5g)

T<sub>4</sub>: Distil water (250ml) + Citric acid (0.5g)

T<sub>5</sub>: Distil water (250ml) + Potassium sulfate (0.5g)

### Experiment 2: (Different plant leaf extract)

T<sub>1</sub>: Tap water 50ml

T<sub>2</sub>: *Ocimum tenuiflorum* (Tulsi) 50ml

T<sub>3</sub>: *Adhatoda vasica* (Ardusi) 50ml

T<sub>4</sub>: *Calotropis procera* (Aakda) 50ml

T<sub>5</sub>: *Lantana camara* (Lantana) 50ml

## Results:

Treatment of Distil water(250ml) + sucrose (0.5g) is get best result 5days in *Hymenocallis littoralis* flower (Table – 1). Very lower result 3days obtain in Distil water (250ml) + citric acid (0.5g) solution.

Treatment of *Lantana camara* leaf extract (50ml) get best result 4days in *Hymenocallis littoralis* flower (Table – 2). Very lower results obtain 2days in Tap water (50ml), *Ocimum tenuiflorum* (50ml) and *Calotropis procera* (50ml) leaf extracts (Table – 2).

Table: 1 (Chemical solution)

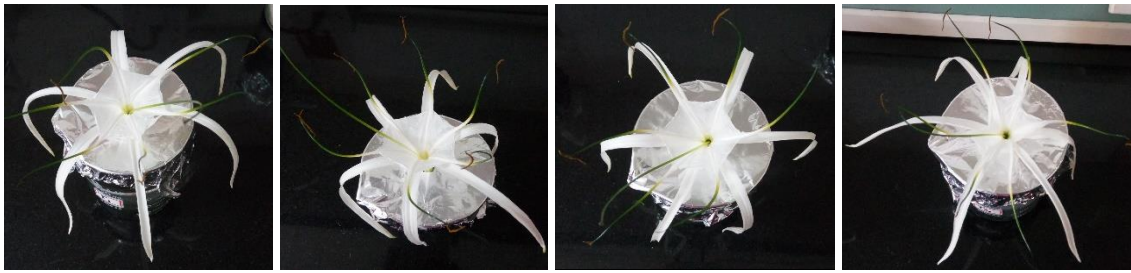
Treatment	Total transpiration water loss (In gm/flower/day)	Total water uptake (In gm/flower/day)	Total water balance (In gm/flower/day)	Shelf life in days
Tap water (250ml)	6.515	5.038	-1.477	4
Distil water (250ml)	7.576	6.426	-1.150	4
Distil water (250ml) + Sucrose (0.5g)	9.265	7.580	-1.685	5
Distil water (250ml) + Citric acid (0.5g)	4.241	3.774	-0.461	3
Distil water (250ml) + Potassium sulfate (0.5g)	5.956	4.695	-1.261	4

Table 2: (Leaf extract)

Treatment	Total transpiration water loss (In gm/flower/day)	Total water uptake (In gm/flower/day)	Total water balance (In gm/flower/day)	Shelf life in days
Tap water (50ml)	2.079	0.570	-1.509	2
<i>Ocimum tenuiflorum</i> (Tulsi) 50ml	1.617	0.212	-1.405	2
<i>Adhatoda vasica</i> (Ardusi) 50ml	2.959	0.153	-2.806	3
<i>Calotropis procera</i> (Aakda) 50ml	1.941	0.013	-1.928	2
<i>Lantana camara</i> (Lantana) 50 ml	3.882	1.221	-2.661	4

**Experiment 1:**

Day 1

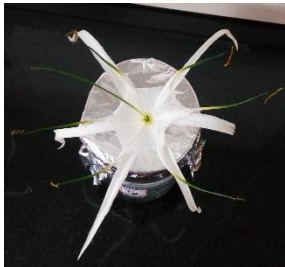


T1

T2

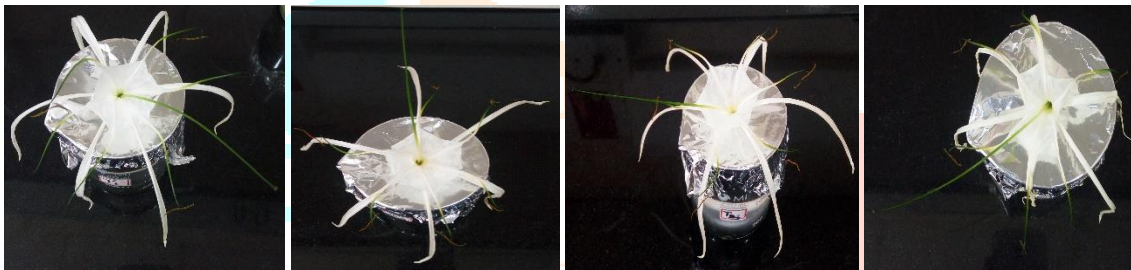
T3

T4



T5

Day 2



T1

T2

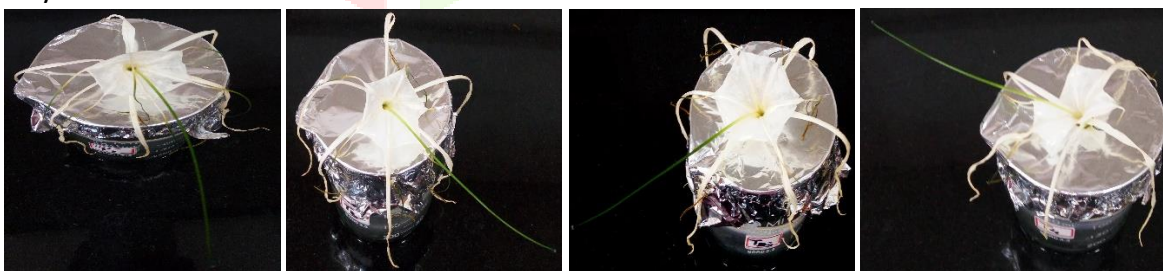
T3

T4



T5

Day 3

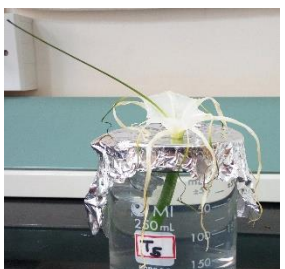


T1

T2

T3

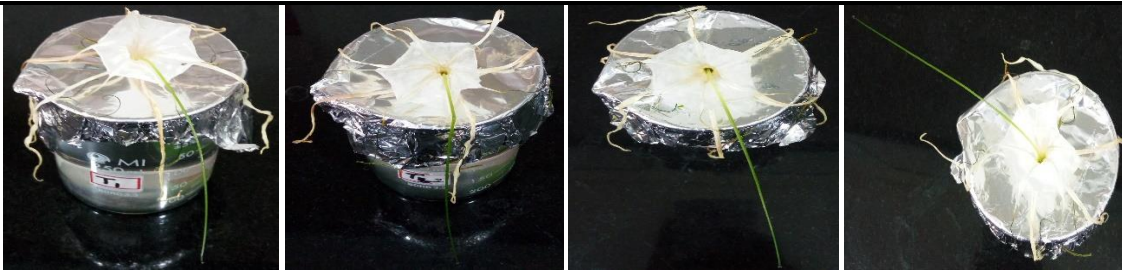
T4



T5

Day 4





T1

T2

T3

T5

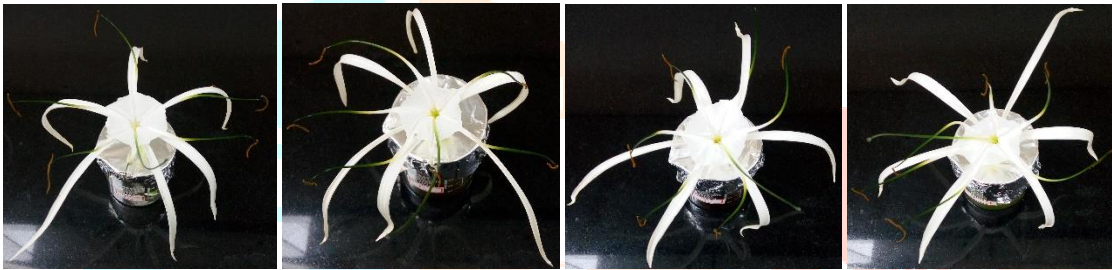
Day 5



T3

### Experiment 2

Day 1



T1

T2

T3

T4



T5

Day 2



T1

T2

T3

T4

T<sub>5</sub>

Day 3

T<sub>3</sub>T<sub>5</sub>

Day 4

T<sub>5</sub>

### Conclusion:

Vase solution ensure the full development of flower blooms and colour intensity. Water is common for cut flower vast life. Treatment with sucrose solution to obtain positive effects on cut flower vast life. Very lower result obtained 3days in treatment of Distil water (250ml) + citric acid (0.5g). Treatment with Distil water (250ml) + sucrose (0.5g) get best result 5days and treatment of *Lantana camara* leaf extract (50ml) get improving result 4 days compare to control tap water and distil water in these present study.

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