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## Effect of different holding solutions on vase life of tuberose (*Polianthes tuberosa*)

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### Abstract

An investigation on enhancing vase life of tuberose in local double type was carried out at Department of Horticulture, College of Agriculture, Dr. Balasaheb sawant Konkan Krishi Vidyapeeth, Dapoli during 2017 to 2019 through Ph.D. research. The research study included fifteen treatments of different holding solutions with various concentrations of chemicals and preservative with three replications in completely randomized design. Various preservative and chemicals were used for extending the vase life of cut flowers. During the investigation period among the various treatments number of florets opened per spike (17.75, percent florets opened per spike (84.39%) and maximum uptake of holding solution (14.71 ml) was obtained promising in Silver nitrate @ 30 ppm while maximum vase life (18.15 days) was recorded by Aluminium sulphate @ 30 ppm.

**Keywords:** tuberose, preservatives, chemicals

### Introduction

Tuberose (*Polianthes tuberosa* L.) popularly known as Rajanigandha, Nishigandha, Gulchhadi & Sugandharaj etc. (Anon, 1982) [1]. Tuberose has been cultivated since ancient times and this crop occupies a unique position in the world trade due to great demand and economic potential in cut flower as well as loose flower trade. The waxy white flowers spike of single as well as double type of tuberose impregnate the atmosphere with their sweet fragrance therefore it is used in perfume industry (Sadhu and Bose, 1973) [6]. It is multipurpose flowering plant which can be use in different forms and occasions. The long flowers spikes are excellent as cut flowers for table decoration when arrange in bowls or vases.

### Material and Methods

Tuberose is perishable, but during long distance transportation the quality deterioration in flower takes place till the produce reaches to the end consumers and fetches low price in market. The research on vase life of tuberose by using different holding solutions like preservatives and chemicals has shown significant effect on enhancing tuberose vase life till today accordingly the study on assessment for prolonging vase life of tuberose was carried by using preservatives and chemicals at different concentrations was undertaken entitled "Effect of different holding solutions on vase life of tuberose in Local double type by using various preservatives like sucrose (2.5, 5 and 10%) and chemicals like Silver nitrate, Aluminum sulphate, Benzyl adenine (10,30 and 50ppm), 8 Hydroxy Quinoline (200,400 ppm) and distilled water (control) with 15 treatments and three replications in control randomized design for two years. Spikes were harvested randomly from each treatment plot. The harvesting of spikes was done when basal one or two florets were open. These selected spikes were kept in conical flask containing different holding solutions of preservatives. The bottom ends of spikes were cut about 5mm every day to prevent clogging of vascular tissues. Data was recorded for various parameters like vase life of spikes, number of florets opened per day, percent florets opened and uptake of solution and was analyzed by panse and sukhatme (1985) [5] method for 1% level of significance.

### Results and Discussion

The vase life of cut flower is an important aspect of study as it decides the marketability of the flower. During present investigation the vase life of tuberose in Local double type was studied with various preservatives and chemicals used for extending the vase life of flowers.

Among the various characters related to vase life, number of florets opened per spike were obtained maximum (17.75) in Silver nitrate @ 30 ppm which was at par with all other treatments except sucrose @ 2.5, 5 percent, BA @ 10 ppm and distilled water (Control). The percent florets opened per spike were maximum (84.39%) in Silver nitrate @ 30 ppm which was at par with Aluminium sulphate @ 10, 30 ppm and sucrose @ 5 per cent but significantly superior over all other treatments. The maximum uptake of solution was observed in Silver nitrate @ 30 ppm (14.71 ml) which was at par with Aluminium sulphate @ 30 ppm, Silver nitrate @ 50 ppm, Aluminium sulphate @ 10 ppm and Aluminium sulphate @ 50 ppm. The maximum vase life (18.15) days was recorded in Aluminium sulphate @ 30 ppm but was at par with all other treatments except 8 HQ @ 400 ppm, BA @ 30 ppm, BA @ 20 ppm and distilled water (control).

From the investigation it is seen that silver nitrate acts as an ethylene antagonist effect while Aluminium sulphate acidifies the holding solution, keeps it free from micro organisms and helps in preventing the plugging of conductive tissues (Harely and Mayak, 1980) [3] resulting in greater solution uptake and ultimately longer vase life.

These results are in confirmation with the Fernandes (2003) [2] who reported in tuberose cv. Single that vase life of spikes was maximum (14.66 days) in treatment aluminum sulfate 50 ppm and minimum vase life of spikes (8.40 days) was recorded in control. Also Padaganur *et al.* (2004) [4] reported that in tuberose at University of Agriculture Sciences, Dharwad the vase life was maximum (16.21 days) in Aluminium sulphate @ 1 m M + sucrose @ 4% as compared to control (8.50 days).

**Table 1:** Effect of chemicals and preservatives on number of florets opened per spike and percent florets opened in tuberose cv. Local Double

Treatments	Number of florets opened per spike	Percent florets opened	Uptake of Solution(ml)	Vase life of Spike Days (ml)
	Pooled	Pooled	Pooled	Pooled
T <sub>1</sub> - Sucrose 2.5%	17.29	72.51	13.02	16.85
T <sub>2</sub> - Sucrose 5%	17.41	82.90	13.19	16.85
T <sub>3</sub> - Sucrose 10%	17.64	73.78	12.20	13.82
T <sub>4</sub> - Silver nitrate 10 ppm	17.39	76.12	13.47	17.09
T <sub>5</sub> - Silver nitrate 30 ppm	17.75	84.39	14.71	17.48
T <sub>6</sub> - Silver nitrate 50 ppm	17.74	78.33	14.13	17.15
T <sub>7</sub> - Aluminum Sulphate 10 ppm	16.46	79.34	13.80	17.54
T <sub>8</sub> - Aluminum Sulphate 30 ppm	17.42	79.60	14.56	18.15
T <sub>9</sub> - Aluminum Sulphate 50 ppm	17.13	78.69	13.78	17.00
T <sub>10</sub> - 8 Hydroxy Quinoline 200 ppm	16.99	76.44	13.52	16.93
T <sub>11</sub> - 8 Hydroxy Quinoline 400 ppm	18.00	76.47	13.58	16.65
T <sub>12</sub> - Benzyladenine (BA) 10ppm	18.41	73.57	13.40	16.82
T <sub>13</sub> - Benzyladenine (BA) 20ppm	18.44	74.23	13.39	16.44
T <sub>14</sub> - Benzyladenine (BA) 30ppm	17.55	77.86	13.17	16.58
T <sub>15</sub> - Control (Distilled Water)	14.43	70.87	11.70	13.46
S.E.m ±	0.16	0.21	0.21	0.18
CD at 1%	0.62	0.83	0.81	0.69

## Conclusion

In vase life studies among the various preservatives and chemicals use of Aluminium sulphate @ 30 ppm was found best for prolonging vase life (18.15 days) of tuberose in local double type while number of florets opened per spike (17.75), percent florets opened per spike (84.39%) and maximum uptake of holding solution (14.71 ml) was obtained promising in Silver nitrate @ 30 ppm.

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