



Scholars Research Library

Annals of Biological Research, 2013, 4 (1):59-61  
(<http://scholarsresearchlibrary.com/archive.html>)



## Effect of Naphthalene Acetic Acid (NAA) on Vase Life, Chlorophyll b Content and Water Relation of Cut *Alestroemeria hybrida*

Hamideh Bagheri<sup>1</sup>, Davood Hashemabadi<sup>\*2</sup>, Shahram Sedaghatthoor<sup>2</sup>, Mohammad Zarchini<sup>1</sup> and Ali Eslami<sup>3</sup>

<sup>1</sup>Young Researchers Club, Rasht Branch, Islamic Azad University, Rasht, Iran

<sup>2</sup>Department of Horticulture, Rasht Branch, Islamic Azad University, Rasht, Iran

<sup>3</sup>Master Science Student, Rasht Branch, Islamic Azad University, Rasht, Iran

### ABSTRACT

To evaluation of effect of NAA on vase life and postharvest characters of cut *Alestroemeria hybrida*, a completely randomized design experiment with 3 level of NAA (0, 10 and 20 mg L<sup>-1</sup>) and 3 replications was carried out. Analysis of variance showed that effect of NAA on vase life, chlorophyll b content and loss of °brix was significant ( $p \leq 0.05$ ). Results showed that 10 mg L<sup>-1</sup> NAA was the best treatment for vase life (9.85 days) and loss of °brix (0.73%). Also 20 mg L<sup>-1</sup> NAA showed highest chlorophyll b content with 8.30.

**Keywords:** NAA, *Alestroemeria*, vase life, loss of °brix.

### INTRODUCTION

*Alestroemeria* (*Alestroemeria hybrida*) is belong to Alstroemeriaceae (Liliaceae) family is one of the major important cut flower in the world [11, 13]. *Alestroemeria* sensitive to ethylene and bacterial contamination and these 2 problems cause to vascular blockage and finally shorten vase life [4, 13, 14]. 1-Naphthalene acetic acid commonly abbreviated NAA by formula of C<sub>10</sub>H<sub>7</sub>CO<sub>2</sub>H is plant hormone that have more important role such as cell elongation, cell formation, thinning and root formation [5]. Nowadays NAA have key role in increasing vase life of cut flowers such as *Eustoma* [17]. Saifuddin et al., [16] showed that NAA at 50, 100 and 150 mg L<sup>-1</sup> improved SPAD value and longevity in *Bougainvillea spectabilis* compare to control. The aim of this study investigation effect of NAA on vase life, chlorophyll b and loss of °brix of cut *Alestroemeria* flowers.

### MATERIALS AND METHODS

Cut *alestroemeria* (*Alestroemeria hybrida*) were purchased from Mahallat (Iran) and transported to postharvest laboratory, Department of Horticulture, Rasht Branch, Islamic Azad University (Iran) at standard conditions. In this study carried out based on RCD with 3 levels of NAA (0, 10 and 20 mg L<sup>-1</sup>) with 3 replications and 9 plots. In this study vase life, chlorophyll b content and loss of °brix was measured. End of vase life was when flower wilted or leaf was discolored [3]. In 4<sup>th</sup> day of experiment leaves of each plot were sampled and chlorophyll content measured by spectrophotometer apparatus [8, 9, 10, 11]. °brix was measured by refractometer model n-α and loss of °brix measured by this formula [8]:

Loss of °brix: °brix in first day- °brix in final day (end of vase life)

Analysis of variance evaluated by SPSS software and mean comparison was performed by LSD test at 1 or 5 percent probability.

## RESULTS AND DISCUSSION

Analysis of variance showed that effect of NAA on measured traits was significant ( $p \leq 0.05$ ). Results showed that 10 mg L<sup>-1</sup> NAA was the best treatment for vase life (0.85 days) and loss of °brix (0.73). Also 20 mg L<sup>-1</sup> NAA showed highest chlorophyll b content with 8.30. Positive effect of NAA on vase life, chlorophyll b content and loss of °brix due to improvement water relation and water uptake, inhibition of chlorophyllase enzyme and decreased of respiration process [1, 6, 7, 12, 14, 15]. Saifuddin et al., [16] showed that NAA at 50, 100 and 150 mg L<sup>-1</sup> improved SPAD value and longevity of *Bougainvillea spectabilis* compared to control. Hashemabadi [8] showed that antiethylene compounds improved vase life and chlorophyll content, reduced loss of °brix in cut carnation (*Dianthus caryophyllus* cv. Tempo). However treatment with the synthetic auxin (2, 4-D) at 500 mg L<sup>-1</sup> suppresses ethylene production and delays petal senescence of carnation [15]. Our results also about positive effect of PGRs on extending vase life and delaying senescence of cut flowers agreement by Chang and Chen [2].

**Table. Effect of different level of NAA on vase life, chlorophyll b content and loss of brix of cut *Alestroemeria***

Treatments	Vase life (days)	Chlorophyll b content	Loss of °brix (% sucrose)
Control	8.62 b	6.25b	0.76 b
10 mg L <sup>-1</sup> NAA	9.85 a	5.33 b	0.73 b
20 mg L <sup>-1</sup> ANN	8.62 b	8.30 a	0.81 a

## CONCLUSION

In conclusion, our results showed that NAA at 10 mg L<sup>-1</sup> concentration improved vase life of cut *Alestroemeria* and 20 mg L<sup>-1</sup> NAA delayed leaf senescence of this flower.

## Acknowledgments

The authors would like to thank Islamic Azad University Rasht Branch, Specific Dr. Ali Mohammadi Torkashvand (Research Office Manager) for financial supports.

## REFERENCES

- [1] Blankenship, S., Dole, J.M. **2003**. *Postharvest Biol. Technol.*, 28: 1-25.
- [2] Chang, Y.S, Chen, H.C. **2001**. *Sci. Hortic.*, 87: 217-224.
- [3] Edrisi, B. **2009**. *Payam-e-Digar Publication*. 150 pages
- [4] Edrisi, B., Sadrpoor, A., Saffari, V.R. **2012**. *Journal of Ornamental and Horticultural Plants.*, 2(1): 1-12.
- [5] Fathi, G.H., Esmaeilpour, B. **2000**. Ferdowsi University Publication. Mashhad, Iran., 288pp
- [6] Ferrante, A., Hunter, D.A., Hackett, W.P., Reid, M., **2002**. *Postharvest Biol. Technol.*, 25: 333-338.
- [7] Halevy, A.H., Kofranek, A.M. **1984**. *HortScience*, 19: 845-847.
- [8] Hashemabadi, D. **2011**. *Final Report of Research Project to Islamic Azad University, Rasht Branch, Rasht, Iran*. 101 pages.
- [9] Hashemabadi, D., Kaviani, B., Sedaghatpour, S., Mohammadi Torkashvand, A. **2009**. *African Journal of Biotechnology*, 8(20): 535-5357.
- [10] Hoseinzadeh Liavali, M. B, Zarchini, M. **2012**. *Journal of Ornamental and Horticultural Plants.*, 2(2):123-130.
- [11] Khalighi, A. **2008**. *Roozbehan Press.*, 392 pages
- [12] Kiamohammadi, M. 2011. *Journal of Ornamental and Horticultural Plants.*, 1(2): 115-122.
- [13] Mousavi Bazaz, A., Tehranifar, A. **2011**. *J. Biol. Environ. Sci.*, 5(14):41-46.

- [14] Oraee, T., Asghar Zadeh, A., Kiani, M., Oraee, A. **2011.***J. Ornament. Hortic. Plants.*, 1(3): 161-166.
- [15] Sacalis J.N., Nichols, R., **1980.** *HortScience*, 15: 499–500.
- [16] Saifuddin, M., Hossain, A.B.M.S., Normaniza, O., Boyce Nasrulhay, A., Moneruzzaman, K.M., **2009.** *Biotechnology*, 8 (3):343-350.
- [17] Shimizu-Yumato, H., Ichimura, K. **2010.** *Postharvest Biol. Technol.*, 56: 104-107.