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Response of cut chrysanthemum cv. white flowers to natural preservative compounds

Mohammad Zarchini*[1], Shokrollah Haji Vand[2], Davood Hashemabadi[3], Ghasem Hajian[3], Alireza Ghaderi[3], Somayyeh Zarchini[4] and Naser Negahdar[3]

[1]*Young Researchers Club, Rasht Branch, Islamic Azad University, Rasht, Iran*
[2] *Agricultural Research and Education Organization, Iran*
[3]*Department of Horticultural Science, Rasht Branch, Islamic Azad University, Rasht, Iran*
[4]*Islamic Azad University, Tafresh Branch, Tafresh, Iran*

ABSTRACT

An experiment was carried out to investigation on effect of different concentrations of Artemisia oil on vase life and other postharvest characteristics of cut chrysanthemum cv. White flowers. The experiment carried out based on randomized completely design with four levels of Artemisia oil (0, 10, 30,50%) at 3 replications. Results showed that maximum vase life, dry weight and fresh weight was achieved in 30% Artemisia oil with 10 days, 8.96g and 44.50g respectively.

Keywords: *Chrysanthemum*, *Artemisia* oil, Vase life, Fresh weight, Dry weight.

INTRODUCTION

Chrysanthemum (*Dendranthema grandiflorum* L.) belong to family Asteraceae family is one of the popularand commerical cut flowers that grown on longer scale in the world [3, 11]. Senescence of cut flowers is induced by water stress, carbohydrate decline, bacterial contamination and etc [6, 17]. Use of preservative and antimicrobial compounds in vase solution such as humic acid [15], silver nano particles [12], 8-hydroxy quinoline sulphate [2] and etc improved vase life of cut flowers. Essential oil as novel natural compound and secondary metabolite that improves vase life of cut flowers [4, 5, 14, 18]. Solgi et al. [14] showed that essential oils and silver nanoparticles improved vase life and postharvest quality of cut gerbera cv. Dune flowers. Mousavi Bazaz and Tehranifar [5] reavaled that 50 and 100 mg l^{-1} essential oils improved weight yield, vase life and water relation in cut *Alstromeria* flowers. The aim of this study is investigation on effect of natural preservative compounds on vase life, fresh weight and dry weight of cut chrysanthemum cv. White.

MATERIALS AND METHODS

Fully opened cut chrysanthemum cv. White flowers were purchased from Mahallat and then transported to postharvest laboratory of Department of Horticulture, Islamic Azad University, Rasht (Iran) with 20±2 $^{\circ}$C 60-70% relative humidity, 12 µmol $s^{-1}m^{-2}$ light intensity and 12 h photoperiod from florescent lamps. Experiment

carried out based on randomized completely design with *Artemisia* oil at 4 levels of (0, 10, 30 and 50%) and 3 replications and 12 plots in each plot was 5 cut flowers. In this study, vase life, dry weight and fresh weight were measured. Vase life index was evaluated by wilting and yellowing of leaf and petal [13]. For determination of fresh weight, all flowers of each plot was weighted by Hashemabadi et al [8] method. Dry weight was calculated 24 h after fresh weight evaluation, flower were held in oven dry in 70° C and then weighted. Analysis of variance was done with SPSS and SAS softwares and mean comparison were established by LSD test.

RESULTS AND DISCUSSION

Analysis of variance showed that effect of *Artemisia* oil on vase life, dry weight and fresh weight was significant ($p \leq 0.05$). Results showed that highest vase life, dry weight and fresh weight were achieved in 30% *Artemisia* oil with 10 days, 8.96 g and 44.50 g respectively (Table 1) (Fig. 1).

Table 1: Effect of *Artemisia* oil on measured traits.

Treatments	Vase life (days)	Fresh weight (g)	Dry weight (g)
E0= Control	6 d	19 bc	3.23 b
E1=10% *Artemisia* oil	8 bcd	42.80 a	8.23 a
E2=30% *Artemisia* oil	10 ab	44.50 a	8.96 a
E3=50% *Artemisia* oil	6.33 cd	31.83b	3.63 b

**Means with the same letters are not significantly different.*

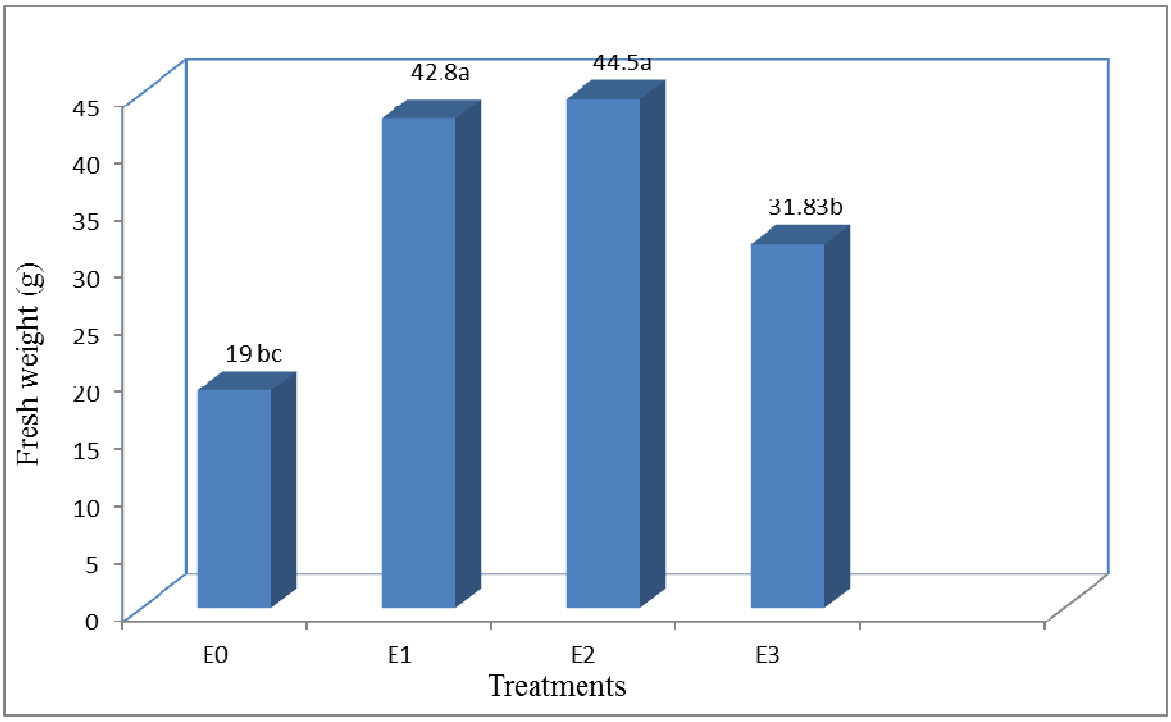

Fig. 1: Effect of Artemisia oil on fresh weight of cut Chrysanthemum cv. White flower.
E0: Control, E1:10% Artemisia oil, E2:30% Artemisia oil, E3:50% Artemisia oil.
**Means with the same letters are not significantly different.*

Positive effect of Artemisia oil on these traits due to inhibiting suberin formation, improvement water relations, hydraulic conductance, antirespiratory properties, Maintaining carbohydrates and antimicrobial effect that finally prevent vascular blockage and increased fresh and dry mass and vase life of cut *chrysanthemum* cv. White [6, 8, 9, 10, 16, 19]. Mousavi Bazaz & Tehranifar [5] found that *Mentha* and *Thymus* oil maintained fresh weight and improved vase life of cut *Alstroemeria* flowers. Anju et al. [7] reported that antimicrobial compounds improved vase life and fresh weight of cut chrysanthemum flowers. Hashemabadi et al. [8] demonstrated that antimicrobial compounds increased dry matter in cut carnation cv. Tempo flowers. Our results also about positive effect of

antimicrobial compound on vase life and postharvest quality agreement by Abdul Wasea [1], Mohammadi Ostad Kalayeh et al. [20] and Damunpola and Joyce [10].

CONCLUSION

In conclusion, *Artemisia* oil at 30% level improved vase life and increased postharvest index of cut chrysanthemum cv. White flowers.

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