

تأثير عمر ووزن الأم ومرحلة الحمل في بعض صفات ومكونات الدم في النعاج العواسية الحوامل .

حمزة مزعل الخزاعي

قسم الثروة الحيوانية - كلية الزراعة- جامعة الكوفة – جمهورية العراق

المستخلص :

أجريت الدراسة في حقل التجارب التابع لقسم الثروة الحيوانية في كلية الزراعة – جامعة الكوفة وباستخدام 30 نعجة عواسية بمراحل حمل مختلفة لغرض تحديد تأثير كل من العمر ووزن الجسم ومرحلة الحمل في معايير الدم وبعض مكوناته . أظهرت النتائج وجود تأثير معنوي ($p \leq 0.05$) لوزن الجسم في قيم , WBC , RBC , Hb , PCV , ESR حيث أعطت الأوزان العالية أعلى القيم وكانت $7.14 \times 10^6 .cm^{-3}$ ، $8.64 gm.100 cm^{-3}$ ، 23.10% ، $0.73 mm.hr^{-1}$ و $6.53 \times 10^3 .cm^{-3}$ على التوالي . بينما الأمهات القليلة الأوزان فقد أعطت أدنى القيم إذ بلغت $5.8 \times 10^6 .cm^{-3}$ ، $7.22 gm/100$ ، 19.88% ، $0.64 mm.hr^{-1}$ ، $5.51 \times 10^3 .cm^{-3}$ على التوالي . وجود زيادة معنوية (في محتوى الدم من البروتين الكلي في الأمهات قليلة الوزن إذ بلغ $74.3 gm.L^{-1}$ مقارنة بـ $70.2 gm.L^{-1}$ في الأغنام ذات الأوزان العالية .

وجود تأثير معنوي ($p \leq 0.05$) لعمر الأم في كل من WBC , RBC , Hb , PCV , ESR و WBC كان لصالح الأعمار الكبيرة (6 سنوات) إذ بلغت $6.11 \times 10^6 .cm^{-3}$ ، $8.14 gm.100 cm^{-3}$ ، 23% ، $0.73 mm.hr^{-1}$ و $6.79 \times 10^3 .cm^{-3}$ على التوالي. كما ازداد البروتين الكلي معنويًا ($p \leq 0.05$) في دم الأمهات الصغيرة (2 سنة) إذ بلغ $73 gm.L^{-1}$ مقارنة بـ $71.18 gm.L^{-1}$ بالنسبة للأمهات الكبيرة (6 سنوات) . وأظهرت النتائج عدم وجود تأثير معنوي لعمر ووزن الأم في كل من اليوريا والدهن .

وجود تأثير معنوي ($p \leq 0.05$) لمرحلة الحمل في كل من WBC , RBC , Hb , PCV , ESR ، والبروتين الكلي ، اليوريا والدهن إذ ازدادت في المرحلة الأخيرة من الحمل فبلغت $7.78 \times 10^6 .cm^{-3}$ ، $8.66 gm.100 cm^{-3}$ ، 24.19% ، $0.70 mm.hr^{-1}$ و $7.14 \times 10^3 .cm^{-3}$ ، $74.88 gm.L^{-1}$ ، $12.18 mmol.L^{-1}$ و $2.65 gm.L^{-1}$ على التوالي مقارنة بـ $5.14 \times 10^6 .cm^{-3}$ ، $6.19 gm.100 cm^{-3}$ ، 23.18% ، $0.62 mm.hr^{-1}$ و $6.61 \times 10^3 .cm^{-3}$ ، $69.18 gm.L^{-1}$ ، $11.21 mmol .L^{-1}$ و $1.38 gm.L^{-1}$ على التوالي.

كلمات مفتاحية : الاغنام العواسية ، مرحلة الحمل ، صفات الدم

Role of salicylic acid and Sucrose in the elongation vase life of *Dianthus caryophyllus* L.

Hyder Erees Abul-Raouf Al-Dulymy

Department of Horticulture and Landscape gardening

Faculty of Agriculture - University of Kufa

Republic of Iraq

Abstract:

An experiment was carried out in Horticulture and landscape gardening department in Faculty of Agriculture in Kufa university at season 2014, The flowers were collected at 15th of April \2014 to test the addition of salicylic acid(SA) in different concentrations (25,50,100and150 mg.L⁻¹) with sucrose at concentration7% or the using sucrose alone at a concentration of 7% compared with control treatment (distilled water).Results showed that the best treatment using 100mg.L⁻¹of SA with 7% sucrose which gave the highest fresh weight(g) and the highest quantity of absorbed water 26.00 g and 11.79 cm³ respectively, compared with control treatment (distilled water) 22.75 g and 5.53 cm³ respectively ,while the treatment of 150 mg of SA with 7% sucrose gave the highest percent of sugars content 7.97 g in contrast with control treatment(4.72 g).The highest respiration rate 110.50 mg.Co₂.kg⁻¹.hr⁻¹ when sucrose solution used alone in comparison with 50.10 mg.Co₂.kg⁻¹.hr⁻¹ when 150g of SA and 7% sucrose was used. This treatment increased the vase life of cut flowers to (8.95 days) compared with control (distilled water) (4.00 days)

Keywords: Cut Flowers, Salicylic Acid, Carnation, Sucrose.

water(12).Borochov. et al(7) mentioned that the addition of sucrose reduced lysis of protein of cut flowers , the higher fresh weight was used 4% in Chresanthemum spp.(9).The greatest factor of cut flower deterioration is the respiration rate which was highest in flowers that treated only with distilled water. Assmail (1) showed that sucrose is responsible for the increasing of respiration rate in (25 - 45%), only when 0.1 %of sucrose is used in solution of cut flowers.

This research was aimed to use Salicylic acid and sucrose in elongation vase life of *Dianthus caryophyllus* L. flowers and their rules in respiration, water absorption and fresh weight of Carnation flowers.

Materials and Methods:

The flowers of *Dianthus caryophyllus* L. were conducted on April,15, 2014 from lath house of Horticulture and landscape gardening department in Agriculture Faculty/ Kufa University .These flowers were placed in glass containers after the cutting of their floral stem and eliminating of the third down parts of floral stem (4). The glass containers

Introduction:

Carnation flowers are considered economically important cut flower in different species, the addition of some chemicals and preservatives material to vasles is one of the best methods in order to maintaining repairing of cutting or opening and perfect mature flowers (8) . Some of these flowers that fail to open are need to adding some materials that help opening such as carnation and Chresanthemum spp.as compared with treatment by distilled water only [8and9] .Many applied researches revealed that the addition of salicylic acid play an important role in reducing or preventing .The structure of obstruction solution of transported vessels of floral stems , in addition play as antiseptic agent(6 and 12).Yuping,(15) found that the salicylic acid inhibit the action of ethylene that stimulate the welting before maturity. The addition of sucrose is consider one of the essential treatment in order to elongate the age of flowers by maintaining the activity and functions of mitochondria and regulating the water balance such as the neutralized of transpiration and increase the absorbed

- 4- Estimation the total sugars content according to A.O.A.C. (5).

Vase life was determined as the number of days from the beginning until wilting of Carnation flowers.

Results and Discussion:

Table (1) showed significant differences among the treatment of carnation, the highest fresh weight 26.00 g for the treatment 100 mg.L⁻¹ of SA and 7% sucrose compared with control treatment 22.75g, The higher rate of absorbed water (11.79 cm⁻³) found at 100 mg.L⁻¹ of SA and 7% sucrose, similar result was obtained from the treatment 150 mg.L⁻¹ of SA and 7% sucrose while the least absorbed water rate was in control treatment (5.53cm⁻³).

Table(1) also revealed that the highest respiration rate was obtained from 7% sucrose only and has no significant differences with the treatment 25 mg.L⁻¹ of SA and 7% sucrose and control treatment in comparison with lowest rate(50.10) for the treatment 150 mg.L⁻¹ of SA

contained 250ml of Salicylic acid (SA) in different concentrations of 25,50,100 and 150 mg.L⁻¹ with 7% of sucrose , in addition the sucrose at 7% alone include 150ml sugar solution, and the distilling water was used as control treatment .This experiment was consist of six treatments and every treatment was repeated three times, each replicate contain five flowers ,and the experiment was designated as Complete Randomized Design (C.R.D).Means was compared according to less significant differences L.S.D. at probability level 5% (2).Results analysis by Genstat program. The experiment was carried out at room temperature (20± 5)°C and humidity (65-75%). The following criteria were as follow:

- 1- Estimation of respiration rate according to Nofl (4).
- 2- The count of absorbed water by using graduating cylinder and measuring the solution level in glass container and absorption rate of the flowers of each treatment (1).
- 3- The variation in fresh weight by sensitive balance (1).

Table (1) Role of Salicylic Acid and Sucrose in Characters of Cut Flower**Dianthus Caryophyllus L.**

Treatment Characters	Fresh weight (g)	Absorption water (cm ³)	Respiration rate(mg.Co ₂ .kg ⁻¹ .hr ⁻¹)	Sugar percentage (%)	Vase life(day)
Control	22.75	5.53	108.70	4.72	4.00
7% Sugar	24.07	6.96	110.50	6.09	5.67
25 SA + 7 % Sugar	24.92	7.36	101.40	6.69	7.03
50 SA + 7 % Sugar	25.80	8.35	80.00	7.38	7.06
100 SA + 7 % Sugar	26.00	11.79	64.70	7.92	8.29
150 SA + 7 % Sugar	25.18	11.09	50.10	7.97	8.95
L. S. D	0.331	1.810	10.63	0.80	0.53

preservative solutions. The results indicate that the treatment 150 mg.L⁻¹ of SA and 7% sucrose caused significant increase in the vase life of cut flowers (8.95 days) compared with control (distilled water) (4.00 days) (Table1). The advance in increase vase life with salicylic acid significantly extends the vase life. Cut flowers treatment with salicylic acid increases the enzyme antioxidant activity, delay the onset of hydrolysis of structural cell components, decrease ethylene production (15).

References:

- [1] اسماعيل، شذى ابراهيم. 2004. تأثير مادة 8-Hqs والسكروز في العمر الزهري لأزهار الداودي السنوي *Chrysanthemum coronarium* المقطوفة. مجلة العلوم الزراعية العراقية 35(4): 45-50.
- [2] الراوي، خاشع محمود وعبد العزيز خلف الله. 2000. تصميم و تحليل التجارب الزراعية. كلية الزراعة و الغابات -جامعة الموصل . وزارة التعليم العالي والبحث العلمي.العراق.
- [3] عبد اللطيف، سوسن عبد الله وصدي نصيف جاسم. 2009. تأثير المحاليل الحافظة اثناء الخزن الرطب في العمر المزهرى لأزهار الزينيا المقطوفة، مجلة العلوم الزراعية العراقية 40(4): 9-17.

and 7% sucrose .The highest carbohydrate total content in flowers, was 7.97% at 150 mg.L⁻¹ of SA and 7% sucrose which was different from the treatment of 100 mg.L⁻¹ of SA and 7% sucrose as compared with lowest sugar content (4.72%) for control treatment (Table1).

Above results may be related to the absorption of different preservative solution and the concentration 100 mg.L⁻¹ with SA 7% sucrose supplied the cut flowers with energy sources that used respiration (3) in addition, that accumulate in floral parts and the presence of SA action as antiseptic agent and prevent vessel obstruction (14) , this result agree with Zamani et.al (16) which showed that the SA may be inhibit ethylene production that increase the senescence of cut flower (13) that revealed the preservative solution that contained sucrose maintain of essential materials that used in respiration, Table (1) showed that water absorbed quantity increased in presence of SA + sucrose because the sucrose increased the osmotic concentration so maintain water absorption by turgid pressure (11 and 12) and reduced the contamination by microorganisms that present in

- [10] Halevy, A.H. and S. Mayak, 1974. Improvement of cut flower quality opening and longevity by pre-shipment treatments. *Acta. Hort.*, 43: 335-347.
- [11] Halevy, A.H. and Mayak, S. 1978. Senescence and post-harvest physiology of cut flowers, part 1. *Hortic. Rev.*, 1: 204-236.
- [12] Marousky, F.J. 1972. Water relations effects of floral preservatives on bud opening and keeping quality of flowers. *Hort. Sci.* 7: 114-116.
- [13] Mayak, S., Y. Vaadia and Dilley, D.R., 1977. Regulation of senescence in Carnation *Dianthus caryophyllus* L. by ethylene. *Plant Physiology*, 59:591-593. Iran
- [14] Mei-hua, F., W. Jian-Xin, L. SHI, and Fan, L. 2008. Salicylic Acid and 6-BA Effect in Shelf-life Improvement of *Gerbera jamesonii* Cut flowers. *Anhui Agricultural Science Bulletin*. China.
- [15] Yuping, Z., 2009. Effects of Salicylic Acid on Fresh Keeping of Cut *Gerbera jamesonii* flower. *Anhui Agricultural 291 Science Bulletin*. China.
- [4] نوفل، امام محمد صابر والجمادي، مصطفى عاطف. 2007. تداول ازهار القطف ونباتات الزينة، الطبعة الأولى، منشأة المعارف-الأسكندرية-مصر.
- [5] A.O.A.C. Association of officinal Analytical Chemists. 1970. Lane and Eynon General Volumetric. 178, Washington DC. USA. pp: 910.
- [6] Anju, P.K., Santosh. S, Ranjan, A., Pal, S., Kumar, and Srivastava, R. 2004. Effect of floral preservatives on vase-life of gladiolus cv. Pink Friendship. *Progressive Agric.*, 2(1): 65-67.
- [7] Borochoy, A.T., T, Tirosh, and Mayak, S. 1986. The fate of membrane protein during flower senescence. *Acta Hort.*, 181: 75-79.
- [8] El-Saka, Magda M., T, AbouDahab, and Hosni, Y.A. 2000. Evaluation of post-harvest handling for transit temperatures and periods of different cultivars of cut rose flowers (*Rose hybrid* L.). *Annals Agric. Sci. Moshtohor*, 38(4): 2341-2355.
- [9] Farnham, D.S. and T. Ueda. 1987. Phisan 20 and 8-Hqs an effective biocide for conditioning and bud opening of Carnation and *Chrysanthemum*, *Flor. Rev.* 162: 24-26, 58-60.

[16] Zamani, S.M, Kazemi, M., Aran. 2011. Postharvest Life of Cut Rose Flowers as Affected by Salicylic Acid and Glutamin. World Applied Sciences Journal, 12(9): 1621-1624. Iran.