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RESEARCH ARTICLE

Effect of Bulb Weight and Spraying with Gibberellic Acid on the Growth Characteristics and Percentage of Volatile Oil and Diagnosis of Oil Compounds with a GC-MS Device of the Wild Daffodil Plant, *Narcissus tazzeta* L.

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ABSTRACT

In the Study was conducted during the winter agricultural season , the fabric canopy of the Agricultural Research Station / College of Agriculture / University of Basra, to determine the effect of bulb weight and spraying with gibberellic acid on the characteristics of vegetative and flowering growth and the volatile oil yield of daffodil bulbs. Narcissus tazzeta L. Four levels of bulb weights were used, which are 30, 40, 50, and 60 grams, and three levels of gibberellin acid, which are three concentrations, which are 0, 50, 100, and the interaction between them, and the specifications of the resulting bulbs and the chlorophyll content of the leaves. A randomized complete block design (RCBD) was used. Randomized complete block design with a two-factor factorial experiment with three replications; The averages were compared using the least significant difference (LSD) at the 5% probability level, and the results can be summarized as follows: The results showed that the 60-gram bulb weight treatment was significantly superior to the rest of the treatments in most growth characteristics, including plant height, bulb weight after harvest, number of bulbs, the highest chlorophyll content in leaves, and the highest average number of roots. As for as for the floral characteristics, they differed Weights of bulbs among each other in flowering characteristics. As the weights exceeded w60 and w50 grams were significantly higher than the rest of the plants, without a significant difference between them. As for Highest bb rate the longest flower stem resulted from the treatment with 60 gm It reached 37.66 cm and also gave the highest rate The number of florets and the highest percentage of oil in the flowers. As for the highest effect of gibberellic acid, no significant effect was recorded for plant height and flower stem length, but the two treatments G50 and G60 mg l-1 were recorded. Is the best weight of the bulb after harvest, the diameter of the floret, and the number of florets in the inflorescence. The comparison treatment also outperformed the other treatments of gibberellic acid in the number of roots.

INTRODUCTION

Narcissus tazzta L. or styrax, styrax, or faghu, or sphagnum, a genus of plants belonging to the narcissus family, Amaryllidaceae, that includes between 50 and 100 species. The plant grows from an early winter onion perennial. The original homeland of most types of daffodils is Central Asia and the Mediterranean basin, from where they moved to the Americas. The leaves are green, striped, and the bulb consists of fleshy scales and leafy bases. It appears in the winter and after rain. It is the most popular flower in the world, especially in Spain. Daffodils prefer dry soil and an environment with light sun and shade. Daffodils must be

planted in the fall, at a depth of 15 cm in the soil. When the plant blooms, it is preferable to keep it away from the sun and create a cool atmosphere for it. jonquil to describe all or some of the members of the genus. Narcissus has prominent flowers with six cup-like petals topped with a cup or trumpet in the form of a wreath. The flowers are generally small white, gathered in inflorescences (Hartmann et al., 1991). Species and their classifications differed due to similarity between species and hybridization. Narcissus became a staple in the 19th century, and is commercially important, primarily in the Netherlands. Today, daffodils are famous for their ornamental flowers and are grown in private and public gardens. As a result of the long breeding history of thousands of different varieties, there are many different alkaloids in the plant that have been used for medical uses in ancient treatment, and galantamine has been produced to treat Alzheimer's dementia. It has also been used in celebrations for a long time, in art and literature, and has appeared in different cultures. The daffodil is the national flower of Wales and a symbol of charity in the countries. Its flowers are used in spring for festivals. (Al-Chalabi and Nisreen Khalil, 2013; Al Taher, (2016) on the daffodil plant.

The weight and size of the bulb are of great importance in increasing the number of florets in the inflorescence, the length of the flower stand, and the formation of new bulbs. But regarding Han et al., (1991) they noticed when Their experiment with six weights of broccoli plant corms Brodinea loxa The number of flowers was related to the weight of the vine. While Hanafy et al. (1990) The cultivation of bulbs of Tabrus L. Polianthes tuberose with a diameter of 12 cm led to an increase The number of florets, the length of the flower stand, and the number of bulbs formed.

And he made it clear Kruyer (1981) The beginning of flower formation for Harvest Golden narcissus bulbs. It is greatly affected by the weight of the bulb. He also pointed out that the appearance of flowers for daffodils weighing 1 gram was slightly reduced, while all plants resulting from planting bulbs weighing 12 and 52 grams bloomed. While the weight exceeded 52 grams due to the increase in the number of flowers formed.

The use of plant growth regulators began in England in 1880 (Wilkins et al., 2008). Among their many and varied uses in the agricultural field is increasing the thickness of stems and increasing the number of flowers as a result of increasing the number of branches (Badr et al., 2003).

When studying the effect of foliar spraying with gibberellic acid on chrysanthemum plants Chrysanthemum coranarium CV Paintball it was observed that there was a significant increase in the height of the plant, the number of leaves, and its wet and dry weight, reaching respectively 59.85 cm, 64.67 leaves, 333.59 g m and 39.94 g m when using the concentration of 300 mg. liter compared to the comparison treatment (ALHajhoj, 2017).

While the concentration was recorded at 150 mg L -1 From GA3, the plant height and the largest number of leaves reached 71.27, respectively cm, 59.6 leaves compared to the comparison that recorded the lowest results for the native lily plan Polianthus tuberosa. (Rani and Singh, 2013).

In a study on Gladiolus grandiflorus, foliar spraying with gibberellic acid resulted in a significant improvement in plant height. The second season outperformed the first season by using GA3 alone at a concentration of 200 mg liter and reached 82.22 cm (Deen and Deen, 2017).

The results obtained by Mishra et al., (2018) on the Chinese aster plant, Callistephus chinensis , when sprayed with gibberellic acid, showed that the concentration exceeded 100 mg. L-1 of GA3 was significantly affected by other concentrations, including the comparison in plant height and number of leaves, as they reached 69.0 cm and 302.41 leaves, respectively.

Al-Sultan et,al(1994) observed when spraying clove plants with gibberellic acid at concentrations of 100 , 200 or 300 mg. L -1 led to a significant increase in the average diameter of flowers, their number, and the length of the flower stand, and the effect increased as the acid concentration increased. While Al-Sultan et al (1994) found when spraying Pelargonium hortorum cv . Radio Red with gibberellic acid at concentrations

of 0, 50, 100 or 200 mg. L-1: A significant increase in the length of the inflorescence stands and in the number of inflorescences.

Volatile oils are known as oily substances with a distinctive aromatic odor that volatilize at normal temperatures and do not decompose when heated at high temperatures, such as peppermint oil, clove oil, and rose oil. Lilies are unlike fixed oils that do not volatilize at normal temperatures, but decompose if they are exposed to high temperatures, such as olive oil. (The water (2001). They are organic, terpenic compounds within the cytoplasm of living cells of various plant tissues. Most of them exist in a free, liquid form, while a few of them are non-free and solid due to their association with glycosidic or resinous compounds. However, they are released in a free, liquid form due to special enzymatic activity (Abu Zaid, 1992). Al-Jabri (2005) concluded that spraying the fragrant plant (geranium) with gibberellin at concentrations of 50 or 100 mg. L-1 led to a significant increase in the percentage of volatile essential oil when sprayed at a concentration of 50 mg.

Aim of the study

1. Determine the best weight for the bulb from among the weights used and the extent of its effect on the growth characteristics of the plant.

2. Knowing the extent to which the daffodil plant responds to spraying with gibberellic acid and which concentrations give the best response to it and improving the studied characteristics, the most important of which is flowering characteristics.

3. Studying the best possible interaction that could give significant results to enhance the cultivation of daffodils in Basra Governorate and on a commercial plot.

MATERIALS AND METHODS

This study was conducted in the fabric canopy of the Agricultural Research Station, College of Agriculture / University of Basra, to determine the effect of onion weight and gibberellic acid and the interaction between them. In the daffodil bulb plant Narcissus tazzeta L. I planted daffodil bulbs weighing (30, 40, 50, 60) grams in pots with a diameter of 25 cm. The stems were washed and sterilized with a 4 % formalin solution. The pots were filled with sterile growing medium of Zamig (river sand) and peat moss at a ratio of 2:1. Irrigation continued, and after two to three weeks, the pots were covered with polyethylene for two weeks until the terminal buds appeared.

Table (1): Characteristics of the initial soil for the experiment

Adjective	the value
Degree of electrical conductivity	11.24
Degree of soil reaction PH	7.37
Soil separators	
% the sand % Alluvial % clay	93.00 4.00 3.00
Histology	sand Mixed

All soil analyzes were conducted in the central laboratory at the College of Agriculture, University of Basra, as stated in Black (1965) .

After the plants reached a height of 10 cm , experimental treatments were conducted on the plants Spray on leaves until completely wet. Three concentrations of gibberellic acid (50, 25, 0) mg L-1 were used. And weights for bulbs (30, 40, 50, 60) grams and the interaction between them with the addition of Tween 20 at a concentration of 1 % as a spreading agent to the spray solution. Neutral NPK fertilizer was added monthly throughout the duration of the experiment at the rate of 1 grams for each pot, and all service operations were performed on it, including irrigation, weeding, and fertilization until the end of the experiment.

A factorial experiment with a randomized complete block design (RCBD) was used Randomized complete block design with two factors with three replicates, analysis of variance was performed, and the means were compared using the least significant difference (LSD) at the 5% probability level (Al-Rawi and Khalafallah, 1989). All experimental measurements of the two study factors and their interactions were taken. First, growth characteristics (plant height cm, number of roots/plant -1, number of resulting bulbs/bulb /plant -1, weight of bulbs after planting/plant -1, chlorophyll content of leaves %). Secondly, floral characteristics (floral stem length cm, floral stem diameter/plant -1, number of florets/plant -1, average diameter of the floret by the foot, and percentage of oil) according to what Al-Aqidi and Bou Saeed (2000) mentioned.

The components Chemical For oil

According to the method of MacHinney (1941) and Arnon (1949), it was analyzed Oil components by device Chromatography Gas Spectrophotometer Gas Shimadzu GC MS – QP2010 Ultra Connected With a spectrometer Bloc chromatography type. civilized region Example Aster For fat samples, Injection of 0.1 Hexane. Relax Using 1 ml of hexane, take 1 Microlitre from Solution Formed, and injected into a device GC MS chromatography Gas

Methods for extracting oil: I attended the flowers from field And it was done Clean it And wash it With water Al-Muqatar R Then the volatile essential oil was extracted Using the method of extraction using organic solvents, which is characterized by the ease of dissolving volatile oils in it (Hussein, 1979), the organic solvent petroleum ether was used. The process was carried out by taking (10 g) of the prepared flower petals, placing them in a thimble, and adding (80 ml) of the organic solvent to it in a Soxhlet device connected to a circular beaker. Volume (250 ml) and extraction was carried out at a temperature of 45-35 ° C for a period of approximately 5-6 hours (Abu Zaid, 1992). The essential oil was separated into sterile glass bottles with a tight lid. The oil was then separated in a rotary evaporation device under vacuum at a temperature of 45 ° C . Then the oil was placed in sterile glass bottles with a tight lid and stored at a temperature of 4 ° C until use. The percentage was estimated. Percentage of essential oil according to Al-Aqidi and Bou Said method according to the following equation:

$$\text{Percentage of oil} = \frac{\text{Oil weight (g)}}{\text{Flower sample weight (g)}} \times 100$$

Another method was used to extract oil from flower petals using aqueous extraction With a distillation device.

Symbols used in the study: bulb weight G: gibberellic acid.

RESULTS AND DISCUSSION

It is noted from Table (A) that the w60 bulb weight showed a significant difference from the rest of the treatments and the comparison treatment, as the w60 treatment recorded the highest plant

height, reaching (54.73) cm compared to the plants in the control treatment, in which the plant height was (41.37) cm.

Table (B2) indicates the effect of gibberellic acid on plant height. It turned out that the differences between the concentrations were not significant. The difference between the concentrations did not significantly affect this trait, but the interaction between the two factors, bulb weight and gibberellic acid, is evident from Table (C2). The G100 W40 treatment gave the highest significant plant height of (48.40) cm compared to With some treatments, the G50w50 treatment gave the least significant difference of (39.50) cm.

This increases the weight of the resulting onion after harvest, there is a significant effect as the weight of the onion and the bulbs (buds) increases. As shown in Table (A2), the treatment is at a level w60 the largest weight of the bulbs was given after harvest, with a significant difference of (169.6) grams, while the lowest weight of the bulbs resulted from treatment W30. As for the effect of gibberellic acid, it had a significant effect on this characteristic. The two treatments, G50 and G100, between which there was no significant difference, were better than the comparison treatment, as they reached (16.6.2), (63.6 1) gm, respectively. The least significant difference resulted from the comparison treatment, which amounted to 106.8 gm.

The interaction was also significant, as treatment G100w60 gave the largest bulb weight of (231.5) grams (Table C-1) .

The difference in the weight levels of the bulbs had a significant effect on the number of bulbs formed, and the largest number obtained from the w60 treatment was (6.31) bulbs. Plant- 1. The smallest number obtained from the comparison treatment was (2.73) bulbs. Plant -1 Table (A-1).

(A-1) indicates that the weight of the bulb had a significant effect on the chlorophyll content of the leaves, as the w60 treatment gave the highest value of the chlorophyll content of the leaves. (31.73) mg 100 gm -1 Fresh weight Compared with the rest of the treatments, the comparison treatment gave the lowest significant value, while gibberellic acid did not give a significant value in this characteristic. The intervention treatment gave a concentration G100w60, the highest value reached (34.606) mg 100 g -1. As for the average number of roots, it was significantly affected by the weight of the bulb. It appears from Table (A-1) that increasing the weight of the bulb A positive effect on the average number of roots, as the treatment plants (w60) gave the largest number of average number of roots, amounting to (50.58) root - 1 plant. As for the effect of gibberellic acid, it was negative, as the comparison treatment and the G50 treatment outperformed the G100 treatment plants. As for the interaction, it showed a significant effect, as the G100w30 concentration outperformed the rest of the treatments with a significant difference.

(A-3) showed that the weights of the bulbs differed among themselves in influencing the flower growth characteristics. Treatment w50 and w60 gave the largest diameter of the floral stem, without a significant difference between them, but it did not outperform the remaining treatments as they reached (7.87, 8.04) mm, respectively. Gibberellic acid also had a significant effect on this trait, as the plants treated with a concentration of 100 mg L-1 excelled in giving the largest diameter of the floral stem, which reached (7.37) mm, while the smallest diameter of the floral stem resulted from the comparison treatment, which reached (5.57) mm. As for the interaction, it was significantly, the treatment with G50w50 concentration was significantly superior to some treatments in this characteristic, amounting to (9.83) mm. Table (A-2) shows that there are significant differences in the length of the floral stem. The length of the floral stem produced from large bulbs (w60) was (37.66) cm. While the effect of gibberellic acid was not significant (Table B-3), the interaction between bulb weight and gibberellic acid was significant, as the G100w60 treatment plants recorded the longest flowering stem, reaching 40.20 cm (Table C-3).

The results of Table (A-3) indicate that the differences between the weights of the bulbs were significant in affecting the floret diameter. It was found that the difference in bulb weight had a significant effect on the diameter of the floret. Concentration W60 gave the largest average diameter of florets, reaching (12.10) mm compared to the lowest average floret diameter resulting from the weight at the W30 level, which reached (11.07) mm. Gibberellic acid also showed significant superiority in this characteristic. If he gave Concentrations of 50 and 100 mg.L -1 The largest average diameter of the floret reached (12.11 and 12.01) Zahira and Noura -1 Table (B-3), which did not differ significantly between them, but showed superiority over the comparison treatment. The interaction was also significant in floret diameter. Treatment G0w50 outperformed the rest of the treatments with a significant difference of (15.17) mm. Table (A-3) showed the number of florets. Inflorescences increased significantly with increasing bulb weight, and the highest average number of florets recorded by the w60 treatment reached (8.84) florets/inflorescence. It also contains gibberellic acid at a concentration of 0 G5 mg liter -1 significant increase.

Bulb weight * Gibberellic acidC						
W30 W40 W50 W60	G0	40.53	82.1	1.20	25.921	20.37
		40.47	172	4.83	31.174	37.00
		45.30	91.3	4.63	31.178	59.33
W30 W40 W50 W60	G50	48.40	81.9	4.27	29.030	36.47
		40.60	80.2	2.80	26.035	23.21
		46.87	196.5	3.00	27.503	27.83
W30 W40 W50 W60	G100	43.83	192.8	7.70	32.769	47.63
		40.93	195.4	7.20	32.116	61.90
		42.97	123.4	3.30	29.123	36.80
		41.50	93.6	3.03	27.824	28.47
		39.50	205.1	2.52	27.817	22.63
		47.78	231.5	7.47	34.066	53.37
LSD 0.05		**3.701**	**20.98**	**1.340**	**0.9874**	**4.498**

in the number of florets as it reached (7.90) florets/inflorescence -1. The interaction between bulb weight and gibberellic acid was significant, as the number of florets per inflorescence of the plants treated (G50W50) reached (11.87). Zahira Noura -1. As the results of Table (A-3) showed, the percentage of oil increases directly with the increase in the weight of the bulbs and in a significant way, as the w60 treatment plants outperformed the rest of the treatments, reaching(0.7234) % but regarding For gibberellic acid, the effect was also significant, as it gave a high concentration of gibberellic acid in this capacity, reaching (0.6873) mg L-1. The interaction between the weight of the planted bulb and gibberellic acid was significant also. The treatment excelled with concentration G100 w60 over the rest of the coefficients, reaching (0.8843 % ((Table C-3).

Table 2: Effect of bulb weight and gibberellic acid on growth traits of daffodils

Onion weight Gloom	Plant height poison	The weight of the onion and the bulbs after planting is in grams	Number of bulbs -per plant -1	Chlorophyll percentage 100 amalgam gm -1	Number of roots -Plant-1
W30	41.37	95.2	2.73	27.02	26.81
W40	42.94	154.0	3.62	28.83	31.10
W50	42.88	163	4.96	30.58	43.20
W60	45.73	169.6	6.31	31.73	50.58
LSD 0.05	**1.850**	**10.49**	**0.774**	**0.5701**	**2.597**
Onion weight in gramsA					
Gibberellic acid mg LB-1					
G0	43.68	106.8	3.73	29.32	38.29
G50	43.06	166.2	5.18	29.60	40.16
G100	42.96	163.6	4.04	29.70	35.32
LSD 0.05	**1.85**	**12.11**	**0.670**	**0.493**	**2.249**

Table (3) Effect of bulb weight and gibberellic acid on flower growth characteristics and percentage of volatile oil of narcissus plants

Bulb weight in grams A					
Onion weight in grams	**Flower stem diameter mm**	**Flower stem length cm**	**Zahira diameter mm**	**Number of florets per inflorescence**	**Volatile oil %**
W30	4.06	31.72	11.07	4.07	0.5589
W40	6.33	33.34	11.39	5.56	0.6407
W50	8.04	36.66	12.05	7.46	0.6938
W60	7.87	37.66	12.10	8.84	0.7234
LSD 0.05	0.610	1.467	0.970	0.963	0.0395

Gibberellic acidB					
Gibberellic acid	**Average flower stem diameter mm**	**Average flower stem length is cm**	**Average floret diameter mm**	**Average number of florets With one light**	**% Volatile oil**
G0	5.57	34.66	10.83	5.50	0.6229
G50	7.37	35.03	12.11	7.90	0.6523
G100	6.78	34.85	12.01	6.04	0.6873
LSD 0.05	0.529	1.467	0.840	0.834	0.03425

.W30	G0	Average flower stem diameter mm	Average flower stem length is cm	Average floret diameter mm	Average number of florets per inflorescence	Volatile oil %
W40		3.80	28.80	7.53	3.07	0.4910
W50		6.40	32.27	13.55	6.00	0.6313
W60		6.27	38.37	13.15	6.37	0.7510
		5.80	39.20	9.10	6.57	0.6183
W30	G50	3.80	33.57	12.87	3.77	0.5650
W40		6.70	35.63	7.90	6.23	0.5787
W50		9.17	37.33	15.17	11.87	0.7980
W60		9.8.3	33.57	12.50	9.73	0.6677
W30	G100	4.57	32.80	12.80	5.37	0.6207
W40		5.90	32.13	12.72	4.43	0.7120
W50		8.70	34.27	7.83	4.13	0.5323
W60		7.96	40.20	14.69	10.23	0.8843
LSD0.05		1.057	2.541	1.680	1.668	0.06850

DISCUSSION

(A-3) showed that the plants have a weight level w60 outperformed other weights in terms of plant height. This may be due to the fact that the greater the weight of the onion, the greater the nutritional reserve within it, and thus leads to increased growth. It is represented by the height of the plant, the weight of the bulb with bulbs, the number of bulbs resulting after harvest, the chlorophyll content of the leaves, and the number of roots. This result is consistent with what was found here. Singh (1996) Since it was found that the large weight of bulbs increases the number of leaves, which leads to an increase in vegetative growth and, as a result, an increase in the products of the photosynthesis process, such as carbohydrates that originally result from converting light space into chemical energy, the concentration of 50 mg/L of gibberellic acid led to superior growth characteristics, and this result is consistent with this. With Al-Dujaili and Rasheed (2010) on the shlek plant, when treated with gibberellic acid at a concentration of 50 mg L -1, it led to the elongation of the stalks and also led to An increase in the average plant height reached 12.87 cm, as well as a significant increase in the number of new plants. Madad -1 reached 2.61 plants. Madad -1 This result is consistent with (1980) Watithak et al This response may be due to the role of gibberellic acid in increasing the size and expansion of plant cells through its effect in increasing the flexibility and plasticity of the cell walls

and increasing their expansion Adaws et al (2011). The reason may be due to the action of oxy induced by spraying gibberellin. Because it has a role in cell growth and stimulating and modifying the processes of gene duplication and then translation processes, which then stimulates the construction of DNA, RNA, and protein. On the other hand, the auxins induced by gibberellin play a role of great importance in stimulating the plasticity of cell walls, by breaking the bonds of the cell walls and are arranged in New sites under the influence of swelling pressure therefore contribute to increasing cell size and expansion as well as the formation of enzymes Its components, such as the cellulase enzyme, which in turn weakens the fiber systems and the construction and decomposition of components of the cell walls, which comes through stimulating the pumping of hydrogen ions (proteins) and reducing the cell pH, which causes an increase in the acidity of the cell walls, thus changing the water relations of the plant, especially the turbidity and osmotic pressure of the cell, which causes water flow. Water enters the cell and increases its expansion Taiz and Zeiger, (2006). (Sayed Muhammad, 1982) (Abu Zaid, 2000) stated that gibberellin works to elongate the stem and the height of plants by two different physiological processes, the first represented in cell division and the second in the cellular elongation of plant tissue cells. Internally, that is, the mother cell divides and in turn, divides into many new cells that grow in size and then they also divide, ultimately leading to an elongation of growth and then an increase in the shoot. As for the effect of bulb weight on flower growth characteristics and oil percentage, see the table (3) Bulbs weighing 50 g and 60 g are superior in flower growth characteristics (number of florets, flower stem length, floret diameter, and percentage of oil in flowers). The reason for the superior weight of bulbs may be due to the increased content of large bulbs of gibberellin-like substances, which led to the rapid development of the flower bud, and in addition to the fact that the size of the apical meristem of bulbs of these weights increased with the area forming the flower principles at the growing apex. Which led to an increase in the number of florets formed per plant, and this is consistent with what was found by Hav et al (1991). It is also consistent with Reda et al (2010), as it was found that spraying gibberellic acid on chamomile plants led to a significant increase in the percentage of the plant's volatile oil. Spraying plants with gibberellic acid led to a significant increase in the amount of essential oil. The same behavior was observed in the volatile oil yield. Spraying the plants of the first season with gibberellic acid led to a significant increase in this percentage, and the effect increased as the concentration of the acid increased, while the plants of the second season that were sprayed with a concentration of 300 mg excelled. L-1 was significantly higher in this percentage compared to the plants that were sprayed at the lower concentration and those that were not sprayed, and they did not differ significantly between them. This may be attributed to the role of gibberellin in the production of genes in the cell's chromosomes, which leads to the activation of DNA and the formation of mRNA, and thus some enzymes are formed that convert primary products into secondary products, including volatile oil (Muhammad, 1985 and Abu Zaid, 1992). These results are consistent with what was found. Aljabri (2005) on the fragrant plant.

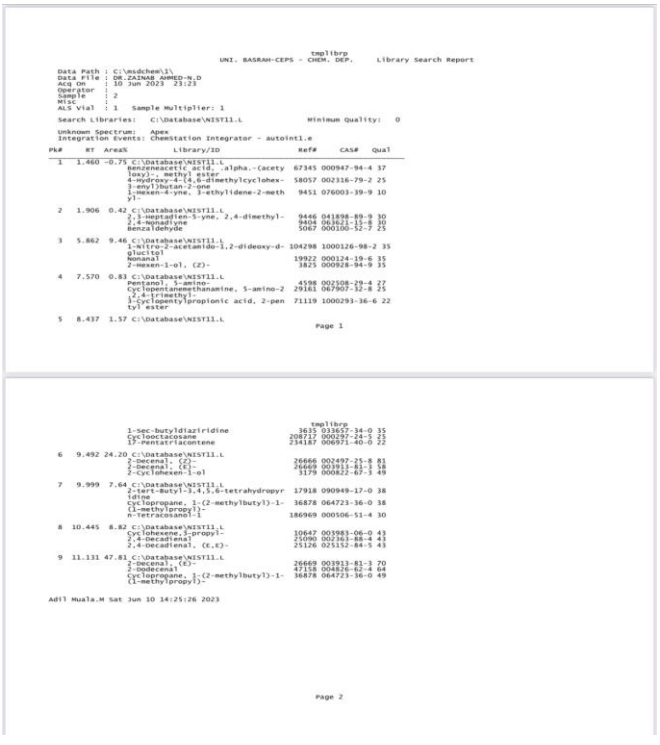
The increase in flower growth characteristics is also attributed to the role of both the food reserve, bulb weight, and gibberellic acid, especially the increase in the number of roots and increased root growth, which was reflected in an increase in growth characteristics through an increase in the number of cells (6). Taiz, I. and Zeiger (2002).

Chromatographic analysis to identify essential chemical compounds in daffodil essential oil using GC-MS technology

It shows the results of chromatographic analysis to estimate the quantity and quality of the basic chemical compounds of the essential oil, as they were identified, as well as their chemical formula, relative surface area, and retention time, which were diagnosed using gas chromatography technology linked to mass spectrometry of the volatile oil compounds of daffodil flower petals. These results are consistent with Fahel et al. 2018) On the papers of Elias.

We note from the analysis the significant effect of the study factors on increasing the percentage of active compounds. When analyzed with a GC-MS device, the selected sample of the treatments showed the appearance of nine compounds resulting from the alcoholic extraction method, the highest of which was 2- Dodecenol. It gave the highest relative area with a ratio of 47.81, knowing that it is an organic compound with a chemical formula C 12 H 22 O. This colorless liquid is part of many perfumes. It occurs naturally in lemon oil, but commercial samples of dodecanol are usually produced by dehydrogenation (Adams, et al., 2008).

As for the aqueous solvent sample, we did not find the appearance of this compound, and only two types of compounds, benzal dehyde, appeared. and Cyclo trisiloxane . The most important of them is benzaldehyde, which is an organic compound with the chemical formula C7H7O. The second compound consists of a benzene ring and a substituted formyl group. It is the simplest and most useful aromatic aldehyde in industrial fields. It is a colorless aromatic liquid with a distinctive odor similar to the smell of almonds, or it is one of the components of bitter almond oil. It evaporates quickly (it turns from a liquid to a gas) when exposed to the air. It is extracted from a number of other natural sources such as Essential oils, including those found in lilies such as iris and citronella, as well as found in fruits such as cherries, apricots and apples, are used to flavor baked goods, cakes, soft drinks and ice cream (Fenaroli, 2005). It is used in the manufacture of perfumes, deodorants, men's shaving gels, moisturizing creams, cosmetics and pharmaceuticals (Leffingwell, 1998).



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Misc :
ALS Vial : 1 Sample Multiplier: 1

Search Libraries: C:\Database\NIST11.L Minimum Quality: 0

Unknown Spectrum: Apex
Integration Events: ChemStation Integrator - autoint1.e

Pk#	RT	Area%	Library/ID	Ref#	CAS#	Qual
1	1.460	0.75	C:\Database\NIST11.L Benzeneacetic acid, .alpha.-(acety loxy)-, methyl ester 4-Hydroxy-3,4,6-dimethylcyclohex- 2-enylbutan-2-one 1-Hexen-4-yne, 3-ethylidene-2-meth yl-	67345 58057 9451	000947-94-4 002316-79-2 076003-39-9	37 25 10
2	1.906	0.42	C:\Database\NIST11.L 2,3-Heptadien-5-yne, 2,4-dimethyl- 2,4-Nonadiyne Benzaldehyde	9446 9404 5067	041898-89-9 063623-12-8 000100-52-7	30 30 25
3	5.862	9.46	C:\Database\NIST11.L 1-Nitro-2-acetamido-1,2-dideoxy-d- glucitol Nonanal 2-Hexen-1-ol, (Z)-	104298 19922 3825	1000126-98-2 000124-19-6 000928-94-9	35 35 35
4	7.570	0.83	C:\Database\NIST11.L Pentanol, 5-amino- Cyclopentanemethanamine, 5-amino-2 ,2,4-trimethyl- 1-Cyclopentylpropionic acid, 2-pen tyl ester	4598 29161 71119	002508-29-4 067907-32-8 1000293-36-6	27 25 22
5	8.437	1.57	C:\Database\NIST11.L			

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			1-sec-butyldiaziridine	3635	033657-34-0	35
			Cyclooctacosane	208717	000297-24-5	25
			17-Pentatriacontene	234187	006971-40-0	22
6	9.492	24.20	C:\Database\NIST11.L 2-Decenal, (Z)- 2-Dodecenal 2-Cyclohexen-1-ol	26666 26669 3179	002497-25-8 003913-81-3 000822-67-3	81 64 49
7	9.999	7.64	C:\Database\NIST11.L 2-tert-Butyl-3,4,5,6-tetrahydropyr idine Cyclopropane, 1-(2-methylbutyl)-1- (1-methylpropyl)- n-Tetracosane	17918 36878 186969	090949-17-0 064723-36-0 000506-51-4	38 38 30
8	10.445	8.82	C:\Database\NIST11.L Cyclohexene, 3-propyl- 2,4-Decadienal 2,4-Decadienal, (E,E)-	10647 25090 25126	003983-06-0 002361-88-4 025152-84-5	43 43 43
9	11.131	47.81	C:\Database\NIST11.L 2-Decenal, (E)- 2-Dodecenal Cyclopropane, 1-(2-methylbutyl)-1- (1-methylpropyl)-	26669 47158 36878	003913-81-3 004826-62-4 064723-36-0	70 64 49

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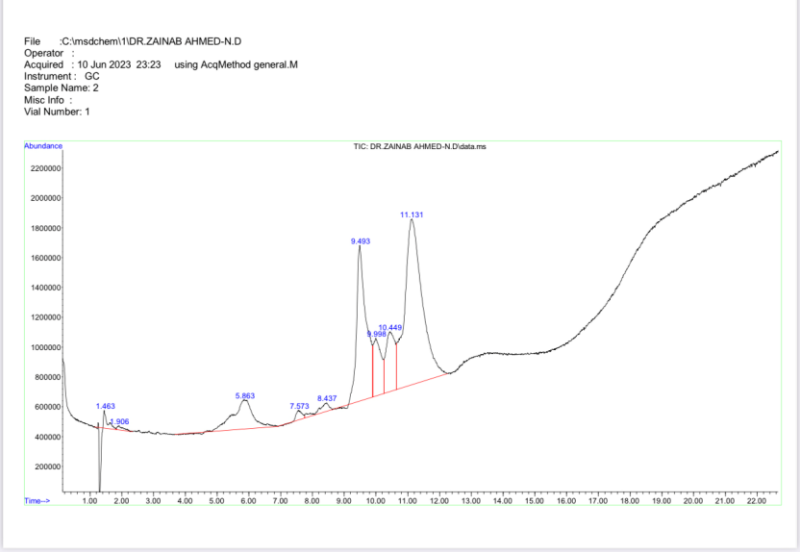
Page 2

No. 1shows the nine basic compounds resulting from the analysis Chromatography usingGC-MS technology
Narcissus flower oil obtained from alcoholic extraction



Panel (2) retention area of the basic compounds resulting from and shows the percentage (GC-MS chromatographic analysis.
Narcissus flower oil obtained from alcoholic extraction

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UNI. BASRAH-CEPS - CHEM. DEP. Library Search Report

Data Path : C:\msdchem\1\
Data File : DR.ZAINAB AHMED-N-1-WATER.D
Acq On : 19 Jun 2023 23:30
Operator :
Sample : water
Misc :
ALS Vial : 1 Sample Multiplier: 1

Search Libraries: C:\Database\NIST11.L Minimum Quality: 0

Unknown Spectrum: Apex
Integration Events: ChemStation Integrator - autoint1.e

Pk#	RT	Area%	Library/ID	Ref#	CAS#	Qual
1	1.459	-546.53	C:\Database\NIST11.L			
			Benzaldehyde	5067	000100-52-7	25
			1H-2-Pyrrolecarbonitrile, 3-amino-1-(cyanomethyl)	22074	1000197-63-3	25
			Benzaldehyde	5066	000100-52-7	25
2	20.561	646.53	C:\Database\NIST11.L			
			Tetrasiloxane, decamethyl-	152278	000141-62-8	43
			Tetrasiloxane, decamethyl-	152279	000141-62-8	38
			Cyclotrisiloxane, hexamethyl-	79617	000541-05-9	38

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Figure (3) GC-MS .chromatographic analysis of narcissus flower oil produced from an aqueous solvent

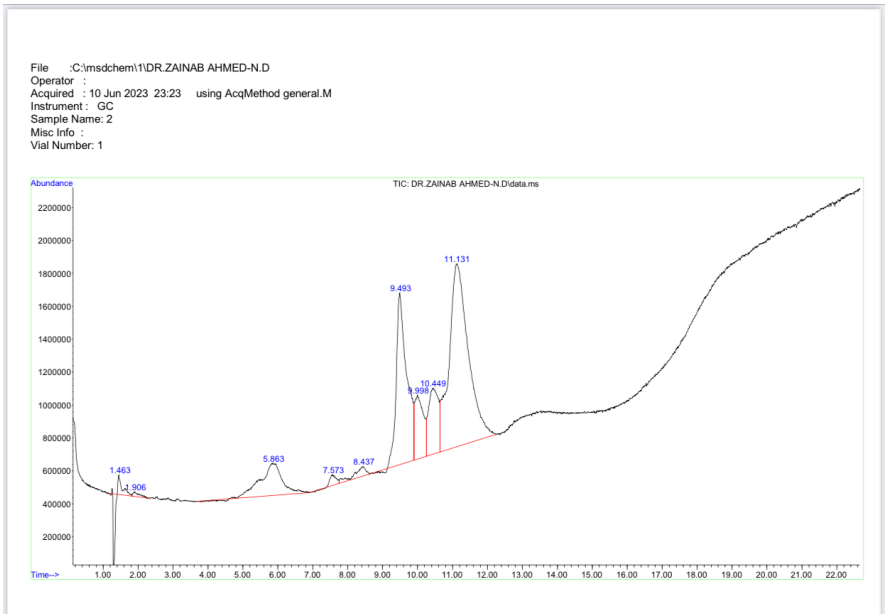

Figure (4) shows the percentage of compounds and the retention area using**GC-MS chromatographic analysis** of narcissus flower oil produced from the aqueous solvent

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