KIRKUK UNIVERSITY JOURNAL FOR AGRICULTURAL SCIENCES

The effect of adding different levels of anise seeds and oil *Pimpinella anisum L.* on some qualitative characteristics of Lohman chicken eggs

Dawood, R. [1]
akam22004@uokirkuk.edu.iq

Hammed, R. [2]
rasheddalo@uokirkuk.edu.iq

[1]Tuz Khurmatu Agriculture Division, Saladin Agriculture Directorate, Saladin, Iraq.
[2]Animal production department, college of agriculture, University of Kirkuk, Kirkuk, Iraq.

• Part of M.Sc. Dissertation for the first author.
• Date of research received 12/3/2024 and accepted 28/3/2024.

Abstract

The experiment was conducted in the fields of the Animal Production Department at the College of Agriculture, University of Kirkuk, for the period from 10/1/2023 to 12/31/2023, the goal of the current study was to study the effect of adding different levels of oil and anise seeds affected the external and internal egg traits of Lohman laying hens. Seven treatments were used during the experiment were T1=0% Anise seed or oil, T2= (5g/kg) anise seed, T3=(7.5g/Kg) anise seed, T4= (0.5ml/kg) anise oil, T5= (0.75ml/kg) anise oil, T6=(2.5g/kg) anise seed + (0.25ml/kg) anise oil, T7= (3.75g/kg) anise seed + (0.375ml/kg) anise oil. The traits were taken in five periods along the experiment, (44, 46, 48, 50, and 52) week of age. The treatments show significant differences for the egg quality treats (egg weight, egg length, egg breadth, egg shape index, yolk weight, albumin weight, egg shell weight, egg shell thickness) comparing with the control treatment. It can be concluded that adding anise seed or oil to the diet of laying hens resulted enhancing and increasing the egg quality characteristics. Therefore, anise seed or oil could be used to improve the laying hen's performance.

Keywords: Anise, laying hen, egg, characteristics.
Citation: Dawood, R., & Hammed, R. (2024). The effect of adding different levels of anise seeds and oil Pimpinella anisum L. on some qualitative characteristics of Lohman chicken eggs. *Kirkuk University Journal for Agricultural Sciences*,15 (1), - doi: 10.58928/kujas.2024.147556.1139
Correspondence Author: Dawood, R. _akam22004@uokirkuk.edu.iq

Introduction:

Poultry productivity has increased and feed use efficiency has been enhanced with the advent of feed additives, which have been widely utilized in poultry feed for several decades. Thus, a variety of prominent medical herbal plants have been the source of plant products for herbal plant additives, which have been extensively researched to enhance poultry performance [1, 2, 3]. On the other hand, phytochemicals from herbaceous plants have antioxidant, antibacterial, antifungal, and anti-inflammatory qualities, and they stimulate the digestive tract of chickens [4].

According to studies conducted recently, those plants offer antibacterial, growth-promoting, antioxidant, and anti-inflammatory properties. Because they include bioactive phytochemicals such as phenolics, polyphenols, alkaloids, lectins, terpenoids, polypeptides, and essential oils, herbaceous plants have attracted more attention recently [5]. One species that is commonly grown in southern Europe and Southeast Asia is anise, or Pimpinella anisum L., an annual aromatic plant that is a member of the Apiaceae family. The essential oil content of the plant ranges from 2 to 6% [6]. Digestive aids such as anise seeds and other herbal plants were discovered by the Romans. Feed additives are commonly used in poultry diets to improve the health and performance of the birds as well as stimulate development and feed efficiency. They have been shown to increase animal performance [7]. The external and internal characteristics of the egg are affected by a number of factors, including genetic factors [8, 9] and other environmental factors [10, 11, 12]. Where [13] a highly significant difference was found for the external characteristics of the egg, there was also [14, 15] a highly significant difference for the internal components of the egg. In addition to that, traits that are not affected by genetics have a role in influencing internal and external traits, as found [16 17, 18, 19]. Because of these differences, these characteristics are used to distinguish between different breeds and birds [20]. Thus, the goal of the current study was to evaluate and study the effect of adding different levels of oil and anise seeds affected the external and internal egg traits of Lohman laying hens.

Materials and methods:

The experiment was conducted in the fields of the Animal Production Department at the College of Agriculture, University of Kirkuk, for the period from 10/1/2023 to 12/31/2023, to study the effect of adding different levels of seeds and anise seed oil to Lohman laying hens diet and studying its effect on the internal and external qualitative characteristics of eggs. One hundred and twelve birds were used in the experiment. They were randomly distributed among seven treatments at a rate of 16 birds per treatment. They were placed in production batteries inside a hall with dimensions of 5 meters by 15 meters. The birds of one treatment were distributed into four replicates at a rate of four birds per each. It was refined, water was given freely to the birds, and the lighting was 16 hours of light and 8 hours of darkness. Seven treatments were used during the experiment were T1=0% Anise seed or oil, T2= (5g/kg) anise seed, T3=(7.5g/Kg) anise seed, T4= (0.5ml/kg) anise oil, T5= (0.75ml/kg) anise oil, T6=(2.5g/kg) anise seed + (0.25ml/kg) anise oil, T7= (3.75g/kg) anise seed + (0.375ml/kg) anise oil. And the components and chemical composition of the materials included in the formulation of the diet are shown in Table 1.

Table1: The percentage and chemical composition of fed materials fed to experiment birds

Ingredients	control
Wheat	16.30
Yellow corn	47.07
Soybean meal (48%)	20.00
Barley	4.00
Oil	0.60
Limestone	9.00
T. Salt	0.20
Methionine	0.07
Lysine	0.01
Laymix 2.5	2.50
Colin Chloride	0.25
Total	100.00
Energy / protein ratio	167.03
Energy	2753
Protein%	16.08
Lysine%	0.81
Methionine%	0.44
Calcium%	3.76
Phosphors%	0.41

The females weighed each treatment at the beginning and end of the experiment separately, using an electronic balance sensitive to the nearest gram. The eggs were weighed once a week and individually using a sensitive scale with a sensitivity of (0.01) g at a rate of 4 eggs per replicate. The length and breadth of the egg were taken using an electronic caliper vernal with a sensitivity of (0.01) mm. The traits were taken in five periods along the experiment, (44, 46, 48, 50, and 52) week of age. For each egg, its specifications were taken, and for each replicate, the value was taken from the tops of the broad and pointed ends in relation to the length, while the breadth was taken from the broad side of the egg [16]. The egg shape index was calculated by dividing the egg breadth by the egg length and multiplying by one hundred. Egg weight was calculated by subtracting the sum of the yolk weight with the weight of the shell and its membranes and subtracting them from the total egg weight for all replicates, according to the equation that explain with [13]. After breaking the eggs, the yolk was isolated from the white and weighed with a sensitive electronic balance with a sensitivity of 0.01 g. After breaking the eggs, the shell and its membranes were washed with water and left for 24 hours at laboratory temperature to dry, and the next day the weight was taken using a sensitive electronic balance (0.01 g) [14]. The shell thickness was taken from three areas, and then divided by 3 to take the average shell thickness. It was taken using an electronic Verna with a sensitivity of 0.01 mm [9].

Data analysis of the studied parameters and their effect on the traits was done using the CRD method and the SAS program, version 4.9, and the Duncan test was used to evaluate the differences between the averages of the parameters for all the studied traits.

Result and discussion:

The mean, and standard error for the egg weight (g) for the seven treatment that treated with Anise are shown in table 2. For the first period (44) week of age, the egg mean did not differ significantly among the treatments ($p>0.05$). In the second period there was significant differences among the treatments, it

was high in T7 (66.61) g, and low in T3 (57.82) g. In the third period the results did not shown and differences among the treatments. The results agreed with [21] who found that adding different levels to the diet of Lohman layer chicken improve the egg weight. Moreover, [22] who used anise seed in the quail die, the egg weight was increase compare to the control group. Also, [23] found in his study the egg weight was increase significantly by adding anise seed to chicken diet. But [24] did not show any significant differences in his study by the adding anise seed to the quail diet.

Table 2: The mean, and standard error for the egg weight (g) for the seven treatment that treated with Anise

Age (week)	T1	T2	T3	T4	T5	T6	T7	Overall mean
44	63.81±2.84 a	64.92±7.23 a	60.08±2.72 a	60.40±5.94 a	65.73±1.97 a	66.16±3.52 a	66.61±6.69 a	64.10±4.98
46	63.19±1.62 ab	62.96±3.33 ab	57.82±5.32 b	61.51±4.96 ab	63.46±5.08 ab	68.97±11.04 ab	63.87±8.12 a	63.11±6.39
48	63.35±6.61 a	67.69±2.65 a	62.84±2.94 a	60.90±3.68 a	65.90±3.64 a	62.30±5.51 a	69.00±5.28 a	64.04±4.57
50	71.12±14.60 a	70.71±14.80 a	68.81±1.30 a	69.15±3.46 a	67.83±4.31 a	69.77±5.75 a	68.82±4.47 a	69.48±7.76
52	68.98±3.46 a	67.29±4.70 a	68.88±2.98 a	65.68±5.79 a	69.21±2.25 a	68.61±3.62 a	68.17±1.83 a	68.19±3.34

different letters in each column indicate significant differences, T1=0% Anise seed or oil, T2= (5g/kg) anise seed, T3=(7.5g/Kg) anise seed, T4= (0.5ml/kg) anise oil, T5= (0.75ml/kg) anise oil, T6=(2.5g/kg) anise seed + (0.25ml/kg) anise oil, T7= (3.75g/kg) anise seed + (0.375ml/kg) anise oil. Means with different superscripts in each row differ significantly ($P<0.05$).

The mean, and standard error for the egg length (mm) for the seven treatment that treated with Anise are shown in table 3. The periods (1, 2, 4, and 5) did not shown and significant differences among the treatments, except the period 3, which was high in T2, T5, and T7 (57.26, 57.23, and 60.20) mm respectively. It was low in T4 (53.98) mm. The results agreed with [21] who found that adding different levels to the diet of Lohman layer chicken improve the egg length

.

Table 3: The mean, and standard error for the egg length (mm) for the seven treatment that treated with Anise

Age (week)	T1	T2	T3	T4	T5	T6	T7	Overall mean
44	58.96±2.95 a	57.26±2.39 a	56.90±2.57 a	56.03±2.95 a	57.62±1.83 a	58.94±3.06 a	59.07±3.48 a	57.86±2.70
46	58.96±2.95 a	57.26±2.39 a	57.11±2.14 a	56.05±2.99 a	57.60±1.85 a	58.94±3.06 a	59.07±3.48 a	57.85±2.66
48	56.37±3.06 abc	57.26±0.67 a	56.78±1.34 ab	53.98±0.64 c	57.23±1.99 a	54.57±1.43 bc	60.20±2.46 a	56.20±2.15
50	58.34±5.91 a	58.92±5.19 a	57.95±0.49 a	58.80±1.46 a	59.09±1.81 a	58.84±1.40 a	59.17±1.34 a	58.71±2.88
52	58.92±2.50 a	56.89±0.96 a	59.04±1.18 a	57.05±1.53 a	59.44±0.32 a	58.69±3.51 a	57.54±1.54 a	58.25±1.86

different letters in each column indicate significant differences, T1=0% Anise seed or oil, T2= (5g/kg) anise seed, T3=(7.5g/Kg) anise seed, T4= (0.5ml/kg) anise oil, T5= (0.75ml/kg) anise oil, T6=(2.5g/kg) anise seed + (0.25ml/kg) anise oil, T7= (3.75g/kg) anise seed + (0.375ml/kg) anise oil. Means with different superscripts in each row differ significantly ($P<0.05$).

The mean, and standard error for the egg breadth (mm) for the seven treatment that treated with Anise are shown in table 4. The periods (1, 2, 4, and 5) did not shown and significant differences among the treatments, except the period 3, which was high in T2 (44.49) mm, and low in T1, T3, and T4 (42.52, 42.34, and 42.41) mm respectively. The results agreed with [21] who found that adding different levels to the diet of Lohman layer chicken improve the egg breadth

.

Table 5: The mean, and standard error for the egg breadth (mm) for the seven treatment that treated with Anise

Age (week)	T1	T2	T3	T4	T5	T6	T7	Overall mean
44	58.96±2.95 a	57.26±2.39 a	56.90±2.57 a	56.03±2.95 a	57.62±1.83 a	58.94±3.06 a	59.07±3.48 a	57.86±2.70
46	58.96±2.95 a	57.26±2.39 a	57.11±2.14 a	56.05±2.99 a	57.60±1.85 a	58.94±3.06 a	59.07±3.48 a	57.85±2.66
48	56.37±3.06 abc	57.26±0.67 a	56.78±1.34 ab	53.98±0.64 c	57.23±1.99 a	54.57±1.43 bc	60.20±2.46 a	56.20±2.15
50	58.34±5.91 a	58.92±5.19 a	57.95±0.49 a	58.80±1.46 a	59.09±1.81 a	58.84±1.40 a	59.17±1.34 a	58.71±2.88
5	58.92±2.50 a	56.89±0.96 a	59.04±1.18 a	57.05±1.53 a	59.44±0.32 a	58.69±3.51 a	57.54±1.54 a	58.25±1.86

different letters in each column indicate significant differences, T1=0% Anise seed or oil, T2= (5g/kg) anise seed, T3=(7.5g/Kg) anise seed, T4= (0.5ml/kg) anise oil, T5= (0.75ml/kg) anise oil, T6=(2.5g/kg) anise seed + (0.25ml/kg) anise oil, T7= (3.75g/kg) anise seed + (0.375ml/kg) anise oil. Means with different superscripts in each row differ significantly ($P<0.05$).

The mean, and standard error for the egg shape index (%) for the seven treatment that treated with Anise are shown in table 5. The periods (1, 2, 4, and 5) did not shown and significant differences among the treatments, except the period 3, which was high in T4 (78.57, and low in T3, and T7 (74.59, and 71.45) % respectively. The results agreed with [19] who found that adding different levels to the diet of Lohman layer chicken improve the egg shape index. And [23] also found in his study the egg shape index was increase significantly by adding anise seed to chicken diet

.

Table 5: The mean, and standard error for the egg shape index (%) for the seven treatment that treated with Anise

Age (week)	T1	T2	T3	T4	T5	T6	T7	Overall mean
44	74.66±3.63 a	77.87±1.86 a	75.76±3.80 a	79.36±3.01 a	78.02±2.62 a	75.73±4.31 a	75.58±3.16 a	76.75±3.29
46	74.66±3.63 a	77.87±1.86 a	76.31±3.29 a	79.30±3.14 a	78.02±2.62 a	75.73±4.31 a	75.58±3.16 a	76.78±3.24
48	75.50±1.88 bcd	77.69±2.19 abc	74.59±1.94 d	78.57±2.22 a	75.22±2.12 cd	78.27±1.03 ab	71.84±2.69 d	76.45±2.50
50	79.53±4.09 a	77.69±4.18 a	78.79±1.04 a	77.95±1.59 a	76.29±4.23 a	77.97±2.33 a	76.60±1.87 a	77.88±2.91
52	76.38±3.42 a	79.39±2.42 a	76.58±1.57 a	78.90±0.51 a	76.62±1.46 a	77.45±4.50 a	79.62±2.55 a	77.82±2.64

different letters in each column indicate significant differences, T1=0% Anise seed or oil, T2= (5g/kg) anise seed, T3=(7.5g/Kg) anise seed, T4= (0.5ml/kg) anise oil, T5= (0.75ml/kg) anise oil, T6=(2.5g/kg) anise seed + (0.25ml/kg) anise oil, T7= (3.75g/kg) anise seed + (0.375ml/kg) anise oil. Means with different superscripts in each row differ significantly ($P<0.05$).

The mean, and standard error for the yolk weight (g) for the seven treatment that treated with Anise are shown in table 6. The periods (1, 2, 4, and 5) did not shown and significant differences among the treatments, except the period 3, which was high in T1 (16.61) g, and low in both T4, and T6 (14.73, and 14.63) g respectively. The results agreed with [21] who found that adding different levels to the diet of Lohman layer chicken improve the yolk weight. Also, [23] found in his study the yolk weight was increase significantly by adding anise seed to chicken diet. But [23] did not show any significant differences in his study by the adding anise seed to the quail diet

.

Table 6: The mean, and standard error for the yolk weight (g) for the seven treatment that treated with Anise

Age (week)	T1	T2	T3	T4	T5	T6	T7	Overall mean
44	14.70±1.54 a	15.13±2.09 a	14.35±0.76 a	14.00±0.99 a	13.80±0.87 a	15.06±1.23 a	15.37±0.99 a	14.64±1.28
46	14.53±1.64 a	13.73±1.01 a	14.55±1.08 a	14.58±1.02 a	14.15±1.23 a	15.46±0.94 a	15.69±1.81 a	14.67±1.31
48	16.61±0.96 a	16.27±1.03 ab	15.09±0.54 ab	14.73±0.73 b	15.84±0.71 ab	14.63±1.08 b	18.51±1.19 ab	15.65±1.22
50	18.41±7.95 a	18.49±7.94 a	15.62±1.25 a	16.12±1.73 a	16.21±0.95 a	15.80±0.58 a	15.84±0.97 a	16.67±4.09
52	15.42±0.58 a	14.72±0.85 a	15.11±1.07 a	15.22±1.02 a	15.76±0.80 a	15.19±0.73 a	15.35±1.00 a	15.26±0.83

different letters in each column indicate significant differences, T1=0% Anise seed or oil, T2= (5g/kg) anise seed, T3=(7.5g/Kg) anise seed, T4= (0.5ml/kg) anise oil, T5= (0.75ml/kg) anise oil, T6=(2.5g/kg) anise seed + (0.25ml/kg) anise oil, T7= (3.75g/kg) anise seed + (0.375ml/kg) anise oil. Means with different superscripts in each row differ significantly ($P<0.05$).

The mean, and standard error for the albumin weight (g) for the seven treatment that treated with Anise are shown in table 7. The periods (1, 3, 4, and 5) did not shown and significant differences among the treatments, except the period 2, which was high in T6 (47.06) g, and low in T3 (36.73) g. The results agreed with [21] who found that adding different levels to the diet of Lohman layer chicken improve the albumin weight. Also, [23] found in his study the albumin weight was increase significantly by adding anise seed to chicken diet. But [24] did not show any significant differences in his study by the adding anise seed to the quail diet

.

Table 7: The mean, and standard error for the albumin weight (g) for the seven treatment that treated with Anise

Age (week)	T1	T2	T3	T4	T5	T6	T7	Overall mean
44	43.02±1.87 a	42.82±5.88 a	38.60±2.36 a	39.51±4.78 a	44.93±1.97 a	43.90±2.32 a	43.71±5.27 a	42.50±4.05
46	41.05±0.65 ab	41.77±2.17 ab	36.73±4.00 b	39.79±4.01 ab	42.15±3.81 ab	47.06±9.71 a	42.05±5.77 ab	41.51±5.33
48	42.23±5.32 a	46.14±3.00 a	42.89±2.88 a	41.10±3.84 a	45.17±3.30 a	42.67±5.99 a	45.49±3.95 a	43.45±4.07
50	45.36±6.01 a	44.57±6.04 a	45.96±0.56 a	46.42±1.06 a	44.22±3.16 a	46.47±5.68 a	45.97±3.82 a	45.55±3.91
52	46.25±2.98 a	45.20±4.64 a	46.52±2.66 a	43.53±4.20 a	45.62±2.00 a	46.41±2.99 a	45.29±0.95 a	45.59±2.84

different letters in each column indicate significant differences, T1=0% Anise seed or oil, T2= (5g/kg) anise seed, T3=(7.5g/Kg) anise seed, T4= (0.5ml/kg) anise oil, T5= (0.75ml/kg) anise oil, T6=(2.5g/kg) anise seed + (0.25ml/kg) anise oil, T7= (3.75g/kg) anise seed + (0.375ml/kg) anise oil. Means with different superscripts in each row differ significantly ($P<0.05$).

The mean, and standard error for the eggshell weight (g) for the seven treatment that treated with Anise are shown in table 8. The periods (4, and 5) did not shown and significant differences among the treatment, but the (1, 2, and 3), were differing significantly among the treatments. In period 1 it was low in T1 (6.09) g, and high in all the other treatments. For the period 2 the eggshell weight was high in T1 (7.62) g, and low in T7 (6.13) g. In the period 3 the eggshell weight was high in T2 (5.29) g, and low in T1 (4.52) g. The results agreed with [21] who found that adding different levels to the diet of Lohman layer chicken improve the eggshell weight. Also, [23] found in his study the eggshell weight was increase significantly by adding anise seed to chicken diet. But [23] did not show any significant differences in his study by the adding anise seed to the quail diet

.

Table 8: The mean, and standard error for the eggshell weight (g) for the seven treatment that treated with Anise

Age (week)	T1	T2	T3	T4	T5	T6	T7	Overall mean
44	6.09±0.58 b	6.96±0.57 a	7.13±0.04 a	6.90±0.54 a	7.00±0.35 a	7.20±0.39 a	7.53±0.55 a	6.97±0.60
46	7.62±0.54 a	7.46±0.50 ab	6.54±0.62 abc	7.14±0.35 abc	7.17±0.87 abc	6.45±0.96 abc	6.13±0.83 c	6.93±0.81
48	4.52±0.57 b	5.29±0.58 a	4.87±0.35 ab	5.07±0.26 ab	4.89±0.51 ab	5.00±0.30 ab	5.00±0.62 ab	4.94±0.45
50	7.35±0.99 a	7.65±0.90 a	7.23±0.27 a	6.61±1.14 a	7.41±0.34 a	7.51±0.77 a	7.01±0.59 a	7.26±0.77
52	7.31±0.52 a	7.37±0.73 a	7.25±0.54 a	6.93±1.13 a	7.83±0.87 a	7.01±0.29 a	7.53±0.50 a	7.34±0.66

different letters in each column indicate significant differences, T1=0% Anise seed or oil, T2= (5g/kg) anise seed, T3=(7.5g/Kg) anise seed, T4= (0.5ml/kg) anise oil, T5= (0.75ml/kg) anise oil, T6=(2.5g/kg) anise seed + (0.25ml/kg) anise oil, T7= (3.75g/kg) anise seed + (0.375ml/kg) anise oil. Means with different superscripts in each row differ significantly ($P<0.05$).

The mean, and standard error for the eggshell thickness (mm) for the seven treatment that treated with Anise are shown in table 9. The periods (3, and 4) did not shown and significant differences among the treatment, but the (1, 2, and 5), were differing significantly among the treatments. In period 1 it was high in T5, and T6 (0.49, and 0.49) mm respectively, and low in T1, T2, and T3 (0.38, 0.38, and 0.39) mm respectively. For the period 2 the eggshell thickness was high in T1 (0.53) mm, and low in all the other treatments. In the period 3 the eggshell thickness was high in T1 (0.37) mm, and low in T4 (0.31) mm. The results agreed with [21] who found that adding different levels to the diet of Lohman layer chicken improve the eggshell thickness. Moreover, [22] who used anise seed in the quail die, the eggshell thickness was increase compare to the control group

.

Table 9: The mean, and standard error for the eggshell thickness (mm) for the seven treatment that treated with Anise

Age (week)	T1	T2	T3	T4	T5	T6	T7	Overall mean
44	0.38±0.06 c	0.38±0.06 c	0.39±0.05 c	0.41±0.04 b	0.49±0.05 a	0.49±0.04 a	0.47±0.03 ab	0.43±0.06
46	0.53±0.07 a	0.38±0.03 b	0.35±0.02 b	0.40±0.06 b	0.41±0.03 b	0.35±0.04 b	0.38±0.05 b	0.40±0.07
48	0.35±0.03 a	0.37±0.02 a	0.39±0.04 a	0.40±0.01 a	0.39±0.04 a	0.38±0.02 a	0.42±0.03 a	0.38±0.03
50	0.44±0.05 a	0.47±0.05 a	0.44±0.07 a	0.47±0.03 a	0.44±0.05 a	0.48±0.04 a	0.47±0.01 a	0.46±0.04
52	0.37±0.04 a	0.32±0.03 ab	0.34±0.05 ab	0.31±0.02 b	0.33±0.03 ab	0.32±0.01 ab	0.34±0.01 ab	0.33±0.03

different letters in each column indicate significant differences, T1=0% Anise seed or oil, T2= (5g/kg) anise seed, T3=(7.5g/Kg) anise seed, T4= (0.5ml/kg) anise oil, T5= (0.75ml/kg) anise oil, T6=(2.5g/kg) anise seed + (0.25ml/kg) anise oil, T7= (3.75g/kg) anise seed + (0.375ml/kg) anise oil. Means with different superscripts in each row differ significantly (P<0.05).

Conclusion:

It can be concluded that adding anise seed or oil anise to the diet of laying hens resulted enhancing and increasing the egg quality characteristics. Therefore, anise seed or oil could be used to improve the laying hen's egg traits.

References:

[1] Hassan, A. O. , Al- Jabari, Q. H. A. , Mustafa, N. A. **(2023)**. Impact of Adding Chitosan and Probiotic to Broiler Dietary on carcass traits. Kirkuk University Journal For Agricultural Sciences, 14(3):75-81.

[2] AL-Khaldani, C., & Ameen, Q. **(2022)**. Effect of fodder addition of Moringa oleifera leaf powder and probiotic on the productive characteristics of broilers. *Kirkuk University Journal For Agricultural Sciences*, *13*(3), 49-61.

[3] AL-Khaldani, C., & Ameen, Q. **(2022)**. Effect of adding Moringa oleifera leaf powder with or without probiotic on growth performnce, carcass characteristics and some biochemical blood characteristics for broiler. *Kirkuk University Journal For Agricultural Sciences*, *13*(3), 186-201.

[4] Achilonu, M., Shale, K., Arthur, G., Naidoo, K., & Mbatha, M. **(2018)**. Phytochemical benefits of agroresidues as alternative nutritive dietary resource for pig and poultry farming. *Journal of Chemistry*, *2018*, 1-15.

[5] Mohammadi Gheisar, M., & Kim, I. H. **(2018)**. Phytobiotics in poultry and swine nutrition–a review. *Italian journal of animal science*, *17*(1), 92-99.

[6] Al-Shammari, K. I. A., Batkowska, J., & Gryzińska, M. M. **(2017)**. Effect of various concentrations of an anise seed powder (Pimpinella Anisum L.) supplement on selected hematological and biochemical parameters of broiler chickens. *Brazilian Journal of Poultry Science*, *19*, 41-46.

[7] Samojlik, I., Mijatović, V., Petković, S., Škrbić, B., & Božin, B. **(2012)**. The influence of essential oil of aniseed (Pimpinella anisum, L.) on drug effects on the central nervous system. *Fitoterapia*, *83*(8), 1466-1473.

[8] Shaker, A. S., Mustafa, N. A., Ameen, Q. A., Hermiz, H. N., Saadullah, M. A., & Ramadan, A. A. **(2019**). Egg traits uniformity comparison between Kurdish local chicken and two commercial strain using coefficient of

variation. *International journal of advances in science engineering and technology*,*7*(4), 62-65.

[9] Al-Tamimy, S. M. A., & Shaker, A. S. **(2023)**. Principal Component Analysis for the Egg Traits in Three Genetic Lines of Japanese Quail. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1262, No. 7, p. 072081). IOP Publishing.

[10] Hermiz, H. N., Shaker, A. S., Abas, K. A., Sardary, S. Y., Ameen, Q. A., & Al-Khatib, T. R. **(2019)**. Egg producton evaluation for Kurdish local chicken in two different envirnments and estimates of their genetic parameters. *International journal of advances in science engineering and technology*, *7*(4), 72-75.

[11] Shaker, A. S., Mohammed, A. K., & Razuki, W. M**. (2023)**. Estimation of genetic parameters for egg production traits in Japanese quail that selected for immune responses and fed different level of dietary L-arginine. *Kirkuk University Journal for Agricultural Sciences*, *14*(1), 73-81.

[12] Al-Jabari, Q. H., & Shaker, A. S. **(2023**). The Effect of Adding Moringa Leaf Powder to the Adapted Quail Diet During the Egg Production Stage on the Productive Performance and some Biochemical Blood Characteristics. In*IOP Conference Series: Earth and Environmental Science* (Vol. 1262, No. 7, p. 072052). IOP Publishing.

[13] Shaker, A. S., Hermiz, H. N., Al-Khatib, T. R., & Mohammed, R. M. **(2016)**. Egg shape characterization for four genetic groups of Kurdish local chickens. *Food and nutrition science*,*1*, 20-25.

[14] Abdulla, S. M., & Shaker, A. S. **(2018)**. Principal component analysis of internal egg traits for four genetic groups of local chicken. *Egyptian Poultry Science Journal*, *38*(2), 699-706.

[15] Amin, Q. A., Zhahir, H. G., & Shaker, A. S. **(2019)**. Variation of egg proteins between bird varieties by using SDS-PAGE. *Al-Anbar Journal of Veterinary Sciences*, *12*(1).

.

[16] Aziz, S. R., Shaker, A., & Kirkuki, S. M. S. **(2017)**. Changes in external egg traits of chickens during pre-and post-molting periods. *Poultry science journal*, *5*(2), 91-95.

[17] Shaker, A. S., Kirkuki, S. M., Aziz, S. R., & Jalal, B. J. **(2017)**. Influence of genotype and hen age on the egg shape index. *International journal of biochemistry, biophysics and molecular biology*, *2*(6), 68-70.

[18] Shaker, A. S., Mustafa, N. A., Ameen, Q. A., Saadullah, M. A., Ramadan, A. A., & Aziz, S. B. R. **(2019)**. Effect of hen oviposition time on some egg characteristics. *Journal of Animal and Poultry Production*, *10*(6), 171-174.

[19] Alsalihi, L. W., Shaker, A. S., Ameen, Q. A., & Ortega Torres, M. J. **(2022)**. The Effect of Line and Age on The Egg External Characteristics of Japanese Quail. *Basrah Journal of Veterinary Research*, *21*(S1), 27-34.

[20] Al, H. J. A. D. A., & Al-Hayani, M. W. K. **(2008)**. Effect of feeding diet containing different levels of anise (Pimpinella anisum) seeds or oil on productive performance of white Lohmann laying hens. *iraqi poultry sciences journal*, *3*(1).

[21] Bayram, I., Cetingul, I. S., Akkaya, B., & Uyarlar, C. **(2007)**. Effects of Aniseed (Pimpinella anisum L.), on egg production, quality, cholesterol levels, hatching results and the antibody values in blood of laying quails (Coturnix coturnix japonica). *Archiva Zootechnica*, *10*, 73-77.

[22] HN Al-Naif, H. (2012). The impact of adding crushed ginger (Zingiber officinale) and anise (Pimpinella anisum) to the bush in some quality attributes of the egg and egg yolk cholesterol of white laying hens (shefer). *Al-Anbar Journal of Veterinary Sciences*, *5*(1), 131-138.

[23] Christaki, E. V., Bonos, E. M., & Florou-Paneri, P. C. (2011). Comparative evaluation of dietary oregano, anise and olive leaves in laying Japanese quails. *Brazilian Journal of Poultry Science*, *13*, 97-101

تأثير إضافة مستويات مختلفة من بذور وزيت اليانسون *Pimpinella anisum L.* في بعض الصفات النوعية لبيض دجاج لوهمان

رؤى جمال داود[1]
akam22004@uokirkuk.edu.iq

رشيد حسن حميد الدلوي [2]
rasheddalo@uokirkuk.edu.iq

[1] مديرية زراعة طوزخورماتو، مديرية زراعة صلاح الدين، صلاح الدين، العراق.
[2] قسم الإنتاج الحيواني، كلية الزراعة، جامعة كركوك، كركوك، العراق.

- البحث مستل من رسالة ماجستير للباحث الأول.
- تاريخ استلام البحث 2024/3/12 وتاريخ قبوله 2024/3/28 .

الملخص

اجريت التجربة في حقول قسم الانتاج الحيواني في كلية الزراعة جامعة كركوك للفترة من 2023/10/1 ولغاية 2023/12/31 بهدف اضافة مستويات مختلفة من مسحوق و زيت بذور اليانسون في علف هجين دجاج الوهمان البياض ودراسة تأثيره. تم استخدام سبع معاملات خلال التجربة وهي: المعاملة الاولى: 0% بذور و/او زيت اليانسون، المعاملة الثانية: 5غرام\كغم مسحوق بذور اليانسون، المعاملة الثالثة: 7.5غرام \كغم مسحوق بذور اليانسون، المعاملة الرابعة: 0.5 مل \ كغم زيت بذور اليانسون، المعاملة الخامسة: 0.75 مل \كغم زيت بذور اليانسون، المعاملة السادسة: مزيج من 2.5 غرام\كغم مسحوق بذور اليانسون+ 0.25 مل \ كغم زيت بذور اليانسون، المعاملة السابعة: مزيج من 3.75 غرام \كغم مسحوق بذور اليانسون+ 0.375 زيت بذور اليانسون. أظهرت المعاملات فروقاً معنوية في معاملات جودة البيض (وزن البيضة، طول البيضة، عرض البيضة، دليل شكل البيضة، وزن الصفار، وزن الألبومين، وزن قشرة البيضة، سمك قشرة البيضة) مقارنة بمعاملة السيطرة. يمكن الاستنتاج أن إضافة بذور اليانسون أو زيت اليانسون إلى علائق الدجاج البياض أدى إلى تحسين وزيادة صفات جودة البيض الذي تنتجه هذه السلالات. ولذلك يمكن استخدام بذور اليانسون أو زيت اليانسون لتحسين أداء الدجاجة البياضة.

الكلمات المفتاحية : اليانسون، الدجاجة البياضة، البيض، الخصائص.