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THE IMPACT OF INCORPORATING LICORICE LEAF POWDER ON THE EGGS AND PLASMA BIOCHEMICAL CHARACTERISTICS OF ISA BROWN LAYER CHICKENS

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Abstract
A research investigation was conducted at Kirkuk University between October 14, 2019, and December 9, 2019, to assess the effects of different doses of licorice plant leaf powder on white chickens. There was a control group that did not get any additives, and there were five groups of twenty-eight hens each that were given different doses of licorice (0.1%, 0.25%, 0.5%, and 0.75%). There was a considerable statistical disparity observed among some treatments in the initial phases of egg development, but no corresponding disparity in the average weight of the eggs.
The egg mass rate during the second period is significantly distinct from that of the fifth treatment. Typically, the treatment is ranked between fourth and sixth out of all therapies. There is a notable disparity in the rate at which feed is consumed between the first and subsequent intervals, whereas the total rate stays consistent in the fourth and fifth treatments. There is a significant disparity between the third and fifth treatment sessions. We did not observe any significant fluctuations in the food conversion rate, high white and unit Hu, or average shell weight. We noticed a statistically significant difference in the rate of the relative weight of white between the fifth treatment group and the control group in the first two periods, as well as in the third, fourth, and fifth periods. Treatment five exhibited a statistically significant alteration compared to treatments two and three in terms of the overall rate and relative yolk weight. The diameter of the yolk exhibited a substantial deviation from the overall average in treatment number five, while the high yolk rate showed a considerable difference compared to treatments three, four, and five. There was a substantial statistical difference in the rate of shell thickness between the fifth treatment and the first two sessions, as well as between the fourth and fifth periods. Treatments 3, 4, and 5 exhibited significant variations in their total rates. Glucose and uric acid levels are elevated, although cholesterol, total protein, and choline levels are comparable.

Keyword: Licorice leaf powder, biochemical characteristics, uric acid, gloucose, cholestrol, cholin protein.

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Introduction

The nutritional and medicinal properties of plants and herbs have led to their increased use in modern medicine. Because of their high concentration of flavonoids, which have beneficial antioxidant effects and contribute to improved health, licorice plants are considered therapeutic herbs and botanicals. Its energy efficiency is comparable to that of perbionic acid and it has a high concentration of volatile oils. Indole, perbionic acid, and buteric acid are among the energy-rich volatile oils found in high concentrations in Mitcher, L.A. (1980) (Kameoka, H and Nakai, 1987). Vitamin E and C compounds are among the many types of vitamins included. Vital to the body's health and vitality in the long run, it is essential (Black, J.Fand A. 1997, Ode, P 1993).

Materials and working methods

The poultry investigation was conducted at Kirkuk University's Department of Livestock Production, which is part of the Faculty of Agriculture. From October 14, 2019, to December 10, 2019, a total of 56 days were devoted to this research.

The experiment included the use of 28 white hens of the Isa Brown breed. I was relocated from a firm in Diyala province to Riyadh when I was 24 weeks old. Following a 14-day adaptation phase, the hens I was in the company of were arbitrarily divided into 5 distinct groups, each consisting of 2 identical sets. The first cohort consumed standard diet without any additional supplements. The diet of the second group was enriched with 0.25 kg per tonne of licorice powder. The third group had a dosage of 0 and 5 kilogrammes per tonne, the fourth group received a dosage of 0.75 kilogrammes per tonne, and the final group had a dosage of 1 kilogramme of licorice powder per tonne of food.

The trial was divided into three equal 14-day intervals. Throughout each stretch, we conducted measurements. We separated the egg yolks from the whites and measured their weights using a high-quality scale to determine their relative weights.

We used a micrometer to measure yolk height and took 3 separate area readings around each yolk to assess the thickness of the egg white enveloping it. We also used assay kits to quantify serum levels of glucose, yolk acid, cholesterol, and total protein .

We analyzed the data using the Statistical Analysis System (SAS 2005) software to ID differences between the treatment means. Duncan's multiple range test (1955) let us compare means at a significance level of $p < 0.05$.

Calculated chemical composition

Table 1 reveals the chemical composition and constituents of raspberry, as determined by the nutritional analysis of white chicken.

T6	T5	T4	T3	T2	T1	Blackberry components
52	52	52	52	52	52	Maize
11.75	11.80	11.85	11.90	11.95	12	Wheat
21.38	21.38	21.38	21.38	21.38	21.38	Soybean gain)47(%
2.70	2.70	2.70	2.70	2.70	2.70	Vegetable oil
9.13	9.13	9.13	9.13	9.13	9.13	Limestone
2.22	2.22	2.22	2.22	2.22	2.22	Dicalcium phosphate
0.17	0.17	0.17	0.17	0.17	0.17	Table salt
0.10	0.10	0.10	0.10	0.10	0.10	Blended vitamins and minerals
0.10	0.10	0.10	0.10	0.10	0.10	Choline)60(%
0.20	0.20	0.20	0.20	0.20	0.20	Methionine

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16.29%	Protein raw %
2812	The energy represented kilo price/kg
0.40%	Mathaeonin%
4 %	Calcium%
0.40%	Available phosphorus%

Chemical composition of relational components (NRC,1994).

Results and discussion

The relative weight assessment demonstrates substantial variations among the first and third periods and the fifth treatment (62.26 and 55.62). The second phase showed no change between treatments. Based on total rate, the third, fourth, and fifth treatments improved 59.00, 55.25, and 54.71 percentages.

Table 7 shows how different dosages of licorice leaf powder affected ISA brown chicken whiteness.

Treatments Duration per week	T1	T2	T3	T4	T5
First term	45.56±0.6 b	46.47±0.9 B	49.70±1.5 B	50.03±0.2 b	55.62±2.1 a
Second term	52.66±2.5 a	53.71±3.6 A	57.19±1.9 A	57.81±1.9 a	59.13±0.4 a
The third term	53.77±1.2 b	54.98±1.4 Ab	57.24±0.2 Ab	57.93±1.4 ab	62.26±2.3 a
General rate	50.66±1.1 b	51.72±1.2 Ab	54.71±0.1 A	54.71±0.1 a	59.00±2.1 a

The table shows that when the licorice powder was added, there were no significant differences in the rate of white rise between treatments in all periods.

Table 8 shows how different amounts of licorice leaf powder affect white ISA Brown hens' average height rate and standard error.

Treatments Duration per week	T1	T2	T3	T4	T5
First term	8.77±0.1	8.84±0.1	9.88±0.6	9.93±3.1	10.55±0.4
Second term	8.88±1.1	8.91±1.3	9.77±0.03	10.04±1.4	10.93±0.6
The third term	9.05±0.5	9.16±0.9	10.88±0.1	10.93±1.0	10.97±0.8
General rate	8.9±0.3	8.97±0.5	10.17±0.1	10.3±0.9	10.81±0.9

The table displays the comparative weight of the yolk during the first stage. There are no discernible disparities between the various therapies. However, during the second and third periods, the overall rate surpassed the fifth treatment by 28.87%, 28.37%, and 27.32% compared to the other treatments.

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Table 9 shows the impact of leaf powder on the weight of the yolk and the typical white chicken ISA, accompanied by a brown colour.

Treatments Duration per week	T1	T2	T3	T4	T5
First term	18.18±7.8 a	18.63±8.6 a	24.87±0.5 A	25.82±2.9 a	25.93±1.7
Second term	23.55±0.3 b	24.00±0.06 b	25.24±0.3 Ab	25.97±1.6 ab	27.32±1.6 a
The third term	23.22±0.4 b	24.59±2.1 b	25.24±0.3 B	26.46±0.1 ab	28.87±1.2 a
General rate	21.65±0.3 b	22.40±1.5 b	25.11±0.2 B	26.08±0.2 ab	28.37±1.5 a

The yolk diameter rate table indicates that there are no notable distinctions between the first and second phases, as well as the overall rate. Nevertheless, the fifth treatment outperformed throughout the third session.

Table 10 shows how licorice leaf powder levels affect ISA brown and white chicken yolk thickness

Treatments Duration per week	T1	T2	T3	T4	T5
First term	37.44±1.3 A	38.07±1.4 a	39.21±0.1 A	39.33±2.1 a	39.89±1.7 a
Second term	38.12±1.1 A	38.65±1.3 a	38.33±0.3 A	40.33±1.2 a	40.71±1.5 a
The third term	38.44±0.01 C	38.65±0.1 b	40.17±0.1 B	40.49±0.2 b	42.14±0.1 a
General rate	38.00±0.1 a	38.35±0.2 a	39.67±0.4 A	40.05±1.1 a	40.91±1.2 a

No significant variations were seen between the second and third periods and the general rate, according to a table displaying the rate of yolk increase. However, the first period's rate was higher than the third, fourth, and fifth treatments.

Table 11 shows the median yolk length ratio and standard deviation for chicken eggs with varying doses of licorice leaf powder.

Treatments Duration per week	T1	T2	T3	T4	T5
First term	15.22±0.1 a	16.17±0.0 a	17.15±2.6 A	19.58±0.6 ab	20.31±0.5 b
Second term	16.42±1.5 a	17.49±1.8 a	19.31±0.9 A	19.60±0.3 a	20.49±0.7 a
The third term	17.33±0.5 a	18.26±0.9 a	19.45±0.7 A	20.87±1.2 a	21.31±0.4 a
General rate	16.32±0.4 a	17.30±0.6 a	18.63±0.5 A	20.01±1.1 a	20.70±0.3 a

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The table indicates that there are no statistically significant variations seen for a unit hu, specifically across the different treatment durations.

Table 12 show e mean ± standard deviation for ISA on white chicken The amounts of licorice leaf powder per unit affect brown

Treatments Duration per week	T1	T2	T3	T4	T5
First term	89.77±0.2	89.96±0.3	95.83±0.3	96.55±2.8	99.36±1.3
Second term	91.67±3.4	93.24±5.5	97.07±6.3	97.34±7.1	100.5±0.9
The third term	93.27±2.5	94.23±3.5	101.1±4.3	101.4±3.6	101.5±0.9
General rate	91.57±2.1	92.47±2.1	98.00±3.5	98.43±3.1	100.4±0.8

An analysis of the shell weights reveals no substantial variations across the different treatments.

Table 13 displays the impact of different doses of licorice leaf powder on the average dandruff weight rate ±standard error in ISA Brown chickens.

Treatments Duration per week	T1	T2	T3	T4	T5
First term	7.5±0.1	8.0±0.1	8.1±0.1	8.4±0.4	8.4±0.7
Second term	8.5±0.1	9.7±0.2	9.7±0.1	9.8±0.9	9.9±0.3
The third term	9.4±0.2	9.8±0.4	9.9±1.2	10.01±0.5	10.11±2.3
General rate	8.4±0.1	9.6±0.3	9.2±1.1	9.4±0.4	9.4±2.1

The data clearly demonstrates a significant disparity in shell thickness between the first period treatments and the fifth treatment, which recorded a measurement of 30.02. At the conclusion of the second session, the fourth therapy had exceeded the levels of the prior treatments by 42.14 and 40.33, respectively. There are no discrepancies in the third quarter. The mean of the third therapy was 40.73, the mean of the fourth treatment was 38.24, and the mean of the fifth treatment was 37.19.

Table 14 shows the average millimetre thickness of chicken eggshells after using different quantities of licorice leaf powder and the standard error. The research targets ISA Brown chickens.

Treatments Duration per week	T1	T2	T3	T4	T5
First term	28.55±0.01 A	28.71±0.01 b	30.00±0.00 b	31.02±0.01 b	36.02±0.01 b
Second term	37.77±0.2 A	38.22±0.1 a	39.21±0.1 b	40.33±0.2 b	42.14±0.1 b
The third term	40.67±0.02 A	41.97±0.03 a	42.36±0.02 a	43.39±0.03 a	44.03±0.03 a
General rate	35.66±0.01 a	36.31±0.02 a	37.19±0.02 a	38.24±0.01 b	40.73±0.03 b

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We find in the table the following levels of glucose in the first, third, and fifth periods of the other treatments. However, in the uric acid high, the fourth treatment was 298.0, and the rest of the treatments were There are no differences in the level of cholesterol, total protein, and choline between treatments.

Table 15 demonstrates the impact of varying concentrations of licorice leaf powder on the chemical and blood-thinning properties of ISA brown white chicken.

Treatments	T1	T2	T3	T4	T5
Glucose	280.6±4.00 A	186.0±2.5 ab	275.5±0.5 A	243.5±10.5 ab	292.5±3.7 a
Cholesterol	170.5±4.5 A	179.0±2.0 a	173.5±7.5 A	10.9±344.0 a	187.0±8.0 a
Uric acid	153.0±6.0 bc	172.1±10.1 c	223.5±2.5 Ab	289.0±4.9 a	107.5±2.1 c
Total protein	36.3±5.6 a	51.4±6.9 a	42.0±2.0 A	75.5±2.3 a	59.0±1.0 a
Clobeolin	40.7±1.0 a	21.4±2.0 a	24.2±2.2 A	36.5±7.5 a	27.7±1.7 a

Enhancing the productivity and quality of eggs by using licorice powder, which is rich in flavonoids that enhance health and antioxidant properties. The findings of Hussein et al. (2009) are in line with previous studies that used licorice extract in four control treatments and different ratios (250, 500, and 750 mg/kg feed) for the white luman chicken. Enhance the shell thickness, yolk weight, yolk height, yolk diameter, and white weight. The findings of this study contradict the results reported by Hussein et al. (2009) regarding the weight of eggs, weight of shells, unit hu, and height of the white. However, our results align with the findings of Darraji and Amin (2007), who used licorice extract in three treatment control groups and administered 500 and 750 mg/kg feed to white elkhorn chickens. This treatment led to improvements in the weight of yolk, thickness of shells, and weight of the white. According to Yasin (2007), the study found that using four control treatments and 0.02, 0.04, and 0.06 lactic chicken enhanced egg production, egg weight, and mass. It also resulted in lower feed consumption. However, there were no significant differences in cholesterol and total protein levels when compared to low glucose.

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