



Evaluation the effect of dates Al-Zahdi addition in broiler chicken diet on some chemical parameters and body weight

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Abstract

The aim of this study was to detect effect of added dates (Al-Zahdi) on broiler chicken dietary. We used forty chicks of broilers on one day old, which divided into four groups (control, G1, G2 and G3). Chicken were fed for 30 days on Al-Zahdi dates mixed with natural diets of broiler chicken in concentrations of (5%, 10%, and 15%). The body weight was measured for each group every week of experiment and blood samples were collected to evaluate some chemical parameters (glucose, total protein, GOT, GPT and lipid profile). A significant increase in total protein ($P > 0.05$) was observed in G1 and G2 as compared with the control group and G3. A significant decrease ($P > 0.05$) in GPT was also found in G1, G2, and G3 as compared with the control group. The results of the lipid profile indicated no significant increase ($P > 0.05$) in cholesterol levels for G1, G2, and G3. In terms of body weight, a significant increase ($P < 0.05$) was observed in G1 and G2 as compared with G3 and control during the fourth week of the experiment.

Key words : Chicken broiler , blood parameters , date palm

الخلاصة:

الهدف من هذه الدراسة هو الكشف عن تأثير التمور عند إضافتها إلى غذاء فروج اللحم. أستخدمنا 40 فرخ دجاج لحم نوع روز 308 بعمر يوم واحد، قسمت إلى أربعة مجاميع (السيطرة، المعاملة 1، المعاملة 2، المعاملة 3). أطعمت 30 يوماً عليقة مدعمة بتمر الزهدي الجاف بتركيزات (5%، 10%، 15%). تم قياس وزن الجسم لكل مجموعة كل أسبوع من التجربة. جمعت العينات لتقدير بعض التحاليل الكيميائية مثل (السكر، البروتين الكلي، انزيمات الكبد (GPT، GOT) و الكوليسترول و الكيلسريدات الثلاثية و الدهون عالية الكثافة و الدهون الواطنة الكثافة. وكانت النتائج كما يلي: زيادة بالبروتين الكلي للمجموعة الأولى وللمجموعة الثانية (5%، 10%) مقارنة مع مجموعة السيطرة والمجموعة الثالثة (15%) مع انخفاض مستويات الجلوتاميك للبايروفيك للمجاميع الأولى والثانية والثالثة بينما أظهرت نتائج الكوليسترول زيادة عن المستوى الطبيعي للمجاميع الأولى والثانية والثالثة على التوالي. أما بالنسبة لوزن الطير فقد أظهرت ارتفاع الوزن للمجاميع الأولى والثانية مقارنة بمجموعة السيطرة والمجموعة الثالثة في الأسبوع الرابع من التجربة

Introduction

The date palm has an important status in Iraq. Since the ancient times, the date palm has been an important source of food for the inhabitants of Arab countries. The most commonly used parts of the date palm are its fruits, which are considered a high energy food source containing 72% to 88% sugar at maturity, and has been used for both human and livestock consumption. The fruits are also processed into a paste and date syrup, called "Dibs", which is a common ingredient in some recipes. The date palm has also proven to be an excellent food resource to ensure food security during food shortages and crises⁽¹⁾.

The date palm has many commercial and medicinal applications, and has been an ingredient in various ointments and bandages⁽²⁾. The sap of the leaves is a remedy for nervousness and kidney trouble and can be used to treat wounds and calm effervescence of the blood. Burnt seeds are processed into an ointment to treat ulcers or a collyrium to induce the growth of eyelashes. Because of its tannin content, the fruit is used medicinally as a deterrent agent and an astringent in intestinal troubles. In the form of an infusion, decoction, syrup, or paste, the fruit is administered as a treatment for sore throat, colds, and bronchial catarrh. It is also taken to relieve fever, cystitis, gonorrhea, edema, and liver and abdominal troubles. The seed powder is an ingredient in a paste given to relieve ague. Meanwhile, a gum obtained from the wounded trunk is employed in India to treat diarrhea and genito-urinary ailments. It is both a diuretic and demulcent. The roots are used against toothache^(3, 4, 5). In this research, 'Zahidi', which is distinguished from dry dates as have a

high sugar and low moisture (< 20%), were used. The Zahidi is medium-sized, cylindrical, with a light golden-brown and contains higher values of potassium, calcium, sulfur, chlorine, iron, manganese, copper, and a small amount of zinc as compared with the three other cultivates⁽⁶⁾.

The objective of this study is to investigate the possibility of using cheap dates as a potential alternative to expensive conventional feed dates while maintaining the quality of poultry production.

Materials and Methods:

This study was conducted in the fields of the faculty of the Veterinary Medicine at the University of Kufa during the period from 11 November 2015 to 14 December 2015. Forty one-day-old 308 Ross chicks were purchased from Al-Sharq Al-Awsat in Baghdad (Appendix 1). The chicks were divided randomly into four groups of 10 chicks per group (Control, G1, G2, and G3) and given a pellet diet. Twenty kilograms of date palm (Zahidi) were incorporated into the diets of the chicks in concentrations of 5%, 10%, and 15% for 30 days. Blood samples were collected from the jugular vein after the completion of the experiment. Centrifugation (3000 PRM at 12 min) was used to separate the serum, which was stored in the refrigerator until its use. The chemical parameters of total protein, triglyceride, and cholesterol were measured using kits from Biolabo, GOT and GPT were measured from Syrbio kits, glucose was measured using a kit from Biomaghreb, and HDL by kits from BioSystems. LDL and VLDL were calculated using the following equations: $VLDL = TG/5$ and $LDL = \text{Cholesterol} - (VLDL + HDL)$ ⁽⁷⁾. Value of each parameter was

determined by using spectrophotometer.

Statistical analysis:

The results are expressed as mean values with their standard errors. Two-way ANOVA followed by Duncan's variance were performed to compare the treatment groups. Significance was set at $p < 0.05$ using the Statistical Package for Social Science-Ready statistic program 20.

Result:

Table 1 illustrates the results of the statistical analysis of biochemical parameters. The results of serum glucose and GOT presented not significant differences ($P > 0.05$), whereas total

protein increased significantly ($P < 0.05$) in G1 (5%) and G2 (10%) compared with C and G3 (15%). GPT showed significant decrease ($P > 0.05$) in G1, G2, and G3 as compared with the control group.

Table 2 shows that no significant increase ($P > 0.05$) in the lipid profile, whereas a significant increase ($P < 0.05$) in the cholesterol levels of G1, G2, and G3.

Table (3) shows that no significant increase ($P > 0.05$) in body weight in the 15- and 30-day period as compared with the last week. In the last week of the experiment, there was a significant increase in the weights of G2 as compared with G1, G3, and control group, which exhibited approximately equal value.

Table (1): The effect of date palm fruit of chicken broiler on serum glucose, total protein, GOT and GPT (mg/dl)

Value Group	Glucose	Total protein	GOT	GPT
C	252.24±21.69a	3.32 ±0.04a	134.70 ±5.20a	3.90±0.43b
G1	237.57± 2.54a	3.96 ±0.16b	139.37 ±10.54a	0.87 ±0.29a
G2	249.61 ± 9.36a	3.69±0.21ab	129.90 ±7.35a	2.60 ±0.74ab
G3	214.74±4.35a	3.41±0.08a	129.80±7.51a	2.00 ±0.68a

- Mean ± SE
- C = control.
- G1= chicken + diet with 5% date palm fruit.
- G2= chicken + diet with 10% date palm fruit. –
- G3= chicken + diet with 15% date palm fruit.
- Small letter denote the different between groups

Table (2): The effect of date palm on the value of lipid profile (mg/dl)

Value Group	Triglyceride	Cholesterol	VLDL	LDL	HDL
C	84.01±11.24a	227.97±5.68a	16.80 ±2.24a	214.83±6.37a	29.93 ± 1.52a
G1	95.03 ±4.10a	334.85±5.88b	19.00 ±0.82a	252.80 ±30.23a	41.94 ±7.99 a

G2	97.69 ±8.54a	371.53±19.96b	19.53±1.70a	350.59 ±19.18a	40.47± 3.70a
G3	92.76 ±6.90a	325.09±38.90b	18.55± 1.38a	304.44±40.79a	39.20± 3.55a

- Mean ± SE
- C = control.
- G1= chicken + diet with 5% date palm fruit .
- G2= chicken + diet with 10 % date palm fruit
- G3= chicken + diet with 15% date palm fruit
- small letter denote the different between groups

Table (3): The effect of date palm fruit of chicken broiler body weight (Kg) in day 16, 30 and 38 of experiment.

- Mean ± SE
- C = control.

Day \ Group	16	30	38
C	0.48 ±0.01a	1.60±0.06a	2.08±0.09a
G1	0.43±0.01a	1.65±0.04a	2.44±0.05b
G2	0.47±0.02a	1.54±0.06a	2.73 ±0.10c
G3	0.48±0.01a	1.57±0.04a	2.25±0.06a

- G1= chicken broiler + diet with 5% date palm fruit .
- G2= chicken broiler + diet with 10% date palm fruit.
- G3=chicken broiler + diet with 15% date palm fruit.
- Small letter denote the different between groups

Discussion:

The serum blood characteristics in Table 1 indicate a significant increase in the total protein of G1 and G2 as compared with G3 and the control group. This increase is due to the improvement in nutrient utilization especially protein and sugars of dates, which be digested and absorb easily ⁽⁸⁾. These results were in agreement with the fact that the different raw materials consist highly digestible energy sources, such as glucose and glucose derivatives, could contribute

to increasing the performance of broiler chicks ⁽⁹⁾. A decrease in GPT concentration was also observed in G1, G2, and G3 as compared with the control group. This decrease may be attributed to the antioxidant effects of date palm, which contains phenolics and flavonoids ⁽¹⁰⁾. Meanwhile, the significant increase (P< 0.05) in cholesterol in Table 2 that may due to the increase in the levels of acetyl-CoA in the liver, leading to an increase in cholesterol synthesis ⁽¹¹⁾. Increases in the weights of the broilers

chicken which were shown in fourth week (Table 3), were in agreement with the results of another study that proved the addition of Al-Zahdi dates led to a considerable increase in weight gain ⁽¹²⁾. The sugar content of this kind of date had a beneficial effect on the broilers, and improved the digestibility of dry matter. The results also show the absence of significant effects in the body weight of the broilers at week 3 ⁽¹³⁾.

Conclusion

1. Date palms should be used in the last week of the experiments to obtain good weight. The added optimal concentration was 10%.
2. The increase in body weight of the samples in this study was higher than that in the Ross 308 guide under the same conditions.
3. The study can contribute positively to extending the poultry industry in the Middle East, especially in Iraq, which has an overabundance of dates.

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