



The effects of garlic and *nigella sativa* on some biochemical and production characteristic in broiler chicken

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Abstract:

This experiment are accrued to study effect of addition of garlic powder and *nigella sativa* of biochemical and production characteristic in broiler chicken , the group experimental roundly divided in to three groups as following group one control the second and third give 4% garlic powder and *nigella sativa* respectively in day 25 to 45 of experiment.

The result show decreasing in significant concentration of mean of albumin , total protein and glucose in broiler that feed on ration contain garlic powder and *nigella sativa* in 4% in concentration of significant ($p < 0.05$) and non significant changes in cholesterol concentration mean and heart weight , as well as *nigella sativa* group show significant decreases in live weight.

This experiment was shown decrease in feed conception in garlic group than black seeds group when compared with control group .

Key words : *nigella*, garlic, albumin, glucose, cholesterol.

تأثير الثوم و الحبة السوداء على بعض المعايير الكيموحيوية و الوزنية في فروج اللحم

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الخلاصة:

اجريت هذه التجربة لدراسة تأثير إضافة مسحوق الثوم و حبة السوداء على الخصائص الكيمياء الحياتية والإنتاجية في الدجاج اللحم، قسمت المجموعات التجريبية عشوائيا إلى ثلاث مجموعات على النحو التالي المجموعة الاولى السيطرة و الثانية والثالثة اعطيتا مسحوق الثوم 4% و حبة السوداء على التوالي في اليوم 25 إلى 45 من عمر الافراخ. اظهرت النتائج وجود انخفاض معنوي في معدل الالبومين، البروتين الكلي و الكلوكوز للطيور التي تم تغذيتها على عليقة التي تحوي مسحوق الثوم بنسبة 4% وبفارق معنوي على مستوى ($p < 0.05$) فيما لم تظهر فروق معنوية في معدلات الكولسترول عن مجموعة السيطرة كما كان هنالك فارق معنوي في وزن الكبد بينما لم يظهر هكذا فارق في وزن القلب، اما مجموعة الحبة السوداء لم تظهر فروق معنوية في كافة المعايير السابقة ماعدا انخفاض في وزن الكبد بالمقارنة بمجموعة السيطرة وبفارق معنوي على مستوى ($p < 0.05$) .

كما بينت التجربة أن أقل المجاميع استهلاكاً للعلف كانت معاملة الثوم تليها معاملة الحبة السوداء عند المقارنة بمجموعة السيطرة حيث كانت 29.40، 27.00، 25.29 كغم على التوالي طيلة أيام التجربة .

الكلمات المفتاحية: الحبة السوداء، مسحوق الثوم، الألبومين، الكلوكون، الكلسترول

Introduction:

The medical plants are used in first records of civilization it's a main natural source in drug preparation as extracts of active ingredient or used as raw material in production of synthetic drugs ,to production of same chemical molecule for an important drugs like corticosteroid, alkaloids and sex hormones [1,2]. Uses of medical plants are diffused in present as instate of synthetic drugs to to reduce side effects this material are chemical consist of alkaloids or glycosides [3] in Iraq there are more experiment to study medical plants to reduce blood sugar as *Artemisia herba* , garlic *Allium stavia* eucalyptus camel dulensis and black seeds *Nigella sativa* and other [4] the garlic and nigella are medieval plants cultured in Iraq , the active ingredient present as volatile sulfuric oils, vitamins hormone and antifungal [5], garlic presence in aminic group called (GRAS) generally regarded as safe [6] the observed to decrease cholesterol concentration increase and liver and in serum and liver and decrease bacterial growth and used as anti-oxidant that lead to decrease of mortality ration broiler the histological effect are presence as decrease of Libran groove in duodenum [7] and elevation in blood globulin in the serum in broiler [8] the nigella are used experimentally as anti-cancer bacterstatic anti-fungal and anti-parasitic infection usually used in case of asthma and hypersensitivity [9] because it contain a volatile oils as dithymoquinone , thymoquinone that have anti-cancer effect [10] its contain high caloric material as protein 21% fats 35% essential fatty acid as elonic acid [11] the use of nigella in feeding of chicken cause increases of feed coupsion and decrease of belly fats [12].

The nigella classified as *nigella sativa* in class of ranunculaceae it's across medial growth the seed are black in color pyrmed in shape[12].

Material and Methods:

This experimental are accrued in farm of in technical instates of kufa uses 30 chicken of Ross brand in 25 days old and classified randomly into three groups in cages diminished 4753 its feed in ration to 20 days as experimental ration

- 1- Control
- 2- 4% garlic [2,5]
- 3- 4% block seeds negilla [4,6]

This ration have given 2944 kcal/kg , then measured following parameters

1. feeding composition by weighing of food and residual feed.
2. Biochemical tests:- in last day of experiment collect 5 ml of blood sample in plane tube (AFCO, Jordan) and separated serum by centrifuge (Hettich, Germany) at 3000 p.r.m. for 15 min , serum collected to following testes.
 - a. Total protein (g/dl)
 - b. Albumin (mg/dl)
 - c. Total cholesterol (mg/dl)
 - d. Serum Glucose (mg/dl)

In this tests used special kites (CYAN, Belgium) and measured by U.V. spectrophotometer according each test.

3. At the end of experiment the chickens Slaughter to take the heart and liver weights.

Statistics

When applicable the data were subjected to analysis of variance followed by the least significance difference test [16]. Student's *t*-test was used for the means of two groups and multiple *t*-test (ANOVA) [13]. The concentration of

significance was at p , <0.05 , by using computerized program spss 10.

Results:

The table 1 showed significant increases (4.736) mg/dl serum albumin concentration in group of garlic compared with other groups (table 1).

Table 1 The effects of garlic powder and *nigella sativa* on serum albumin concentration (mg/dl).

Treatment	Mean (mg/dl)	St. error
Control	2.282	0.706
Garlic	4.736*	0.755
Nigella	1.956	0.706

*significantly different from the respective control p , < 0.05 .

Table 2 show the mean value of serum total cholesterol concentration (mg/dl) there no significant difference between control and treatment groups (table 2).

Table 2 the effects of treatments on serum total cholesterol concentration (mg/dl).

Treatment	Mean (mg/dl)	St. error
Control	186.607	13.843
Garlic	179.795	14.799
Nigella	166.071	13.842

*significantly different from the respective control p , < 0.05 .

The result in table 3 explain the mean values of serum glucose concentration (mg/dl), the garlic significantly decreasing (91.615) mg/dl serum glucose concentration (table 3).

Table 3 the effects of treatments on serum glucose concentration (mg/dl).

Treatment	Mean (mg/dl)	St. error
Control	109.159	4.242
Garlic	91.615*	4.535
Nigella	110.107	4.243

*significantly different from the respective control p , < 0.05 .

The result in table 4 explain the mean values of serum total protein concentration (g/dl), the garlic significantly increasing (6.423) g/dl serum total protein concentration (table 4).

Table 4 the effects of treatments on serum total protein concentration (g/dl).

Treatment	Mean (g/dl)	St. error
Control	5.915	0.313
Garlic	6.423*	0.334
Nigella	5.478	0.313

*significantly different from the respective control p , < 0.05 .

The mean values of heart and liver weights in treated groups listed in table 5, the garlic and *nigella sativa* significantly increasing (38 and 36.33) g of liver weight.

Table 5 the effects of treatments on heart and liver weights .

Treatment	Heart weight (mean $\pm$ St. error)	Liver weight (mean $\pm$ St. error)
Control	7 $\pm$ 0.687	52.333 $\pm$ 4.690
Garlic	8 $\pm$ 0.687	38 $\pm$ 4.68*
Nigella	8 $\pm$ 0.687	36.33 $\pm$ 4.56*

*significantly different from the respective control $p, < 0.05$.

The result in table 6 explain the mean values of total body weight of treated groups , the garlic and Nigella groups are significantly increasing (1457 and 1558) g total bird weight (table 6).

Table 6 the effects of treatments on total bird weight (g)and feed conversion factor.

Treatment	bird weight (mean $\pm$ St. error) (g)	feed conversion factor
Control	1665 $\pm$ 0.29	1.76
Garlic	1457 $\pm$ 0.25*	1.73
Nigella	1558 $\pm$ 0.27*	1.75

*significantly different from the respective control $p, < 0.05$.

Discussion:

The attention of some material to chicken ration as garlic and nigella because of eleventh the immunity status [14]. because its contains the antioxidant compound as vitamin E [15]. that reserved the WBC agent high concentration of free radicals inside the inflammatory . The garlic contain 0.05 IU of vitamin E, selenium and axasine [16]. in the study observant to positive action of garlic on albumin concentration more than control and nigella it increase of total protein concentration because of the effect garlic to advantage the digestion and absorption environment inside the elementary tract[17,18]. The often on total cholesterol concentration it's not observed significantly but it's mainly decrease in the both and nigella group, than control because the case study and individual variation and differ of environment of experiment [19]. The garlic decrease glucose concentration than control and nigella groups it have an effect on glucose concentration [20]. There are no effect on heart and liver weights because of

decreasing of lipid deposition by inhibition of hepatic lipogenic enzyme [21,22]. and inhibition of fatty acid by organic tellurium compound that present in garlic and nigella[23]. The increasing in hall weight of bird in nigella group in late study due to negatively effect's on pathogenic bacteria such as *E. coli* and *S. aureus* but in this study the total weight are low than control group because of the bitter test of nigella [24] .

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