ARTICLE
JOURNAL OF UNIVERSITY OF BABYLON
For Pure and Applied Sciences (JUBPAS)
Vol.33; No.2.| 2025

Effect of Put on Different Levels of Anise and Clove Oil Added to Broiler Feed on Some Biochemical Traits of Blood, Carcass and Dressing Percentage

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تا ثير اضافة مستويات مختلفة من زيت اليانسون والقرنفل المضافة إلى عليقة فروج اللحم على بعض الصفات الكيموحيوية للدم وقطعيات الذبيحة ونسبة التصافي

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Accepted: 9/3/2025 **Published:** 30/6/2025

ABSTRACT:

Background: This experiment was conducted to study the effect of adding anise and clove oil on the physiological performance of broiler, represented by biochemical traits and carcass components, for a period of 35 days.

Materials and Methods: In this experiment 300 Ross 308 broiler chicks One-day old were used. The chicks were randomly distributed into six equal treatments with two replicates for each treatment (25 birds per replicate). The birds were divided into treatments as follows: The first treatment (T1) basic diet, second and third treatment (T2 and T3) basic diet with anise oil added at 0.5 and 0.1 ml/kg feed respectively, fourth and fifth treatment (T4 and T5) basic diet with clove oil added at 0.5 and 0.1 ml/kg feed respectively, and sixth treatment (T6) basic diet with 0.5 ml/kg of each anise and clove oil. Some biochemical traits of blood, carcass and dressing percentage were measured.

Results: The results of the experiment showed that adding anise oil, clove oil and their mixture had a significantly excelled ($P<0.05$) in the biochemical traits and carcass properties compared to the control. The results also showed that adding a mixture of anise and clove oil 0.5 for each of them had the best biochemical traits and carcass properties, which was found in the sixth treatment of the experiment.

Conclusion: We can conclude that adding anise and cloves oil has a positive effect on some biochemical characteristics of the blood and it also improves the weight of the carcass for broiler.

Keywords: Chicken; anise; clove; physiological traits.

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INTRODUCTION

In the past few years, poultry farming has witnessed significant growth and rapid and accurate developments on a large scale compared to the manufacture of red meat products, accompanied by an increase in demand for white meat [1]. Consumers have turned to poultry meat because it is a source of high-quality animal protein, in addition to its use in preparing many meals, its moderate price, and the content of its meat of cholesterol and fat, which are intertwined in the emergence of obesity and heart diseases, which have become an obstacle that haunts modern man [2]. The great development in poultry farming or increased productivity is accompanied by the emergence of a large and diverse group of resistant bacterial and viral pathogens due to the random use of drugs and antibiotics [3] as well as metabolic diseases as a result of incorrect management practices in poultry farming [4]. Medicinal plants contain natural chemical substances of great benefit and importance in their physiological effect and therapeutic activity for humans and animals and the lack of side effects. Therefore, among the plants that have been proven to have the ability to improve the physiological traits of poultry are rosemary oil and laurel oil [5,6]. Anise (*PimpinellaanisumL.*) is a common medicinal plant. Scientific research has shown that adding anise seeds to broiler feeds increased growth rate and significantly improved production traits [7]. Anise contains many active compounds, including phenols, conjugates, flavonoids, alkaloids, and proteins [8]. Clove (*Syzygium aromaticum*) is one of the most common spices, as it contains a number of bioactive compounds. Eugenol is the most bioactive compound in cloves, and it constitutes 80-70% of clove oil [9]. The current study aimed to investigate the effect of adding anise and clove oil to broiler feed on some physiological traits represented by biochemical traits and carcass components.

MATERIALS AND METHODS:

This experiment was conducted in the poultry field of the Animal Production Technology Department at Al- Mussaib Technical College for 35 days, to investigate the effect of adding anise and clove oil to broiler feed on some productive traits. 300 unsexed Ross 308 broiler chicks were used, one day old, and then randomly divided into six treatments equally, with two replicates for each treatment (25 birds for each (Repeated) Anise oil obtained from local markets was added to the feed starting from the first day and the treatments were as follows:

The first treatment represents the control group that ate the basic feed without adding anise oil and clove oil; the second treatment represents the group of birds that ate the basic feed with anise powder added at a concentration of 0.5 ml/kg feed; the third treatment represents the group of birds that ate the basic feed with anise powder added at a concentration of 1 ml/kg feed; the fourth treatment represents the group of birds that ate the basic feed with clove powder added at a concentration of 0.5 ml/kg feed; the fifth treatment represents the group of birds that ate the basic feed with anise powder added at a concentration of 1 ml/kg feed; The sixth treatment represents the group of birds that ate the basic feed with a mixture of anise oil and clove oil added at a concentration of 0.5 ml/kg feed.

Traits studied: The physiological traits represented by the biochemical traits and carcass traits of the birds were measured.

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Blood collection

Blood samples were collected immediately after slaughter from 4 birds that were randomly selected for each treatment at the age of 35 days, blood was drawn from the brachial vein and placed in tubes containing anticoagulant (K3EDTA) and then placed in a centrifuge at a speed of 3000 rpm for the purpose of measuring the biochemical traits in the blood.

Anise and clove oil used in the experiment

The anise oil and clove oil used in the experiment were obtained from the local Iraqi markets.

Statistical analysis:

The data analysis was conducted statistically using the complete randomized design (CRD) to study the effect of the studied treatments, comparing the significant differences using [10] Duncan's multinomial test within the ready statistical program (SPSS).

RESULTS AND DISCUSSION

It is clear from the results of the current study, Table (1), that the glucose level was highly significantly affected (P>0.05) in the treatments that were applied in the experiment if the glucose level decreased in vegetable oils, the highest significance was found in T3 compared to the rest of the treatments. The reason for the decrease in the glucose level may be due to the role of anise and clove oil in reducing the intestinal absorption of sugar by inhibiting the amylase enzyme [11]. This result is consistent with what the researchers [12] reached, who found a decrease in the glucose level of broiler chickens fed on anise and clove oil at a level of 0.1% compared to the control. There were also significant differences in the level of triglycerides in T1, followed by T6, which did not differ significantly from T1. As for the treatments T2 and T3, they did not differ significantly between them, while T4 had the lowest level of triglycerides. As for cholesterol, T5 was higher. Morally compared to T1, followed by T6, and also came after it were treatments T2, T3 and T4 with the least significant. As for albumin, the treatments T2 and T6 had the highest value compared to T1, and the least significant differences were the treatments T3, T4 and T5. Also, urea had the highest significant value in the treatment T1 and T6, followed by the rest of the treatments with the least significant difference compared to. T1 As for ALK, all treatments were insignificant. The table also showed the total protein level, as the addition treatments excelled on the control treatment, where treatment T1 recorded the highest significant increase at the level (P>0.01) on all treatments in the experiment. The reason for the increase may be due to the role of essential oils in stimulating the production of immune proteins because they contain a high percentage of flavonoids, thus increasing the percentage of broiler production [13] as the total protein level is directly proportional to the number of antibodies and the increase in body weight, as it represents a direct reflection of the metabolic rate, and blood proteins, including albumin, have an effective role in transporting vitamins, carbohydrates and some hormones. The results are not consistent with [14] in serum protein concentration, which indicated that its levels did not show significant differences in Japanese quail. [15] reported that the use of dietary clove oil at an average of 0.06 had non-significant effect on total blood protein in broiler chickens. Data indicate a significant decrease in cholesterol concentration when anise powder 0.01 was added to broiler and Japanese quail diets [7]. While [16] reported that non-significant difference in cholesterol levels occurred when anise oil was added to quail diets of laying hens. Data indicate a significant decrease in cholesterol concentration when anise powder 0.01 was added to broiler and Japanese quail diets [7]. While [16] reported that there was non-significant difference in cholesterol levels when adding anise oil to the diet of white

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quail. The effect of vegetable oils on the level of cholesterol and triglycerides as shown in Table (1) which indicates that treatment T5 is the most significant at an average of (P<0.01) while treatments T2 and T3 recorded the highest undesirable values for this trait. The reason for the decrease in cholesterol and triglycerides in the treatments added to vegetable oils may be that these oils are rich in thymol and carvacrol compounds, as these substances have a significant effect on the concentration of cholesterol and triglycerides and getting rid of their harmful standards in the blood [17]. The addition of anise powder reduces the exposure of birds to any type of stress by increasing the secretion of thyroxine hormone and thus increasing the rates of food metabolism and increasing vital reactions in the body and then building muscle tissue in the body as it results in maintaining a high rate of total protein in the blood of birds for the experimental treatments. As indicated that, the reason for the decrease in uric acid in the added treatments may be that anise contains anethole, a natural diuretic in its essential oil.

Table (1) Effect of adding anise and cloves oil and their mixture on blood traits (g) of broiler chicks, Rose 308 strain (± standard error)

Treatments	Glucose	Protein	Triglycerides	Cholesterol	Albumin	urea	AlK
T1	180.0e ±0.0	3.40a ±0.0	70.0b ±0.0	173.0c ±0.0	2.16c ±0.03	1.60a ±0.0	98.66 ±0.88
T2	188.33c ±0.33	3.0d ±0.0	53.0d ±0.0	157.66f ±0.66	2.40a ±0.0	1.30c ±0.0	98.33 ±1.45
T3	193.66a ±0.33	3.20c ±0.0	53.0 d ±0.0	171.0d ±0.0	1.93d ±0.03	1.30c ±0.0	132.66 ±35.17
T4	186.0d ±0.0	3.0d ±0.0	62.0c ±0.0	169.0e ±0.0	2.13c ±0.03	1.50b ±0.0	98.66 ±1.85
T5	189.33bc ±0.33	3.33b ±0.03	79.0a ±0.0	189.0a ±0.0	2.30b ±0.0	1.50b ±0.0	99.66 ±0.88
T6	190.33 b ±0.66	3.30b ±0.0	70.0b ±0.0	177 b ±0.0	2.46a ±0.03	1.60a ±0.0	99.0 ±1.52
Significance	**	**	**	**	**	**	**N.S.**

Different letters mean significant differences between the treatments at the probability level of 0.05 ** / at the level of p <0.05) , N.S. / Not Significant

It is noted from Table (2) that there are non-significant differences in the relative weights of the main cuts (carcass weight, breast weight, thigh weight). While significant differences were recorded between the treatments for back weight T3, T4, and T6 compared to T1, followed by T2, while T5 is the least significant compared to the control. As for the neck weight, it was the highest significant in T3, T4, T5, and T6, followed by T2 compared to the control. As for the weight of the wings, T4 and T6 were the highest significant among the treatments, followed by the other treatments compared to the control. The results of the experiment are consistent with the results of [18], as there was no change in the weights of the carcass cuts in the anise oil addition treatments compared to the control. [19], indicated that there were non-significant differences in the relative weight of the breast compared to the control group when adding rosemary extract at a level of 200 mg/kg feed to the rations of Rose strain broilers. The results also agreed with [20], who indicated that there was a significant decrease in the relative weight of abdominal fat in the treatment in which thyme oil was used at an average of 1.5 feed in the rations of broiler chickens.

Table (2) Effect of adding anise, cloves oil and their mixture on carcass weight and weight of main and secondary cuts (g) for broiler chickens, Rose 308 strain (± standard error)

Treatments	Carcass	Breast	Thigh	Back	Neck	Wing
T1	2296.67 ±88.52	905.0 ±29.29	520.0 ±25.0	208.33 ab ±16.41	110.0 a ±2.88	173.33 bc ±6.0
T2	2321.67 ±70.73	863.33 ±83.78	528.33 ±23.15	198.33 b ±4.40	81.66b ±6.0	163.33c ±7.25
T3	2326.67 ±69.30	843.33 ±48.67	538.33 ±46.21	243.33 a ±16.91	106.66 a ±7.26	183.33 b ±4.40
T4	2370.33 ±60.13	906.66 ±40.44	535.0 ±10.0	238.33 a ±15.89	110.0a ±2.88	204.33 a ±7.44
T5	2171.67 ±66.47	878.33 ±20.48	513.33 ±21.85	203.33ab ±4.40	101.66 a ±6.0	180.0bc ±2.88
T6	2261.67 ±46.93	863.33 ±17.40	551.66 ±6.0	240.0a ±5.0	115.0a ±7.63	211.66 a ±6.0
Significance	**N.S**	**N.S**	**N.S**	*	**	**

Different letters mean significant differences between the treatments at the probability level of 0.05 ** / at the level of ($p < 0.05$), * / at the level of ($p < 0.01$), N.S. / Not Significant

The relative weight of the internal organs (heart, liver and gizzard) as shown in Table (3) indicates that there are non-significant differences between all experimental treatments. The results agree with what was stated by [21] regarding the absence of significant differences in the dressing percentage and weight of the internal organs, which included the liver and gizzard, in the chicks fed on rations containing in their composition rosemary leaf powder mixed with thyme, garlic, and cinnamon at a level of 10/kg feed. It also agrees with [22] who indicated that there are non-significant differences in the weight of the gizzard when adding rosemary to the laying hens' rations at an average of 0.5 and 0.01 compared to the control treatment free of any addition. The results are consistent with [23] who showed non-significant differences in the relative weight of the liver when adding a mixture of essential oils including laurel oil, sage oil, marjoram and sunflower oil to broiler feeds.

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Table (3) The effect of adding anise oil, cloves and their mixture on the weight of internal organs of the carcass (g) for broiler chickens, Rose 308 strain (± standard error)

Treatments	Dressing percentage	Heart	Liver	Gizzard
T1	73.206 ±0.56	13.33 ±0.88	57.0 ±3.60	32.66 ±1.76
T2	75.23 ±0.83	14.66 ±2.18	50.33 ±2.96	27.33 ±3.52
T3	77.79 ±0.96	13.0 ±1.15	57.0 ±4.14	30.66 ±1.45
T4	74.22 ±1.17	12.66 ±0.88	66.0 ±2.08	34.00 ±2.08
T5	73.95 ±4.56	13.0 ±0.57	53.33 ±4.33	29.0 ±1.0
T6	77.33 ±4.35	13.00 ±1.0	54.66 ±0.66	39.33 ±4.05
Significance	**N.S**	**N.S**	**N.S**	**N.S**

N.S. / Not Significant

Dressing percentage was all insignificant compared to the control. [18] indicated a relative increase in the weights of internal organs in the broiler experiment when adding anise oil to the feed, as it did not agree with our results, as the weights of the internal organs were constant. As shown in Table (3) dressing percentage with internal organs showed there were non-significant differences, but all treatments were insignificant, while dressing percentage without internal organs was all insignificant in the experimental treatments. [24] stated that jasmine can be used as an effective growth promoter in poultry due to its digestive stimulating effect and its antimicrobial effect. The results of the experiment showed that adding anise oil and clove oil or their mixture led to an increase in the dressing percentage data with and without viscera. The reason is due to an improvement in body weight, weight gain, and feed consumption, which was positively reflected in the dressing percentage.

CONCLUSION

It can be concluded that put on vegetable oils to the diet like anise and clove oil has a useful effect on some biochemical traits of blood, and also improves the weight of carcass components of broiler chickens.

Conflict of interests:

There are non-conflicts of interest.

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الخلاصة

المقدمة: أجريت هذه التجربة لدراسة تأثير إضافة زيت اليانسون والقرنفل على الأداء الفسيولوجي لدجاج اللحم، المتمثل بالصفات الكيموحيوية ومكونات الذبيحة، لمدة 35 يومًا.

المواد وطرائق العمل: في هذه التجربة استخدم 300 فروج لحم من سلالة روس 308 عمر يوم واحد. وزعت الافراخ عشوائيا على ستة معاملات متساوية بواقع مكررين لكل معاملة (25 فرخا لكل مكرر). قسمت الافراخ في المعاملات على النحو التالي: المعاملة الأولى (T1) علف أساسي بدون أي إضافات، المعاملة الثانية (T2) علف أساسي مضاف إليه زيت اليانسون بمعدل 0.5 مل/كجم علف، المعاملة الثالثة (T3) علف أساسي مضاف إليه زيت اليانسون بمعدل 1 مل/كجم علف، المعاملة الرابعة (T4) علف أساسي مضاف إليه زيت القرنفل بمعدل 0.5 مل/كجم علف، المعاملة الخامسة (T5) علف أساسي مضاف إليه زيت القرنفل بمعدل 0.1 مل/كجم علف، والمعاملة السادسة (T6) علف أساسي مضاف إليه 0.5 مل/كجم من كل من اليانسون وزيت القرنفل. تم قياس بعض الصفات الكيموحيوية للدم (الجلوكوز، البروتين، الدهون الثلاثية، الكوليسترول والألبومين) ونسبة التصافي وقطعيات الذبيحة.

النتائج: أظهرت نتائج التجربة أن إضافة زيت اليانسون وزيت القرنفل وخليطهما كان له تأثير معنوي ($P<0.05$) في الصفات الكيموحيوية وخصائص الذبيحة مقارنة بمعاملة السيطرة، كما أظهرت النتائج أن إضافة خليط من زيت اليانسون وزيت القرنفل 0.5 لكل منهما كان له أفضل الصفات الكيموحيوية وخصائص الذبيحة وهو ما وجد في المعاملة السادسة من التجربة.

الاستنتاج: نستطيع أن نستنتج أن إضافة الزيوت النباتية إلى العلف مثل زيت اليانسون والقرنفل له تأثير إيجابي على بعض الخصائص الكيموحيوية للدم، كما أنه يحسن من وزن مكونات الذبيحة لدجاج اللحم.

الكلمات المفتاحية: دجاج, اليانسون والقرنفل، الصفات الفسيولوجية.

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