



A comparative study on the effect of the, local hawthorn leaf powder, with the mixture of liquid enhancers (Garlimmune) on the physiological characteristics of the blood of broiler chickens

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Abstract

This study was conducted in the Poultry Farm for KYSAR Company in Erbil City and aimed to determine the effect, adding of the single Powder of Hawthorn tree leafs PHTL with or without adding mixed Garlimmune liquid to Obtain the Synergism effect upon physiological blood parameters for ROSS-308 broiler. In this experiment randomly distributed 144 unsexed one-day age broilers to 6 treatments with three replicates for each. The system of feeding was ad libitum and the drinking water was available and the average live weight of the chicks was 40 gm. The nutritional treatments were as follow. T1, basal diet (Control I diet), T2: basal diet with 0.025 % of PHTL, T3: basal diet with 0.50% of PHTL, T4: basal diet and the drinking water contained liquid Garlimmune as 0.50ml per100 liter. T5: basal diet with 0.25% of PHTL and the drinking Water Contained liquid Garlimmune as 0.50ml per N100 water, T6: The basal diet with 0.50% of PHTL and drinking water contained liquid Garlimmune as 0.50ml per 100 drinking water. The Statistical analysis for the serum bio chemical parameters obtained significantly ($P \leq 0.05$) depression of the cholesterol and Triglycerides for the 2,3,4,5, and 6th treatments serum by comparing with control group birds the Serum by comparing with control group birds. The serum total protein percentage for the 3rd treatment was significantly ($P \leq 0.05$) bigger than another treatments and average for the same parameter for the serum of control group birds was less from all treatments, while the low density lipoproteins for the serum of 6th treatment birds were significantly ($P \leq 0.05$) less than control treatment birds. There was no significantly difference between the serum cef the all treatments birds for the values of albumin and globulin.

Key words: Garlimmune, Crataegus, Broiler, Blood

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Introduction

Feed additives from plant sources are considered as a tool to eliminate the role of antibiotics as catalysts for growth and improve performance with photo biotics, which are within the plant kingdom metabolizable by herbs, fruits, bark of stems, seeds, roots, tubers, essential oils, and aqueous and oily extracts and for the leaves (Leafs) of trees and shrubs, and the light enhancers that took large areas of applied scientific research, such as garlic powder, which contained active substances, androgens, plant estrogens, and essential fatty acids such as linoleic [1], and the same applies to cinnamon powder (Phenolics), Alsbomyat, cosadat, resins, Alclai, tannins [2], On the other hand, ginger powder contained many active compounds (gingerol, shogaols, zingerone) [3], and thyme powder contained many biologically active compounds such as thymol and carvacrol [4]. This is due to the fact that these effective compounds increase the efficiency of digestion by enhancing the secretions of digestive enzymes on the one hand, and improve the efficiency of absorption through the length of the villi and the depth of the crypts, which are considered the tools of absorption in the gastrointestinal tract, in addition to that. Harmful bacteria, noting that these effective compounds work to improve the body's immunity, and all of this works to support growth and improve the quality of the product and due to the fact that modern international camels have no broiler chickens among them are the new models of broiler crosses, rose 308, as these models possess a high-speed genetic training process, which leads to a high rate of bird deaths, especially in the last breeding stages of high-weight birds. The cause of death is attributed to the occurrence of Pulmonary hypertension syndrome (PHS), which is a phenomenon caused by an imbalance between the amount of O₂ required for muscles and the amount of O₂ supplied to the heart and lungs [5, 6]. Which necessitated the need to choose a specific type of optical enhancers, including the powder of the leaves of the local hawthorn tree (*Oxyacantha Crataegus*), due to the fact that they contain effective compounds that have a vital effect in protecting the bird from this phenomenon. In order to determine the effectiveness of many optical enhancers, the effect of these enhancers on productive and physiological performance is studied. For broiler chickens and laying hens, so the study aimed to determine the synergistic effect supporting production, improving the internal stability of the body (blood) for some physiological

parameters and the chemistry of blood biochemistry for broiler chickens. That is, to determine the efficiency of those commercially banned enhancers in the form of liquid (Garlimmune) with the local hawthorn leaf powder.

Materials and methods

In this experiment, used 144 unsexed broiler chicks of Rose 308 strain, one-day old, at a rate of 40g. These chicks were raised on the floor in a closed hall with 18 cages with dimensions (1*1*0.50) m on a litter of sawdust, the thickness of the sawdust 4-6 cm and above. Chicks were distributed randomly to 6 treatments, with 3 replications for each repetition of 8 birds/replicate. Hawthorn leaf powder was obtained from the local markets of Kirkuk Governorate, and the compound used in drinking water was obtained from Kosar Company/Erbil the chicks were fed during the period 1-14 days on the starter diet (Table 1). It contained 23% protein and 3000 kilocalories / kg metabolizable energy, and the growth diet for the period from 15-28 days (Table 2). It contained 21% protein and 3100 kilocalories/kg Representative energy and the final diet for the period from 29-35 days (Table 3). It contained 20% protein and 3175 kilocalories/kg representative energy. The chicks were left in the first week of life at a temperature of 33 C, and the feeding was free dietary treatments were as follows. T1: basic diet (Control I diet), T2: basic diet with 0.25% of (PHTL), T3: basic diet with 0.50% of (PHTL), T4: basic diet and Garlimmune drinking liquid containing 0.50 per 100 drinking water for 7 days in the growing period T5: basic diet 0.25% of (PHTL) and drinking water containing Garlimmune liquid 0.50 per 100 drinking water for 7 days in the growing period, T6: basic diet 0.50% of (PHTL) and the drinking water contains Garlimmune liquid at a ratio of 0.50 per 100 drinking water for 7 days in the growth period. The nutritional needs in the table were calculated according to the guide of Kosar / Erbil Company, the chemical composition calculated according to the report of the US National Research Council [7].

Results

Characteristics of blood biochemistry: The results of the statistical analysis of Table (4) showed the effect of the experiment's treatments on the characteristics of blood vitality chemistry. A significant decrease was observed for the treatment of the birds of the sixth treatment compared with the third and fifth treatment. As for the level of

cholesterol, a significant decrease ($P < 0.05$) was observed in the second treatment compared with the rest of the all treatments. Likewise, a significant decrease was observed for each of the treatments in comparison with the control treatment. As for the level of triglycerides, a significant decrease ($p < 0.05$) was observed in the blood of all treatments (6, 5, 4, 3, 2) compared to the control treatment. As for the level of albumin, no significant differences were observed n.s between all treatments. Total protein in blood plasma, a significant increase ($P < 0.05$) was observed in the serum of the birds of the third treatment compared with the treatments. Likewise, a significant superiority ($P < 0.05$) was observed for the sixth treatment compared to the first, second, fourth and fifth treatment, while a significant superiority was observed for the second, fourth and fifth treatments compared to with the first treatment of control. As for the level of very low-density

lipoproteins (VLDL), we notice that there is no significant difference between the serums of the transactional birds. As for the level of globulin, a significant ($p < 0.05$) superiority was observed in the serum of the three treatment birds over the rest of the treatments compared with treatment. Transport enzymes of the amino group AST, ALT: - AST, as we notice a decrease in blood serum of birds for the third, fourth, fifth and sixth treatment compared with the control, while the second treatment did not differ significantly with the control treatment. As for the ALT enzyme, we

notice a significant decrease in the activity of the ALT enzyme in the serum of the blood of the third treated birds compared to the control. As for the second and sixth treatments, they did not differ significantly from each other. Likewise, the fourth and fifth treatments did not differ with each other in a significant way, as we notice a significant superiority ($p < 0.05$) in the blood of the treated birds. On the second, fourth, fifth and sixth transactions, there were no significant differences between the first and third transactions.

compounds (Flavonoids and oligomeric proanthocyanidins) improve digestion coefficient of nutrients, growth and environmental stability of the intestine in favor of beneficial bacteria by lowering the intestinal pH, anti-growth of harmful bacteria in addition to its work as an antioxidant [8, 9], While garlic contains androgens, phytoestrogens, and essential fatty acids such as linoleic acid, which help [1], ginger contains the active compounds gingerol, shogaols, zingerone [3], while Thyme contains the active compounds thymol and carvacrol responsible for its activity as an antioxidant [4], while cinnamon contains active compounds Phenolics), Alsabomyat, cosadat, resins, Alclai, tannins) [2] These effective compounds increase Improving the body's immunity and as an antibacterial agent.

Table1: the proportions of feed materials included in the composition of the starter feed (day-14 days) used in the experiment

Feed stuffs %	T1	T2	T3	T4	T5	T6
Crushed wheat	57.78	57.53	57.28	57.78	57.53	57.28
Soybean meal	33.50	33.50	33.50	33.50	33.50	33.50
Soybean oil	4.50	4.50	4.50	4.50	4.50	4.50
Di Calcium Phosphite	2.66	2.66	2.66	2.66	2.66	2.66
Salt	0.20	0.20	0.20	0.20	0.20	0.20
Limestone	0.68	0.68	0.68	0.68	0.68	0.68
A mixture of vitamins and minerals	0.10	0.10	0.10	0.10	0.10	0.10
DL-methionine	0.26	0.26	0.26	0.26	0.26	0.26
L-lysine	0.32	0.32	0.32	0.32	0.32	0.32
Local hawthorn leaf powder		0.25	0.50		0.25	0.50
Total	100	100	100	100	100	100

Table3 the proportions of feed materials included in the composition of the final feed (29-35 days) used in the experiment .

Feed stuffs %	T1	T2	T3	T4	T5	T6
Crushed wheat	25.30	25.05	24.80	25.30	25.05	24.80
Crushedyellow corn	38.81	38.81	38.81	38.81	38.81	38.81
Soybean meal	27	27	27	27	27	27
Soybean oil	5	5	5	5	5	5
Di Calcium Phosphite	2.19	2.19	2.19	2.19	2.19	2.19
Salt	0.20	0.20	0.20	0.20	0.20	0.20
Limestone	0.69	0.69	0.69	0.69	0.69	0.69
A mixture of vitamins and minerals	0.10	0.10	0.10	0.10	0.10	0.10
DL-methionine	0.21	0.21	0.21	0.21	0.21	0.21
L-Lysine	0.25	0.25	0.25	0.25	0.25	0.25
choline chloride 60%	0.25	0.25	0.25	0.25	0.25	0.25
Local hawthorn leaf powder		0.25	0.50		0.25	0.50
Total	100	100	100	100	100	100

Table2: the proportions of feed materials included in the formation of growth diet (15-28 days) used in the experiment.

Feed stuffs %	T1	T2	T3	T4	T5	T6
Crushed wheat	52.71	52.46	52.21	52.71	52.46	52.21
Crushedyellow corn	8.50	8.50	8.50	8.50	8.50	8.50
Soybean meal	29.50	29.50	29.50	29.50	29.50	29.50
Soybean oil	5	5	5	5	5	5
Di Calcium Phosphite	2.41	2.41	2.41	2.41	2.41	2.41
Salt	0.20	0.20	0.20	0.20	0.20	0.20
Limestone	0.76	0.76	0.76	0.76	0.76	0.76
A mixture of vitamins and minerals	0.10	0.10	0.10	0.10	0.10	0.10
DL-methionine	0.24	0.24	0.24	0.24	0.24	0.24
L-Lysine	0.32	0.32	0.32	0.32	0.32	0.32
choline chloride 60%	0.26	0.26	0.26	0.26	0.26	0.26
Local hawthorn leaf powder		0.25	0.50		0.25	0.50
Total	100	100	100	100	100	100

Table4: the effect of adding local and compound hawthorn leaves powder (Garlimmune) to a ration containing serum proteins (g/100ml) for broilers 308 ROSS (mean ± standard error)

Treatments	T1	T2	T3	T4	T5	T6
Age						
Glucose	0.15±239.28 a	0.57±231.13	0.36±233.57bc	0.29±232.56cd	0.57±234.12b	0.57±231.3d
Gholesterol	1.87±186.29 a	0.61±169.91 c	1.51±178.86 b	1.12±178.17 b	1.29±176.47b	0.91±175.8b
Triglycerides	0.68±84.34 a	1.01±62.20 b	0.12±65.23 b	0.89±64.98 b	2.45±65.01 b	2.33±60.65b
Total Protein	0.01±3.37 d	0.02±3.51 c	0.05±3.8 a	0.02±3.45 c	0.03±3.5 bc	0.08±3.61b
vHDL	2.11±36.94 a	0.31±36.40 a	0.30±32.93 ab	0.28±35.53 ab	0.08±35.93ab	0.97±36.05b
Globulin	0.02±1.06	0.01±1.11	0.04±1.36	0.01±1.12	0.01±1.17	0.01±1.20
Albumhn	0.04±2.31	0.10±2.40	0.15±2.44	0.03±2.33	0.05±2.33	0.01±2.41

. The different letters within the same raw indicates that there is a significant difference between the treatments at the level of significance $p > 0.05$, values were Mean ± standard error.

Table5:shows the effect of adding local and compound hawthorn leaves powder (Garlimmune) in the diet on amino group transport enzymes (ALT, AST) in the blood serum of broiler 308 ROSS (mean \pm standard error.)

Treatments Age	T1	T2	T3	T4	T5	T6
AST	33.31 \pm 0.70a	31.59 \pm 0.31b	27.79 \pm 0.93c	29.04 \pm 0.86c	29.04 \pm 0.86c	29.76 \pm 0.62bc
ALT	9.51 \pm 0.33a	8.54 \pm 0.36b	7.46 \pm 0.13c	7.76 \pm 0.15bc	7.76 \pm 0.15bc	8.26 \pm 0.05b

The different letters within the same raw indicates that there is a significant difference between the treatments at the level of significance $p > 0.05$, values were Mean \pm standard error.

Discussion

The reason may be attributed to the improvement of the physiological characteristics in these treatments, which used the local hawthorn leaf powder, with the two treatment birds eating drinking water containing the photosynthetic mixture containing proportions of (garlic, ginger, thyme, cinnamon), where the content of the local hawthorn leaf powder contains the active.

Conclusion

The current study concluded that the use of hawthorn and garlimmune in broiler diets leads to an improvement in physiological characteristics.

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دراسة مقارنة حول تأثير استخدام المعزز الضوئي (مسحوق اوراق الزعرور المحلي) مع Garlimmune في الصفات الفسلجية لدم فروج اللحم

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الملخص

اجريت هذه الدراسة في حقل الطيور الداجنة التابعة لشركة كوسار في مدينة اربيل وهدفت الدراسة الى تقدير التأثير المفرد الناجم من اضافة مسحوق اوراق الزعرور المحلي (Crataegus Oxyacanthal) مع او بدون اضافة خليط المعززات الضوئية السائل لإيضاح التأثير التارزي على صفات الكيموحيوية الدم لفروج اللحم Ross-308، بهذه التجربة وزعت 144 عشوائى من افراخ فروج اللحم الغير مجنس بعمر يوم واحد الى ستة معاملات وبقاوع ثلاثة مكررات لمعاملة الواحدة وأحتوى المكرر الواحد على 8 طيور وكان نظام التغذية حتى الاشباع ومياه الشرب متوفر لطيور وان معدل الوزن الحي لأفراخ كانت 40 غ وكانت المعاملات التغذية كالتالي:

T1 ، عليقة السيطرة ، T2: عليقة اساس مع 0.25% من مسحوق اوراق الزعرور المحلي ، T3: : عليقة اساس مع 0.50% من مسحوق اوراق الزعرور المحلي ، T4: عليقة اساس وما الشرب يحتوي على سائل Garlimmune بنسبة 0.50 / 100 لتر مياه شرب ، T5 عليقة اساس مع 0.25% من مسحوق اوراق الزعرور المحلي وماء الشرب المحتوي على سائل Garlimmune بنسبة 0.50 لكل 100 ماء شرب، T6 عليقة اساس مع 0.50% من مسحوق اوراق الزعرور المحلي وماء الشرب المحتوي على سائل Garlimmune بنسبة 0.50 لكل 100 ماء شرب ان نتائج التحليل الاحصائي لصفات كيموحيوية اشارت الى الانخفاض المعنوي لمستوى الكولسترول و الكليسيريدات الثلاثية لمصل طيور المعاملات 2,3,4,5,6 مقارنة بمعاملة السيطرة اما نسبة البروتين الكلي في مصل طيور المعاملة الثالثة كانت اكبرمعنوية مقارنة بالمعاملات الاخرى اما البروتينات الدهنية واطئة الكثافة في مصل طيور المعاملة السادسة كانت معنوية اقل مقارنة بمعاملة السيطرة .لم تكن هناك فروق معنوية بنسبة لقيمة الالبومين والكلوبيولين ان قيمة الانزيمات ALT و ASTمعنوية كانت اكبر لطيور معاملة المقارنة نسبة الى المعاملات الاخرى .

الكلمات المفتاحية : فروج اللحم ، دم ، مركب الثوم المناعي، الزعرور .