Some haematological and biochemical changes in Quails *Coturnix coturnix* Due to *Ascardia galli* infection in AL-Diwanyia city

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Abstract

The study was conducted to determine of haematological and biochemical changes in *quails* infected with nematoda worm *Ascardia galli* and compared with control group , 40

samples of quails were collected at local market of Al-Diwaniya city .

Birds divided in to four groups : G_1 represent control group , G_2 birds with light infection , G_3 birds with mediate infection , G_4 birds with severe infection .

Haematological parameters include count total red blood corpuscles (Erythrocytic) and white blood corpuscles (Leucocytic), packed cell volume%(P.C.V) and Haemoglobin concentration (Hb), biochemical parameters include measurement of total protein(T.P) concentration , total Cholestrol concentration(T.C) and Triglyceride(T.G) .

The results of blood examination showed that total cytosis count , Packed cell volume and haemoglobin (Hb) percentage decreased significant in infected group , The total leucocytic count showed significant increased in all infected group. also result showed that total protein concentration decreased significant in G_2,G_3,G_4 as compared with G_1. while total cholestrol and triglycerides ky word haemolotigical ,biochemical, quaels, ascardia galli decreased gradual in serum blood of all infection birds .

	الرياضيات			
16	افكر كثيرا في حل اسئلة الرياضيات فقط عندما يطلب مني والداي ذلك			
17	استمتع بمحاولة حل مسائل الرياضيات التي تعتبرها بعض الطالبات مستحيلة			
18	لا يهمني ما ابذل من وقت وجهد ان كان ذلك يساعدني على النجاح في الرياضيات			
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20	اشعر ان الوقت يمر بطيئا في درس الرياضيات			

بعض التغيرات الدموية والكيموحيوية في طائر السلوى المصاب بالـــدودة الاسطوانية *Ascardia galli* في مدينة الديوانية

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الخلاصة

أستهدفت الدراسة الحالية البحث والاستقصاء عن طبيعة التغيرات الدموية والكيموحيوية في طائر السلوى المصاب بالدودة الاسطوانية *Ascardia galli* ومقارنتها بمجموعة السيطرة , أذ تم أجراء هذه الدراسة على 40 طير من طائر السلوى جمعت من بعض الاسواق المحلية لمدينة الديوانية .

قسمت الطيور الى أربعة مجاميع G_1 تمثل مجموعة السيطرة و G_2 تمثل الطيور ذات الاصابة الضعيفة و G_3 تمثل الطيور ذات الاصابة المتوسطة و G_4 تمثل الطيور ذات الاصابة الشديدة .

شملت المعاير الدموية حساب العدد الكلي لكريات الدم الحمر Erthrocytic count والعدد الكلي لكريات الدم البيض Leucocytic count والنسبة المئوية لحجم الخلايا الدموية المرصوصة Packed cell volume وقياس تركيز الهيموكلوبين Haemaglobin ,أما المعايير الكيموحيوية فشملت قياس تركيز البروتين الكلي(T.P)وتركيز الكولسترول الكلي (T.C) والكليسيريدات الثلاثية (T.G).

أظهرت نتائج فحوصات الدم حصول فقر دم أي أنخفاض تركيز الهيموكلوبين مع أنخفاض العدد الكلي لكريات الدم الحمر وأنخفاض النسبة المئوية لجم الخلايا الدموية المرصوصة وزيادة عدد كريات الدم البيض في الطيور المصابة بالدودة *Ascardia galli* مقارنة بمجموعة السيطرة .

كما أشارت النتائج الى وجود أنخفاض معنوي في معدل تركيز البروتين الكلي في G_2,G_3,G_4 مقارنة بـ G_1 ,أما فيما يتعلق بمستوى الكولسترول والكليسريدات الثلاثية فقد لوحظ أنخفاض تدريجي في معدل تركيز الكولسترول الكلي والكليسريدات الثلاثية في مصل دم جميع الطيور المصابة .

Introducation

poultry farming plays a very important role in the struggle against poverty by producing a cheap source of protein,and local poultry represents the majority of animals raised by farming populations for their own consumption, sale, and cultural and social uses(1) .

Different types of poultry infected with many from intestinal helminthes that effect in production such as meat and eggs as well as its effect in functions operation and some toxins and chemical materials that causes block function body (2).

In addition to sucking blood of the host,the greatest damage is done when the young worms migrate in to the wall of the proventriculus, causing marke dirritation and inflammation, which may kill bird (3). Infected birds are emaciated and anemic in heavy infestation. There is diarrhea and death in heavily infected (4).

Disease from intestinal parasites results when normal body function are impaired and the degree of impairment determines severity of the disease , in some instance , there is no apparent disease but there is alos in production such as food conversion or gain , severity of disease can depend on the type of parasite or the number of parasites involved (5).

Finally Infestation by parasites, mainly helminths, is very high and probably responsible for a high proportion of keet deaths. Indeed, several surveys have indicated a high prevalence of parasites in different African countries: 85to 89% in Burkina Faso (6) 40 to 92% in Niger (7) and 87 to97% in Benin (8) .

In Iraq there is no data about effect *Ascardia galli* in haematological and biochemical paramrters in quails and this is first one .

The aim of the study is contain, determine haematological and biochemical changes in quails that causes by *Ascardia galli* .

Materials and Methods

Fourteen adult quails were collected from some local market of Al-Diwaniya city .

The visceral separated from mesentry were divided in to five parts crop , gizzard , small intestinal , large intestinal and caecum then put in container then worms isolation kept in tube contain physiological saline , this worm stained with lactophenol (9) and examined under lower and higher magnification(10x,40x) . Identification of *Ascardia galli* was carried out using the characters described by Calenk *etal* the in tensity of infection accont form number parasites and divided on number infection birds. (10).

Haematological parameters:

Blood was collected from the individual birds of each group from vein at region under wing. Sterile vials with 20 mL of 10% EDTA were used as anticoagulant for collection of blood. Two milliliters of anti-coagulated blood was collected from each bird and was kept in refrigerator for haematological studies. R.B.C. and W.B.C. were done by Neubauer haemocytometer. The Rees and Ecker solution was used as diluting fluid as described by Sastry (11). Hb concentration was estimated by cyanmethemoglobin method as described by Dacial(12). P.C.V was determined by Wintrobe haematocrit method as described by Schalm *et al.* (13).

Biochemical parameters:

Blood was collected from the individual birds of each group from vein at region under wing. Two milliliters of blood was collected from each bird in sterile test tubes without anticoagulant and allowed to clot. Serum was separated by centrifuge and kept at 20°C until analysis. Total protein was estimated by Biuret and Dumas method as described by Dumas *et al.* (14) by using SPAN diagnostic kit (Code No. 23935). Cholesterol concentration was estimated by colour method as described by Richmond (15) , measurement of triglycerides were deponded on method Allaint *et al.*,(16) .

Statistical analysis:

The results were analysed by Analysis variance and used test Least significant differences (LSD) under probability level $P<0.05$.

Results

1- Haematological parameters:

Table (1) shows different haematological changes in quails infected with *Ascardia galli* ,it is clear from table (1) that asignificant decrease in erythrocytes in all infected groups as compared control group (non infected) , and shows significant deacrease in haemoglobin values , packed cell values in all infected groups with *Ascardia galli* , while asignificant increase in leucocytic values in all infected groups as compared with control group of quails ,also seen in table (1)

Table 1: Haematological changes in quails infected with *Ascardia galli*

Groups of birds / Examination	R.B.C. c× 10^6/mm^3	W.B.C. c×10^3/mm^3	Hb gm/10 0ml	P.C.V. (%)
G_1	5.988 ± 0.040 a	24.071± 0.136 a	11.875± 0.080 a	38.995 ± 4.669a
G_2	4.877 ± 0.033 b	29.014 ± 0.542 b	9.440± 0.281 b	30.155± 0.369
G_3	4.132 ± 0.153 b	31.189± 0.596 b	8.178± 0.0845 b	28.090± 0.291
G_4	3.575 ± 0.168 b	32.027± 0.050 b	6.913± 0.046 b	24.933± 0.278

Values of R.B.C,W.B.C. Hb, P.C.V. are presented as mean ± standard deviation

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all results shows significant difference from other values at P< 0.05

2- Biochemical parameters :

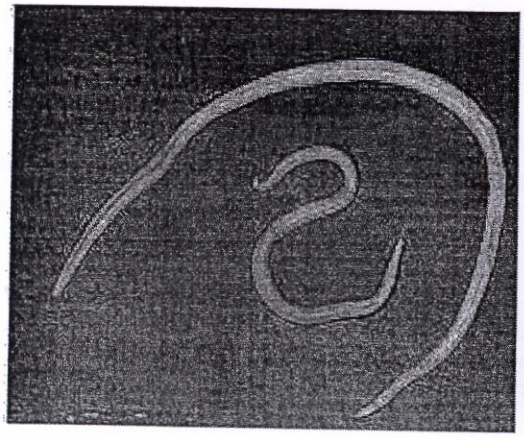
The results of table (2) showed significant decrease of total protein in G_2, G_3 and G_4 of infected birds with *Ascardia galli* , total cholesterol and triglyceride shows decrease gradual in infected groups of quails with nematoda worm(*Ascardiagalli*).

Table 2: Biochemical changes in quails infected with *Ascardia galli*

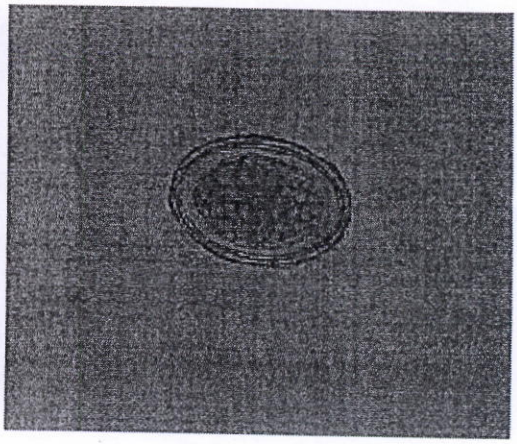
Groups of birds examination	Total protein gm/100 ml	Total cholestrol mg/100 ml	Triglycerides mg/100ml
G_1	6.026 ± 0.088 a	134.4 ± 4.926 a	73.8 ± 3.910
G_2	4.419 ± 0.376 b	113.3± 5.912 b	64.65 ± 5.142
G_3	4.015 ± 0.029 b	102.5 ± 2.175 b	55.928 ± 4.445
G_4	3.08 ± 0.193 b	95.875 ± 3.270 b	48.75 ± 1.832

Values of T.P., T.C. and T.G. are presented as mean ± standard deviation

all results shows significant difference from other values at $P \leq o.o5$



Picture(1)egg of *Ascardia galli*



picture (2)male &femal of *Ascardia galli*

Discussion

During the study an attempt was made to find nematoda worm (*Ascardia galli*) infesting native quails in local market subsequent of Al-Diwaniya city and also to determine haematological and biochemical changes caused by this *Ascardia galli* .

Haematological study showed that total erythrocyte count decreased significantly in infected groups of quails (G_2, G_3 , G_4) than that of control group(G_1) .this agree with (17, 18,19) .

Lowered of total erythrocytic count in *Ascardia galli* infected quails might be due to lowered erythropoesis ,and its usually associated with mild-acute enteritis which hampers the absorption of essential nutritis for blood cell formation. In the present study the total leukocytic count were showed significant increase in (G_2,G_3,G_4) as compared with control group ,this is in agreement with finding (18) in quails and chiken and agreement with (19) in poultry .

The net increase in the total leukocytic count might due to the increase in heterophils and eosinophils because they reform first defence line against body infection (19). The haemoglobin percentage showed significant decrease in all

-cted groups than that control group . (18) also record similar observation in his experiment . the lowered in Hb values might be due to metabolic disturbance caused by worms rather than direct blood loss (20). also results shows that asignificant decrease in packed cell volume in(G_2,G_3,G_4) as compared with control group (G_1). (18) recorded the same finding in his experiment in quails and chicken infected with *Ascardia galli* , also (21) in fowls infected with *Ascardia galli* (22) in duks.

Biochemical study showed that total serum protein decreased significant in all infected groups with *Ascardia galli* as compared with control groups . This finding was in agreement with finding of (18,19) , the lowered of T.P. values may belonged agreat loss of tissue protein may occur through leakage into gut with loss of digestive secretion and mucous due to intestinal parasitism in anaemic birds ,which also caused inefficient protein absorption (18). total cholesterol and triglycerides values shows asignificant ($P<0.05$) decreased in all infected groups with *Ascardia galli* that than control group , the lowered of T.C and T.G values might be due to effect of worms in lipids absorption .

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