EFFECT OF *Nigella Sativa* AND / OR *Trigonella Foenum Graecum* SEEDS SUPPLEMTATIONS IN LAMB MALE RATION IN SOME BLOOD PARAMETERS

M.J. Al-Saadi * **M.N. Al-Saigh****
D. Abdul Al-amer ** **S.B. Al-Araji *****

ABSTRACT

A study was carried out at animal farm pertaining to college of veterinary medicine, Baghdad university from 1/July /2009 up to 28/February2010.Twenty Awssi male Lambs of 4-5 months old and 20-22 kg weight were implication in this experiment . equally divided into four groups and each animal fed on concentrate diets 2% of body weight with grazing for 4-5 hours a day . The first group(C) was kept as control group , the second group (N) was daily fed with same percentage of concentrate diet contain 7.5% ground Nigella sativa seeds , third group (F) also fed with same percentage contain 7.5% ground fenugreek seeds ,while the fourth group(NF) group fed the 2% concentrate diet supplemented with both (7.5% of Nigella sativa and 7.5% fenugreek seeds respectively) as group feeding .The results revealed that using Nigella sativa or Fenugreek seeds as well as using both of them as a mixed feed supplemented with concentrated diet of Awassi ram lambs showed that the treated group recorded significantly (P< 0.05) higher values compare with control groups in Hb ,PCV, Platelets as well as in total blood count (WBC),nutrophils and lymphocytes .While control group showed significantly (P< 0.05) higher values compare with all treated groups in Granulocytes (esinophils) particularly during last three months of the experiment .

INTRODUCTION

The therapeutic properties of the medical plants return to the presence of some chemical compounds in plant tissues which have a specific effect on animal bodies . These compounds are alkaloids , glycosides , volatile oils ,flavonoides and others (1)the medical plants are the first sources that get benefit from , which are considered as a natural and economic source in order to rise the nutritive value of the diet, and to improve the economic input for production and consumer safety(2). In a study by El-Sarha.(3), it was indicated that the oral administration of Nigella sativa to lambs led to an increase in white blood cells ,lymphocytes and non significant variation in nutrophiles ,monocytes , eosinophils with a non significant decrease in hemoglobin and packed cells volume. Nair *et al*. (4) revealed that the extract seeds of Nigella sativa prevent the decrease ,which might be occurred in hemoglobin and white blood cells, caused by using Cisplatin drug (anticancer) caused a decrease in the total white blood cells and thrombocytes .

Zaoui (5) showed that oils extract from Nigella sativa seeds caused hncrease in hemoglobin concentration and packed cells volume values in mice , while, Al-Jishi (6) didn't find any variation in blood parameters when Nigella sativa was added to diet of mice. Chadha (7) observed that fenugreek seeds contain sufficient quantities of vit. C so it is a good antioxidant to protect RBC

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* Veterinary Directory.–ministry of Agric.-Baghdad, Iraq.
** College of vet. medicine –Baghdad Univ.- Baghdad, Iraq.
***College of Biotechnical –Baghdad Univ.- Baghdad-Iraq.

membranes from free radicals and prevent RBC haemolysis which leads to increase Hb and as well as PCV (8)and (9). In fact Few studies have been conducted on the effect of fenugreek seeds on Hb, PCV. Like a study of an aqueous extract of Fenugreek seeds in various doses on hematological parameter in Albino male rats .

MATERIALS AND METHODS

This experiment was conducted at animal farm, College of Veterinary Medicine, Baghdad University from 1/July/2009 up to 28/ February/2010. Twenty Awassi ram lambs were bought at age of 4-5 months and body weight (20-22 kg), from a trusted and familiar source. They were fed on concentrate diet (2%) of body weight and were freely grazed for 3-6 hours /day on the College Fields as a preliminary period for 3-4weeks ,Also they were supplied with tap water and mineral blocks. All animals were examined and treated before the experiment be started then they were precautional vaccinated against enterotoxaemia by (Co-Baghdad), also they were treated ecto and endo parasites by using Ivermectin drug and treated orally with Albendazol .Lambs were divided equally (body weight was considered) into four groups (5 each) :

1-The first group(C), was daily fed on 2 %of body weight of concentrate diet, and kept as control group.

2- The second group (N) was daily fed on the same amount of the concentrate diet /a head contain (7.5%) ground Nigella sativa seeds per head.

3- The third group(F) , also was given the same level of concentrate diet/a head contain(7.5%) ground Fenugreek seeds per head.

4- The fourth group (NF) mixed group, also were daily given 2 % of concentrate diet supplemented with both (7.5%) ground Fenugreek seeds + supplemented with (7.5%)ground Nigella Sativa seeds.

All animal grazed daily as one group . In addition , hay and green roughages were freely offered when the animal couldn't graze.

Blood samples were taken from jugular vein by using disposable sterilized syringes, at monthly intervals from the beginning of the experiment up to the end (from 30/7/2009 -30/1/2010) to estimate blood hemoglobin , packed cell volume and platelets , total white blood cells and their differential count .

Statistical Analysis:

The data were analyzed ,using complete randomized design at least significant differences (LSD) was applied to detect the significant differences among different group , means at 5% level. (20).

RESULTS AND DISCUSSION :

A-Blood hemoglobin (Hb) :-

Table (1)showed that the level of Hb of different groups gradually increased with age , but the animals in the treated groups were significant ($P< 0.05$) higher values than those in the control group particularly in the late periods of the study .

Table 1: Effect of Nigella sativa and / or Fenugreek seeds in the diet on Hemoglobin Hb (gm/ dl)of Awassi male lambs (means ± SE)

Period	Treatment				LSD Value
	N group	F group	NF group	Control	
30/7/2009	9.62±0.10	9.40±0.04	9.37±0.10	9.37±0.40	-
30/8/2009	9.02±0.17	8.35±0.09	8.85±0.15	9.05±0.29	-
30/9/2009	9.47±0.10	9.50±0.11	9.42±0.07	9.55±0.11	-
30/10/2009	9.75±0.05	9.70±0.09	10.05±0.24	9.62±0.31	-
30/11/2009	11.97±0.17 a	11.93±0.11 a	12.07±0.20 a	10.65±0.50 b	0.90
30/12/2009	12.75±0.17 a	12.72±0.25a	13.2±0.15a	11.45±0.35b	0.76
30/1/2010	12.92±0.25a	12.72±0.26a	13.1±0.24a	11.75±0.33b	0.84

Different letters show significant differences among treatments at one perioat5%level

B - Packed cell volume (PCV) :-

Table (2) showed the same trend in PCV as in Hb, i.e. the control group recorded significantly (P<0.05) lower values than all other treated groups at the late period of the study., but the NF group recorded the highest values in the late period of the study .

Table 2: Effect of Nigella sativa and / or Fenugreek seeds in the diet on blood packed cells volume (PCV %) of Awassi male lambs (means ± SE)

period	Treatment				LSD Value
	N group	F group	NF group	Control	
30/7/2009	27.00±0.40	28.25±0.32	28.1 ±0.51	28.10±0.23	-
30/8/2009	27.42±0.58	28.07±0.58	27.72±0.37	27.52±0.30	-
30/9/2009	26.25±0.75	27.50±0.50	27.50±1.04	26.00±0.70	-
30/10/2009	28.25±0.62	30.25±0.85	29.50±0.95	27.50±0.50	-
30/11/2009	32.25±0.25a	33.00±0.57a	33.75±0.25a	30.75±0.47c	0.93
30/12/2009	33.00±0.40b	33.25±0.25b	35.00±0.57a	30.75±0.47c	0.37
30/1/2010	32.75±0.47a	32.75±0.47a	33.75±0.85a	30.75±0.47b	1.83

Different letters show significant differences among treatments at one period at5% level .

C- Blood Platelets :-

Blood platelets of all treated groups showed significantly (P< 0.05) higher values than the control group along the experimental periods . Also the NF group showed significantly (P< 0.05) higher values than the other two treated groups in the late periods of the study (Table 3)

Table 3: Effect of Nigella sativa and / or Fenugreek seeds in the diet on blood Platelets (N x 10 6 Cell / dl) of Awassi male lambs (means ± SE)

Period	Treatment				LSD Value
	N group	F group	NF group	Control	
30/7/2009	211.25±5.90	223.75±6.88	227.50±6.61	220.00±11.36	-
30/8/2009	271.25±6.25ab	287.50±4.33a	281.25±10.87a	243.75±16.25b	32.30
30/9/2009	312.50±4.78a	307.50±4.78a	307.50±13.14a	270.00±9.12b	26.77
30/10/2009	335.00±6.12a	322.50±5.95a	325.00±7.35a	281.25±3.14b	17.96
30/11/2009	356.20±4.25a	346.25±6.88a	348.75±7.18a	300.00±4.08b	17.76
30/12/2009	359.00±6.74b	356.00±6.88b	377.00±3.22a	320.00±4.08c	16.80
30/1/2010	360.00±2.46b	361.00±5.15b	385.00±4.08a	333.00±3.75c	12.26

Different letters show significant differences among treatments at one period at5% level .

D – Total white blood cell count : -

Table (4) showed that the number of WBC gradually increased in all groups but treated animals recorded significant (P< 0.05) higher values than those in the control group started from the middle period up to late period of the study .

Table 4: Effect of Nigella sativa and / or Fenugreek seeds in the diet on the total white blood cells counts (cells /mm 3)of Awassi male lambs (means ± SE)

Period	Treatment				LSD Value
	N group	F group	NF group	Control	
30/7/2009	6800±884.20	7050±1040.40	6475±612.80	6625±370.50	-
30/8/2009	8050±392.60	8150±556.02	7950±512.30	6975±370.50	-
30/9/2009	8775±278.00a	8725±466.10a	8775±280.90a	7425±228.60b	1005.40
30/10/2009	9375±201.50a	9425±309.20a	9600±81.60a	7825±330.40b	1010.50
30/11/2009	9850±104.00a	10050±170.70a	10250±119.00a	8850±132.20b	1100.00
30/12/2009	10125±85.30a	10525±232.70a	11075±246.00a	9450±155.40b	589.00
30/1/2010	10200±108.00bc	10525±359.10b	11550±104.00a	9825±165.00c	951.40

Different letters show significant differences among treatments at one period at5level .

Nutrophils:

Table (5) showed that the neutrophils percentage recorded gradually an increased with time in all treated groups as well as the control one , but treated groups recorded significant (P< 0.05) higher values compared with the control group in most periods of the study .

Table 5: Effect of Nigella sativa and / or Fenugreek seeds contents in the diet on neutrophils cells percentage % of Awassi male lambs (means ± SE)

period	Treatment				LSD Value
	N group	F group	NF group	Control	
30/7/2009	61.74±0.33	61.53±0.36	61.45±0.20	61.57±0.14	-
30/8/2009	61.20±0.10ab	60.37±0.31b	61.80±0.40a	60.65±0.41b	1.02
30/9/2009	61.42±0.41ab	61.50±0.57ab	62.62±0.16a	60.62±0.27b	1.20
30/10/2009	61.57±0.34bc	61.58±0.27b	63.02±0.20a	60.72±0.27c	0.87
30/11/2009	62.60±0.42a	62.50±00a	62.72±0.20a	61.22±0.10b	0.72
30/12/2009	61.75±0.32c	63.0±0.64b	64.22±0.30a	61.3±50.11c	1.21
30/1/2010	62.05±0.55ab	62.75±0.25a	63.10±0.26a	61.15±0.30b	1.11

Different small letters show significant differences among treatments at one period at5% level .

- WBC differential : -

Granulocyte percentage :-

Tables (6) revealed that the eosinophil and basophil cells in the treated groups decreased with time , while they kept at the same level in the control group which significantly (P< 0.05) showed higher values compared with treated groups in most periods of the study .

Table 6: Effect of Nigella sativa and / or Fenugreek seeds in the diet on eosinophils cells percentage % of Awassi male lambs (means ± SE)

period	Treatment				LSD Value
	N group	F group	NF group	Control	
30/7/2009	1.89±0.31	2.16±0.56	2.50±0.15	2.55±0.14	-
30/8/2009	1.67±0.23	1.97±0.27	197±0.24	2.47±0.29	-
30/9/2009	2.15±0.27ab	1.72±0.29b	1.52±0.04b	2.85±0.45a	0.93
30/10/2009	1.77±0.22ab	1.60±0.10ab	1.30±0.12b	2.20±0.30a	0.67
30/11/2009	1.60±0.21b	1.52±0.24b	1.55±0.20b	2.32±0.25a	0.706
30/12/2009	1.370.15b	1.070.13b	1.05±0.20b	2.77±0.04a	0.45
30/1/2010	1.15±0.23b	0.62±0.16bc	0.52±0.19c	2.67±0.06a	0.53

Different letters show significant differences among treatments at one period at5% level .

A granulocyte percentage : -

Lymphocyte :-

Table (7) showed that there was gradually increase in lymphocyte percentage with time in all treated groups except the control group. The treated groups showed significantly (P< 0.05) higher percentages compared with control group , along most studied periods.

Table 7: Effect of Nigella sativa and / or Fenugreek seeds in the diet on lymphocytes cellpercentage % of Awassi male lambs (means ± SE)

Period	Treatment				LSD Value
	N group	F group	NF group	Control	
30/7/2009	32.45±0.47	32.17±0.25	31.97±0.22	31.77±0.30	-
30/8/2009	33.0±0.57ab	33.77±0.14a	32.50±0.57ab	31.95±0.31b	1.02
30/9/2009	32.32±0.19ab	33.65±0.67a	32.35±0.30ab	32.02±0.34b	1.33
30/10/2009	33.10±0.04	33.17±0.37	33.20±0.16	32.27±0.48	-
30/11/2009	32.80±0.24b	33.65±0.22a	33.25±0.08ab	31.77±0.31c	0.97
30/12/2009	33.75±0.31b	32.97±0.50a	33.15±0.06ab	31.05±0.22c	0.75
30/1/2010	33.40±0.18a	33.85±0.34a	33.82±0.35a	30.67±0.21b	0.75

Different letters show significant differences among treatments at one period at5level

The gradual increase in blood components such as Hb,PCV, and platelets for all groups could be attributed to that those animals were in good managemental and feeding regimes. By progress of age there was significant (P<0.05) increase in the treated groups compared with control group . This might be due to an increase in absorption of nutrients in the intestine due to an increase in feed intake as a result of an increase in appetite which reflects the metabolic activity of the animals. In addition the mixed (NF) group showed better improvement either significantly or numerically compared with the other two groups , this could be due to synergistic effect on these traits . Besides of these supplementations contain high ratio of crude protein and iron (10)and(11)), and they contain high ratio of vit E which play a vital role on hemoglobin synthesis and has a vital role in oxidation , Also these feed additives contain high ratio of flavonoides which play as antioxidant properties against free radicals (12) and Zaoui (5) whom were showed that oil extract from Nigella sativa seeds caused an increase in Hb, PCV in experimental work on rats and mice, In the mean time Effram (13) found that by an increase in a dose of

fenugreek seeds from 300 to 600 mg/kg body weight of Albino male rats led to an increase in the Hb ,PCV,and RBC after administration for 7days as compared with the control group . However Chadha (7) observed that fenugreek seeds contain significant quantities of vit C. So it is a good antioxidants to protect cell wall of RBC and hemoglobin which leads to an increase in Hb, and PCV levels (8) and (9).

The increase in white blood cells of all groups with the time , could be due to the development of immune system in all animals with time and age progress. The treated groups were significantly ($P<0.05$) increased more than the control group , this could be due to these feed additives both of them which contain high ratio of vit E and C. that lead to stimulate the body immunity, because ascorbic acid plays a vital role in protecting the membrane of leukocytes from oxidative damage (14),(15) and (16). Raju (17) revealed that Fenugreek seeds, increase (thyroxin)T4 levels which help to increase the total serum calcium, and may lead to an increase WBC count(10) and (18) . However, lymphocytes percentages showed similar trend as WBC counts ,but the neutrophils showed fluctuation in their percentages of different treatment along the studied periods. El-Sarh (12) indicated that the oral administration of Nigella sativa to lambs led to increase WBC and lymphocytes with a non significant variation in monocytes and eosinophils, but Zaoui(5) revealed that oil extract from Nigella sativa seeds caused, a reduction in WBC. Politis (19) showed that Fenugreek seeds administration caused significantly increased in WBC and neutrophil percentage due to the protective effect of vit C which promotes the action of these cells ,and this trend is similar as in the present study.

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تأثير استخدام اضافات علقية من بذورنبات الحبة السوداء و/ او الحلبة المطحونة لاعلاف ذكور الحملان العواسية في بعض مكونات الدم

ماجد جودة لعيبي الساعدي * مظفر نافع رحو الصائغ* *

ضياء عبد الامير *** سند باقر الاعرجي ****

الملخص

اجريت هذه التجربة في الحقل الحيواني التابع لكلية الطب البيطري / جامعة بغداد للمدة من 2009/7/1 الى 2010/2/28 تضمنت التجربة 20 حملاً عواسياً بعمر من (4–5) اشهر وبوزن من 20–22 كغم .وزعت الى اربع مجاميع مع الاخذ بنظر الاعتبار وزن الجسم الحي ،وكما ياتي : المجموعة الاولى (C) مجموعة السيطرة وغذيت على العلف المركز بنسبة 2% من وزن الجسم لكل رأس يوميا". المجموعة الثانية (مجموعة الحبة السوداء) N وغذيت على النسبة نفسها من العلف المركز الذي يحتوي على 7,5% من الحبة السوداء المطحونة لكل رأس يومياً. المجموعة الثالثة (مجموعة الحلبة) F وغذيت على النسبة نفسها من العلف المركز الحاوي على 7,5% من الحلبة المطحونة لكل رأس يومياً. اما المجموعة الرابعة (مجموعة العلف الخليط) فتحتوي على كل من 7,5% من بذور الحبة سوداء المطحونة + 7,5% من بذور الحلبة المطحونة لكل رأس يومياً .مع السماح لكل المجاميع بالرعي الحر للمدة من 4–5 ساعات يومياً ، وتقديم العلف الاخضر و الماء في حالة عدم الرعي. تفوقت المجاميع المعالجة معنوياً بمقدار ($P<0.05$) مقارنة مع مجموعة السيطرة في قيم خضاب الدم والخلايا المضغوطة و الصفيحات الدموية و العد الكلي لخلايل الدم ، وكذلك في نسب العدلات و الخلايا اللمفية وفي مدد الدراسة كلها تقريباً. كما ان مجموع العلف الخليط(NF)سجلت ايضاً ارتفاعاً معنوياً ($P<0.05$) مقارنة مع كلتا المجموعتين (N,F)في في اغلب القيم. بينما سجلت مجموعة السيطرة تفوقاً معنوياً بمقدار ($P<0.05$) بالمقارنة مع المجاميع المعالجة في نسب الخلايا الحمضية وفي اغلب مدد الدراسة .

جزء من اطروحة الدكتوراه للباحث الأول .

* دائرة البيطرة– وزارة الزراعة –بغداد، العراق.

** كلية الطب البيطري –جامعة بغداد – بغداد ، العراق

*** كلية التقانات الاحيائية والصحية – جامعة بغداد– بغداد، العراق .