

EFFECT OF AQUEOUS EXTRACT OF HABEK (*MENTHA LONGIFOLIA*) ON SOME HEMATOLOGICAL CHARACTERISTICS OF BROILER CHICKENS

Israa Najem Abdu- allah*

Layla mohsen mahdi**

*College of Veterinary, University of Diwanya, Diwanya, Iraq

**Department of Biology, College of Education, University of Thi-Qar, Thi-Qar, Iraq

(Received 12 February 2005, Accepted 1 September 2005)

Keywords: Habek, Broiler, hemoglobin..

ABSTRACT

This study was conducted to investigate the effect of aqueous extract of *Mentha longifolia* supplemented to broilers on some physiological parameters represented by hematological characteristics .

A total of 90 chick of broiler faobre strain from IPA center for agricultural researches were used at one day old . The birds at 4th day old , were randomly assigned into three groups .

Each group consisted of thirty birds . The control group (c) was not treated , T1 group treated with aqueous extract 1 ml / day of concentration 0.25 (gm / ml water) and T2 group was treated with aqueous extract 1 ml / day of 0.125 gm/ml concentration and for eight weeks .

All groups were fed the same commercial basal ration of broiler and the same environmental condition and vaccinations were allowed to each group . The results of blood samples tests were as follows .

Treated birds expressed high values of blood hemoglobin concentration and packed cell volume percentage and showed significant difference ($p < 0.05$) compared with control group .

The birds of T1 group indicated high significant increased($p < 0.05$) in total leukocytic count compared with the T2 & control group .

Theres is , significant increased ($p < 0.05$) in numbers of TWBCs in T2 group compared with a control group .

A total erythrocytic counts revealed that there were Significant differences ($p < 0.05$) between groups In numbers of Red blood cells by increasing the number of red blood cells in treated group .

These results refered to the benefit of aqueous extract of *Mentha longifolia* to broiler chicken at concentrations of 0.25 and 0.125 gm /ml

INTRODUCTION

Mentha longifolia or wild mint is a fast-growing , perennial herb that has creeps

along an underground rootstock . It can reach up to 1.5 m high in favorable conditions , but is usually between 0.5-1 m high and even shorter in dry conditions . Strongly aromatic , the leaves are formed in pairs opposite each other along the square – shaped stem . the soft , lancelet leaves (long and narrow with a sharp point) are between 45-100 mm long and 7-20 mm wide . the leaves are usually coarsely hairy and the edges sparsely toothed . the colour of the leaves varies from light and dark green to grey (1) . The small flowers of *M . Longifolia* are crowded into spikes at the tip of the stems varying color from white to mauve ,this wild mint flowers throughout the summer months (November to April) . *Mentha* species of the family labiate–are well know in traditional medicine (2) .

Habek mint (*mentha longifolia*)–known as horse or wild mint – like many other members of this genus , is often used domestic herbal remedy,being valued especially for its antiseptic properties and its beneficial effects on the digestion(3) .

The active virtues of the habek depend on the abundant volatile oil , which has been found to contain a hydrocarbon , thymol , and higher oxygenated compounds . it yields its virtues to boiling water , but particularly to alcohol.the main medicinal action of the leaves and flowering stems are antispasmodic. The leaves contain about 0.75% essential oils (Eos) which is sometimes used as a substitute for peppermint oil in confectionery(4) .

The composition of EOS obtained from habek exhibit strong antibacterial (3) and antioxidant activities .

(5) found that broiler chickens fed diets supplemented with *Mentha longifolia* power at level of 150 g/kg make a significant improvement in the mean body weight ,daily average gain , feed intake and feed conversion ratio .

this study was carried out to investigate the effect of incorporating *M . longifolia* aqueous extract on the hematological parameters of broiler chickens.

MATERIALS AND METHODS

A total of 90 at one day old fabro chicks nearly similar body weight were used in this study. The birds were divide randomly into three equal groups (A, B and C) . The first group T1 bird was treated with aqueous 1 ml / day of *M . Longifolia* extract of 0.25 gm/ml w . Concentration. The second group T2 was treated with 1 ml / day of *M . Longifolia* aqueous extract of concentration 0.125gm\ml.

Treatment continue from the 3rd day till the 8th wk of rearing ., while the third group where the control group were not given the extract .

Blood samples were obtained at the end of experiment by vein puncture from wing vein – (bronchial vein) & blood was drawn smooth in heparinized tubes , and 5 ml of blood was collected from each individual bird .

Hemoglobin level (Hb) was determined by cyanomethemoglobin method and spectronic 20 instrument while packed cell volume measured by microhematocrite method and total leukocytic count (TWBC) calculated by a direct method which involves the use of Natt and Herricks' solution and haemocytometer chamber according to (6) .

Also total erythrocytic count was determined by using haemacytometer chamber

and hyme , solution according to (7).

STATISTICAL ANALYSIS

Data were analysed by analysis of variance ANOVA, F- test , confidence interval test , least significant difference LSD according to . (8)

RESULTS AND DISCUSSION

Table (1)
Hemoglobin concentration (gm / 100ml)

Group	M-	SE+-
T1	13.1 a	0.31 +-
T2	12 a	0.23 +-
C	10 c	0.19 +-

Effect of aqueous extract of *M. Longifolia* on hemoglobin concentration results are present in table (1). There were significant differences($P < 0.05$) between the two treated groups (T1 with T2) and control (untreated) group . while no significant difference($P > 0.05$) between T1 and T2 group .

Table (2):Packed cell volume . PCV%

Group	M-	SE+-
T1	35.5 a	0.09 +-
T2	34.9 a	0.10 +-
C	31.6 c	1.05 +-

Effect of aqueous extract of *M. Longifolia* on packed cell volume .The results are present in table (2) show significant difference($P < 0.05$) between treated groups and untreated group while on significant difference between treated groups .

Table (3): 10^9 cell / liter total leukocytes count
(TWBCs) cent 109 cell / liter

Group	M-	SE+-
T1	20 a	0.35 +-
T2	17.8 b	0.91 +-
C	14 c	0.14 +-

Effect of aqueous extract of *M. Longifolia* on total leukocytic count .

Table (3) shows clear and significant differences ($P < 0.05$) between groups such as T1 group had significant difference with T2 & C groups and T2 had significant difference with C groups.

a , b , c Different letters refer to significant differences $P < 0.05$.between groups .

SE = Standard error

M- = Mean

Table (4):(TRBCs) total erythrocytes count ($10^6 / \text{mm}^3$)

Group	M-	SE+-
T1	2.6 a	0.03 +-
T2	2.4 a	0.10 +-
C	2.5 a	0.12 +-

Effect of aqueous extract of *M. Longifolia* on total erythrocytic count .

Table (4) shows the result of drenching on TRBCs and revealed that significant differences between groups.

This study showed that birds received high concentration of aqueous extract of *Mentha longifolia* revealed a significant changes (increased) in blood hemoglobin concentration , packed cell volume and total leukocytic counts . while there were not significant increase in total erythrocytic count .

These results are due to the chemical composition of *M. Longifolia* , the major components are essential oils (EOS) isolated from it which were ; corvone , piperitenone oxide , α -caryophyllene , germacrene , limonene and trans - piperitol (9)

Pharmacological properties of EOS improves hepatic antioxidant status in mice by decreasing lipid per oxidation , increasing hepatic glutathione and super oxide dismutase activity . Un saturated fatty acids are important constituent of cell membrane & organelles which may undergo oxidative rancidity (10) .

Therefore the use of effective antioxidant in feeds is necessary for poultry production to prevent oxidative rancidity , allowing optimal growth rate , reproductive efficiency and livability in intensively produced poultrys (5) .

Many factors influence the total red blood cell count in birds : therefore the total erythrocytic count is of the most value following the course of disease in the individual bird , factors effecting red cell number include species variation , age , sex , hormonal influence , hypoxia and environmental effects . while factors affecting leukogram include age , sex , environmental status, nutritional status and degree of stress (6).

تأثير المستخلص المائي لنبات البونج على بعض المقاييس الدموية في أفراخ اللحم سلالة فابرو-هجين

ليلى محسن مهدي**

اسراء نجم عبد الله*

*كلية الطب البيطري، جامعة القادسية، القادسية، العراق .
**قسم علوم الحياة، كلية التربية، جامعة ذي قار، ذي قار، العراق.

الخلاصة

أجريت هذه الدراسة لبيان تأثير المستخلص المائي لنبات البونج وهو نبات طبي على بعض المقاييس الفسيولوجية في أفراخ اللحم من سلالة فابرو-هجين من مشروع إبقاء للتربية المنزلية. استخدم 90 طيرا بعمر يوم واحد وقسمت إلى ثلاثة مجاميع في اليوم الرابع حيث ضمت كل مجموعة 30 طيرا عوملت المجموعة الأولى بمستخلص البونج المائي بجرعة 1 مل و بتركيز 0.25 gm/ml أما المجموعة الثانية فجرعت بمستخلص البونج المائي بجرعة 1 مل و بتركيز 0.125 gm/ml ولمدة ثمانية أسابيع أما المجموعة الثالثة فهي مجموعة الغير معاملة (مجموعة السيطرة) خضعت جميع المجاميع لظروف تربية متشابهة من حيث التغذية على علفه تجارية لفروج اللحم والظروف البيئية الأخرى والتلقيح. تم قياس بعض مكونات الدم وفيما ملخص لنتائج البحث:

أظهرت طيور المجموعة الأولى T1 والثانية T2 قيما أعلى الهيموكلوبين الدم وحجم الخلايا المتراصة و فرق معنوي عن المجموعة الغير معاملة .

أظهرت طيور المجموعة الأولى T1 تفوقا على طيور المجموعة الثانية T2 وعلى مجموعة السيطرة C في أعداد خلايا الدم البيض.

أظهرت طيور المجموعة الثانية T2 المعاملة بتركيز 0.25 gm/ml تفوقا أيضا على مجموعة السيطرة C.

ليس للمستخلص تأثير في اعتداد خلايا الدم الحمر حيث لا توجد فروقات معنوية بين المجاميع تشير النتائج أعلاه إلى فائدة مستخلص البونج المائي لفروج اللحم بالتركيزين 0.25 و 0.125غم/لتر.

REFERENCE

- 1- Codd , L.E.W. (1985) . Lammiacea . flore of southern Africa 28 , 4 . Botanical Research Institute , Pretoria .
- 2-Lewis , W. and Elvin – Lewis , M., (1977) . Medical Botany , P27 , Willey inter , science poblication , st . louis , Missouri, USA .
- 3-Faster , s. and Duke , J.(1999) . Afiêld Guide to medical comparative study of volatile constituents and antimicrobial activity of Mentha species . Acta Hort ., 344 :110-115 .

- 4-Bown , D . (1995) . Encyclopedia of Herbs and Their uses . Dorling kindersley , London . UK , P : 424 .
- 5-AL- Ankari , A.S.;AL- Sultan , S.I. and Zaki , M.M (2004) . Use of Habek mint (*Mentha Longifolia*) in Broiler chicken Diets . International Journal of poultry science 3 (10) : 629 – 634 .
- 6- Campbell , T.W. (1988) . Avian hematology and cytology 1st . ed , Iowa state university press / Ames P,77 .
- 7-Power ,L.W. , (1989) . Diagnostic hematology , Clinical principles . C.V. Mos company .P, 81
- 8-المحمد ، نعيم ثاني ، خاشع محمد الراوي ، مؤيد يونس ووليد المراني ، (١٩٨٦) . مبادئ الإحصاء ، مديرية دار الكتب للطباعة والنشر ، جامعة الموصل .
- 9-Nori – Shargh , D.; Mirza , M .; Jaimand , K. , Norouzi – Arasi , H. and Mohammadi , S. (2000) . Volatile components of *Menth longifolia* (L.) Huds . from Iran .J. Essent . oil Res ., 12 : 111-112.
- 10 -Austic , R.E. and scott , M.(1997) . Nutritional diseases . In : “ Disease of poultry “ Eds . By . Calnek , B.W ; Barnes , H.D.; Beard , C.W.; McDougald , L.R .and Saif , Y.M. ,10 th . ed . , Iowa state university press , Ames , Iowa , USA . Pp . 48 .