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A PRELIMINARY STUDY ON POSSIBLE EFFECT OF PLECTRANTHUS SPP. EXTRACT ON HISTOPATHOLOGY AND PERFORMANCE OF BROILERS CHICKEN INFECTED BY EIMERIA TENELLA IN TAIZ CITY, YEMEN.

Badria M. Abdul -Wasae; Manal A.S. Alashwal and Mohammed El-Essy
Dep. of Biol., Fac. of Applied Sci., Taiz Uni.P.O.Box:4942
Corresponding author: Badria M. Abdul -Wasae Email:**b_wasae2013@yahoo.com**

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ABSTRECT: Coccidia specie is classified under the subkingdom protozoa of the phylum Apicomplexia genus Eimeria. Coccidiosis is a self-limiting, infectious disease of the digestive tract caused by host specific. Eimeria tenella (E. tenella) is the most pathogenic species of Eimeria which infected chickens. The aim of the present study was to examine the histopathological changes on the caecum of chicken infected with E. tenella and treated with some Yemeni herbal drug (Plectranthus spp.).

Some Yemeni`s herbals have strong effects on the inflammatory disease, fever and internal parasites and some species of protozoa such as coccidia. Aqueous extract of Plectranthus spp. was used to determine their effect on the cecal coccidiosis of chicken. Thirty broiler chickens aged 20 days were divided into 3 groups: Ten birds each. Each bird in groups A & B was challenge orally with 15,000 sporulated oocysts of E. tenella while, group C used as "negative control group" not infected / not treated. Nine day post-infected, group B was treated with extract Plectranthus spp. herbals of 15 mg/ kg for 15 days after the bloody diarrhea was seen. Group A didn't treat.

The dropping was examined to notice the decreased in the oocysts numbers and the change in body weight among groups. Histopathological changes and damage of the tissue infused by the parasite in both groups A & B and the effect of herbals amelioration on the tissues was also studied and compare them with group C. Hematoxine & Eosin techniques for histopathological experiments and McMaster techniques for oocyst counting, The effects of herbal plants (Plectranthus) illustrated particularly in treated chickens after experimentally infected with E. tenella a positive anticoccidial herbal drugs activity where it has repaired some lesion, damaged and decreased some destruction in caecum tissue of chickens

Key word: Coccidia, Caecum, Chicken, Histopathological, Herbal drugs, Plectranthus

INTRODUCATION

Coccidiosisis a disease responsible for one of the major problem in poultry husbandry with significant economic impact on broiler chicken production (Haug et al., 2008 Chandrakesan et al., 2009 and Haritova et al., 2013). Coccidial infection of poultry is caused by Eimeria. There are different types or species of Eimeria that affect poultry and each is host-specific species meaning that a species thatinfects chickens does not infect turkeys and vice versa (McDougald, 2003 and Lillehoj et al., 2005).

E. tenella, the most pathogenic species of Eimeria in chickens, is usually located in caecum and causing caecal coccidiosis. Different Eimeria stages enter the cecal mucosa by penetrating villus epithelial cells, resulting in extensive destruction of the cecal epithelium, bloody dropping, reduction in body weight gain, decrease in feed efficiency and eventually mortality (Abdel-Wasae, 2001 & 2004; Naidoo et al., 2008 and Abbas et al., 2011). Coccidial infection has largely been controlled through the use of anticoccidal drugs to chicken feed (Guo et al., 2007). However, in some countries, plants and their extracts available forms of treatment from headaches to parasite infections, they also used for treat arthritic conditions, immune system problems, diarrhea, colic and other digestive upsets. Internal medical problems including liver, heart, stomach, lung and can be helped with many herbal formulas (Dinan et al., 2001). Furthermore, in some cultures, plant essential oils (and/or active components) can be used as alternatives or adjuncts to the used antiparasitic drugs (Vale et al., 2004 and Anthony et al., 2005).

Plectranthus spp. belongs to the family Lamiaceae, which also known as mint-family, is a large plant family containing 236 genera with 7173 species worldwide. This plant had been screened around 70 medicinal plants from the Arabian Peninsular region (Yemen and Saudi Arabia) for their antiplasmodial, antileishmanial and antitrypanosomal properties as reported by Mothana et al., 2014. Plectranthus spp is a large and widespread genus with a diversity of uses (Lukhoba et al., 2006). They are usually aromatic plants and some of the popular kitchen herbs like rosemary or oregano which belong to this family and their volatile oils are commonly used in aromatherapy (Abdel-Mogib et al., 2002 and Al Yemeni and Sher, 2010).

Although Plectranthus is widely in use, especially in cosmetic, flavor and fragrance industry, and in traditional medicine for a long time, some of them are yet to be described (Chaieb et al., 2007 and Chang et al., 2007). As well as, their therapeutic effects (anti-inflammatory, anti-tumor, antiseptic, antimicrobial, antihelminthics and antioxidant properties) and mechanism of action have not yet been well investigated. And the lack of present information on Plectranthus species renders this genus interesting for further investigation in botanical, phytochemical and pharmacological aspects (Lukhoba et al., 2006 and Pašoski, 2009). The main phytochemical constituents of the genus Plectranthus are diterpenoids, essential oils and phenolics (Schneider & Bucar, 2005; Sylvestre et al., 2007; and Onozato et al., 2009). Plectranthus spp. is used to

treat a wide range of disease as (digestive problems, skl respiratory and urogenital infection) (Lukhoba et al., 2006).

The medicinal flora in Yemen is not yet well documented, as researches in this subject are still limited. However, medicinal and aromatic plants are of great interest and use to Yemenis. There are accumulated experiences in using these plants as traditional remedies to cure an endless list of diseases in different areas of the country while others are used as cosmetics, condiments, coloring matters and flavoring agents (Mohammed, 2001 and Mothana et al., 2008) .This study was aimed to determine the clinical evidence gross microscopic pathology and performance histopathological changes in chickens infected with E. tenella and effects of herbal drug (Plectranthus spp.) in dose of 1ml / kg when treated after infection.

MATERIALS AND METHODS:

Experimental birds: Twenty days old, 30 broiler chickens were bought from different local poultry farms in Taiz city-Yemen and kept in a clean wire cages with constant light. And recommended temperature. All chickens were individually weighed at the time of their placing into the cages. And also, weighed on days 21 to 45 of age. Chicken were divided randomly into 3equal groups, 10 chickens each, as the following table:

Chicken nutrition: The diet of all groups were containined about 22% crude protein (CP), 16.7% crude fiber (CF), 5.2% fat, 1.2% calcium (Ca), 0.6% phosphorus (P) and 2800 Kcal/kg Metabolisable energy was given from 21 day old to the end of the experiment (about 45 day of age).

E. tenella oocysts: The oocysts of coccidian species (E. tenella) which were used in this present study were obtained from the caeca of infected chickens and were propagated in the broiler chickens by giving oral infection. After obtaining sufficient amount of oocysts, they were sporulated by placing in 2.5% $K_2Cr_2O_7$ in the presence of suitable humidity and temperature. Sporulated oocysts were cleaned and counted by the McMaster technique (MAFF, 1986).

Experimental infection (challenge) of groups: Each bird in A & B were given orally 1 ml containing 15000 sporulated oocysts of E. tenella, then group B was treated with 1 ml of 150 mg / kg from extract of Plectranthus spp, once a day from the day 9 post infection (p.i.) (day 29 old) to the day (23p.i) day 45 old. Group C, was kept as control negative (non infected / non treated).

Herbal extract: The plant leaves (local name is madan) were collected from Al-Howban in Al- madehen village, Taiz city Yemen Fig: (1).

Preparation of herbal extract: Plectranthus spp. was prepared as previously described by (Dutta et al., 2008). Fresh leaves were collected and washed by distilled water. Then they were dried, weight and crushed in an electronic grinder with 100 ml of distal water (DW) then infiltration and the dose was calculated and takes 1/ ml to 999 µl D.W.

Identification of oocysts: The morphology of sporulated as well as non sporulated oocysts was studied by light microscope using high resolving oil immersion objective lens (×100) with critically adjusted illumination. The length and width of 100 sporulated and un sporulated oocysts were measured with a calibrated ocular micrometer and

photographed using euromex digital photomicroscope camera.

Weight determination: five broiler chickens from each group were weight daily from the day 20 before infection and after infection until the day 45 of age.

Gross pathology: The effects of experimental infection of E. tenella and herbal treatment on post lesions were recorded in all groups.

Histopathological studies: Ten chickens were used for the histopathological experiments; two chickens from each group were scarified at the days (9, 11, 13, 15and 23) (p.i.). Tissues from the caeca were fixed in 10% formal saline solution and in 50% alcohol for 4-6 hour and stored in 70% alcohol then washed in 80%, 90%, 95% and absolute. And finally the specimens were embedded in paraffin wax, sectioned and stained with H&E. (Luna, 1968 and Amer et al., 2010).

Statistical analysis: Data were used of the analysis statistical package for the social sciences (SPSS) for windows version 15). The significance of differences was determined by analysis of variances (ANOVA) and T-Test.

RESULTS

Identification of E. tenella oocysts in chicken's dropping: The identification of E. tenella was performed through detection of oocyst size and shape, demonstration of typical intestinal lesion, determination of prepatent period.

Sporulation time and endogenous development stage: Each chicken from groupsA and B was infected with 15000 oocysts of E. tenella showed bloody drooping contained numerous of unsporulated oocysts of E. tenella in the day 6 post infection (p.i) which has ovoid shape and average size 22.35 X 20.30 µm from the infection until oocysts and blood drooping appeared in faeces was 144 hours p.i while the speculations time was 19 hours. The average size of oocysts size was 20.21 X 16.64 µm and the average sizes of sporocysts and sporozoites were 9.97 X 5.97 & 5.57 X 3.67 µm respectively in Table: (2).

Microscopic studies for the nonsporulated and sporulated oocyst showed outer and inner wall, sporocyst, sporozoite and steida body. Fig: (2A-C).

Chickens body weight: Chickens body weights were daily recorded after infection and after treatment. Change in body weight per gram of birds in all groups was recorded. Group A: Infected with E. tenella non treated with any extract or drug, had the lowest weight. They lost weight on day 4 p.i and the weight decreased till day 17 p.i. However the weight gain increased slowly as they became recuperating from infection. However, group B, infected this group a gradual increase in weight On 9^{th} dp.i (day 1p.t), from the 4^{th} dp.t (12 dp.i) and the weight gain rapidly increased until 23 days post treatment also, illustrated that there was significant differences in the values of weight between the control and infected chicken group A. birds in control group C: Showed normal increasing in weight for 23 days and listed the highest weights. Table: (3) & Fig: (3).

Gross pathology: All broiler chickens infected with E .tenella. And at 9 dp.i revealed bloody caeca and their lumens were filled with blood and its core became and stuffed by blood then they became harder and drier and passed in feces on 11th& 13^{th}dp.i, the infection can be seen from the serosal surface of ceca as dark petechiae and foci on, 9^{th}11th,$13^{th,}$ 15^{th} and 23^{rd}, dp.i, which became ballooned enlarged and thickened with

haemorrhagic contents, On the other hand, the oocysts of E. tenella were seen in the caecum from 7thdp.i to 23rddp.i. Group B which infected / treated orally with Plectranthus spp. on 9th , 11thdp.i (1st,3thdp.t) showed bloody, dark caecum and its change in its size which become bigger than the normal and full by bloody drooping, on 13thdp.i (day 5p.t) caecum was speckled by petechiae with foci on its surface and filled with dry and black dropping faeces. The oocysts were also seen in huge number in this group. On 15th day post infection (dp.i) (7th dp.t) caecum revealed nearly normal and softer, no blood in the dropping which had taken from caecum, and no oocysts of E. tenella seen in it. On 23rd day past infection (dp.i) (15thdp.t) caecum were normal in shape, size, and color, and no blood in faeces or oocysts was seen. However, No gross pathological changes were observed in group C, also normal intestinal tract and caecum with blush-pink color were noticed.

Histopathological studies: In the present study the examination of tissue sections and the histopathological changes of broiler chickens after infection with E. tenella revealed: diffuse lymphocytic infiltration of caecum and marked congestion of Lamnia propria. Normal (group C negative control): showed normal histological structure of mucosa, sub mucosa, and muscular is Lamnia propria Fig: (4 A&B) compared with infected and treated groups. In (group A) infected with E .tenella non treated at the 9th dpi the sections showed many mature and large second generations of schizonts which developed deep in the Lamnia propria. Also, it was noticed numerous vacuoles and parasitophorous vacuoles this damaged cells were appeared without their nuclei or they were dislodge to the cell wall, and there were some inflammatory cells in the sections in group A (Fig: 5A & B). Moreover, it was clearly detected many Eimeria developmental stages of parasites in cecum it was clearly, with increasing in inflammatory cells and damaged cells. Some vacuoles was shown full with mucus on11th 13thdp.i. (Fig: 5 C & D). As well as, 15th dp.i. Parasite invasion was deep into the sub mucosa layer to the muscular layer, and many stages of parasites were seen clearly in mucosa layer (Fig: 5E). On the 23rddp.i in many lesions showed severe mucosal and sub mucosal congestion. Additionally, the mucosal epithelium showed diffuse degeneration, necrosis, and infiltration and damaged of the Lamnia propria (Fig: 5F). On the other hand, (group B) infected with E .tenella / treated with Plectranthus spp. Showed repairs in major parts of caecum, and no parasite was seen in the end of experiments. At 9th dp.i (day 1 p.t.) cells were damaged, vacuolated and some parasite stages.

(Macro and Microgamete) were surrounded by parasitophorous vacuoles (Fig: 6 A & B). On 11thdp.i (day 3 p.t.). Infiltration and necrosis were recorded widely and clearly in the sub mucosa, and villi were damaged and Lamnia propria appeared smaller than normal. Necrosis and inflammatory cells were seen fewer than the last period and Lamnia propria showed without parasite stages (Fig: 6 C & D). On 13th to 15th day post infection (dp.i) (5to7dp.t.) recoveries were extended to major area, were crypts and Lamnia propria regained their normal shape and size. In sub mucosa some vessels and repaired connective were seen (Fig: 6 E). On 23rd dp.i (15th dp.t.)

connective tissue and blood vessels appeared clearly and normal, recovery cells covered major areas, no infiltration or parasites was seen, goblet cells appeared clearly and Lamnia propria regained its normal shape and size (Fig; 6 F). There were no mortalities in birds of groups A & B.

DISCUSSION

Coccidiosis is associated with reduced growth rate, impaired feed conversion leading to poor performance of broiler chickens and mortality (Chandrakesan et al., 2009). Eimeria species being one of the most dangerous diseases facing the poultry production industry (Bashtar et al., 2010). E. tenella is the most pathogenic species in chickens and the most common type (Mukiibi-Muka et al., 2001; Eraslan et al., 2004 and Abdel-Wasae & Alashwal, 2014).

The identification of oocyst of E. tenella in this present study has showed ovoid shape ,and the average size of 100 oocysts was 22.35X 20.30 µm, but Mojalli, (2009) reported average size 22.41X 19.47 and Amer et al., 2010 measured 21.39X18.75 µm. Some reports identified E. tenella by morphological features and pathological characteristic in the host (Fetterer and Barfield, 2003 and Klotz et al., 2007 and Abdel-Wasae & Alashwal, 2014).

In our study, the oocysts of E. tenella appeared from day 6 (equal to 144 hours p.i) in few numbers until day 8 when feces were completely stained or filled with blood when numerous numbers were present of oocysts, which is in agreement with Chandrakesan et al., (2009) and Abdel-Wasae & Alashwal, (2014). Oocysts count in group A (infected / not treated) decreased in the last days of our experimental study, and this was in opposition to Nweze and Obiwulu, (2008) whereas their infected dose was less than ours. While, in the treated group B with Plectranthus spp the oocysts continued to decrease in numbers until it became zero, which is similar to Mwale et al., (2006) who used Aloe vera and Aloe spicata to treated chickens infected with E. tenella. Also, similar results were reports by Silva et al., (2009 and Abdel-Wasae & Alashwal, (2014). On the other hand, the control group C had no oocysts in feces until the final day of the experiment and the level of oocysts per gram of feces in this group was zero. The sporulation time recorded in the present study was 19 hours. This period is nearly equivalent to that reported by Mojalli, (2009) but less than 48 hours (Fetterer& Barfield, 2003). This may support the opinion that different sporulation times may be related to different experimental factors or laboratory techniques, or the lack of adequate oxygen Bashtar et al., (2010 and Abdel-Wasae & Alashwal, 2014). For weight gain, group A (infected with 15,000 oocysts of E. tenella / not treated) was showed a decrease in weight gain on days 3-9 p.i. until day 17 p.i. This has been previously shown in reports of (Nweze and Obiwulu, 2008 and Amer et al., 2010). And started to increase slowly because they started recuperating from the infection; this observation was reported with (Nweze and Obiwulu, 2008). Furthermore, some reported were showed that with an upper inoculation of more than 15,000 oocysts per chicken, the test subjects often undergo a decrease in weight till the last days of the experiment and sometimes mortality is encountered in day's 6-10 p.i, Although some subjects was recovered (Hu et al., 2000). Abbas et

al., 2011, showed that the body weight gains in all the medicated groups were significantly higher than infected with E. tenella / non-treated groups as this work showed.

Also, it was observed a significant greater increase in the treated chickens' with Plectranthus spp after infection with E. tenella while. Therefore, recent researches focused on the alternative strategies for the control of avian coccidiosis such as adding acids in the diet (Vale et al., 2004). Furthermore, acetic acid administered in drinking water has demonstrated anticoccidial effects against E. tenella in terms of improved weight gains, lower oocysts numbers and lower lesion scores (Abbas et al., 2011). For weight loss in group C (not infected / not treated group) the highest increase in weight, was reported as (Zhang et al., 2012).

Histopathological examination of group A (infected/ not treated) have shown many stages of the parasite E. tenella, and damage in the caecal tissues, including heamorrhage and the congestion of blood vessels. We have also noticed the loss of epithelial tissue, loss of villi, disruption of caecum, damage of Lamnia propria, necrosis of sub mucosa and mucosa tissue, and lymphoid cells showed hyperplasia and inflammatory cells in the mucosal layer (this damage noticed from day 7 pi) and became well-defined in the final stages. These finding are similar to those of (Soomro et al., 2001; Zulpo et al., 2007; Zhang et al., 2012 and Abdel-Wasae & Alashwal, 2014).In the present study group B, (infected /treated) which was treated with Plectranthus spp. extracts showed an effect on several stages and sporulated oocysts of E .tenella indicates that Plectranthus spp. is able to kill or inhibit the growth and development of oocysts and subserve the damaged cecal tissues to recovery after damage in Lamnia propria and crypts glands and the decrease in inflammatory cells until they have finally disappeared completely which were agree with (Zhang et al., 2012).

CONCLUSION

Plectranthus spp, is widely used as traditional treatment in Yemen for many parasites, skin diseases and inflammatory diseases. The effects of herbal plants (Plectranthus) illustrated particularly in treated chickens after experimentally infected with E. tenella a positive anticoccidial herbal drugs activity where it has repaired some lesion, damaged and decreased some destruction in ceacum tissue of chickens. And this is the first scientific study on using Plectranthus spp, as a treated for infected chickens agents coccidiosis (E. tenella).

RECOMMENDATION

1- There should be more further researches on herbal drugs (Plectranthus spp) used in this study as anticoccidial drugs on chicken infected with E. tenella.

2- The farmer should pay more attention to the use of this plant as anticoccidial drugs in chicken`s farms.

3- Add these herbal drugs (Plectranthus spp) with the food of chickens instead of the synthetic drugs because it is less cost.

Fig: (1 A): Photo of Plectranthus sp. This plant leaves were collected from Al Hawban, in Al- Madehe village, Taiz-city it is local name is madan which used in this study

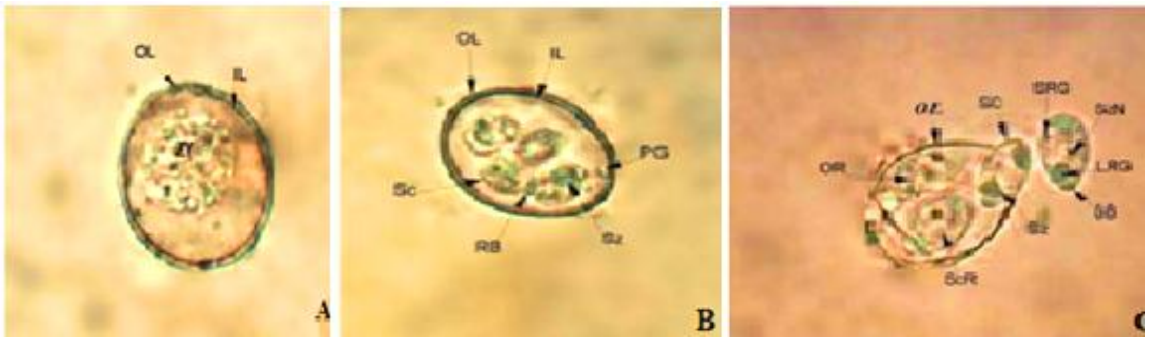

Fig: (2A-C): Photomicrographas for the sporulated and non sporulated oocysts show: Outer layer(OR), Iner layer (IL), polar granule (PG). Large refractile glouble (LRG), Residual bodies (RB) Steida body (SB), Sporocyst (SC), Small refractile glouble (SRG), Sporozoite (SZ), Sporozoite nucleus (SZN), and Sporocyst residential (SCR)**.**

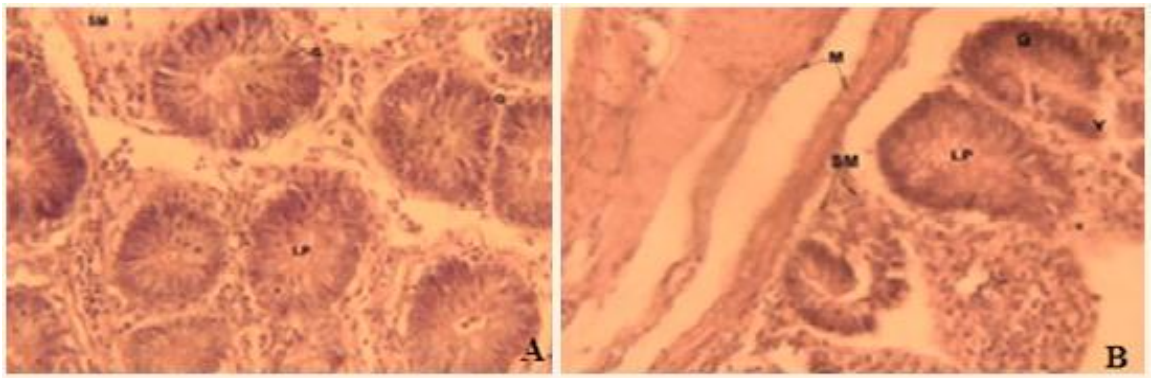

Fig: 4 (A &B): Photomicrographs of a normal section (5 µ) of caecum tissue in experimental chickens (not infected or treated), notice: Goblet cell (G), Sub layer (SM), Muscle layer (M), Villi (v) and Lamina propria (LP). Crypts with the normal shape and size. All photos. X 100.

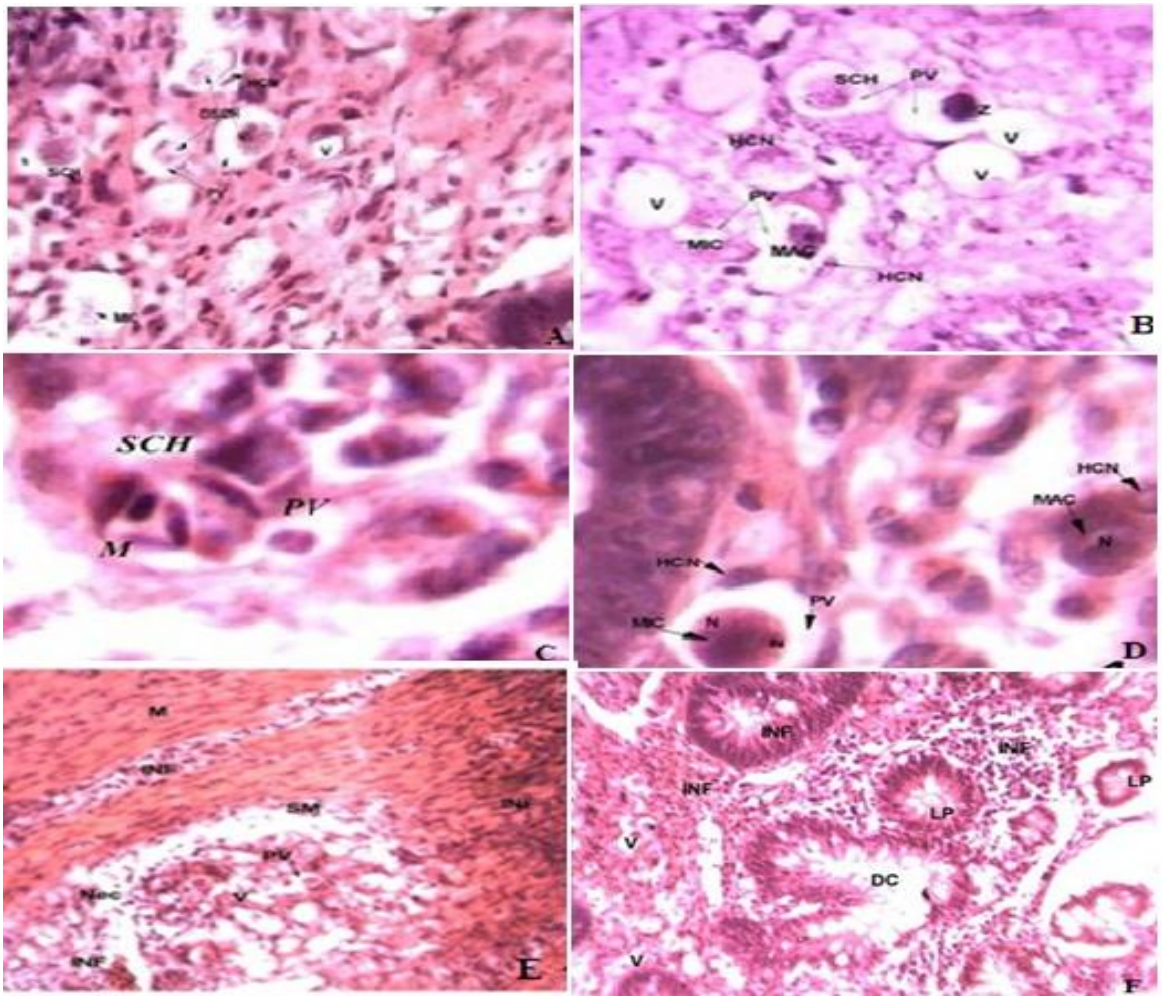

Fig: 5 (A-F): Histopathological sections from the caecum in the experimental chickens group A(Infected non treated), from 9th dpi to 23 dpi stained with H&E(A &B): At 9th dpi the sections shown many mature and large second generations of schizonts With numerous vacuoles (V) and parasitophorous vacuoles (PV) also some Inflammatory cells which appeared. . (C&D): Many developmental Emirian stages of the parasites were appeared clearly, with increased in damaged cells. Some vacuoles were shown full with mucus on 11th 13thdp.i. (E): At 15thdp.i. Illustrating necrosis (Nec) and infiltration (INF) in the sub muscles layer and extended to the muscles layer the tissue cells within parasite stages and vacuoles free from parasite. (F): At day 23 p.i. Shown the Infiltration (INF), large vacuoles (V), and damaged Lamnia propria (LP), notice the change in Lamnia propria size and shape. All Photos. X400.

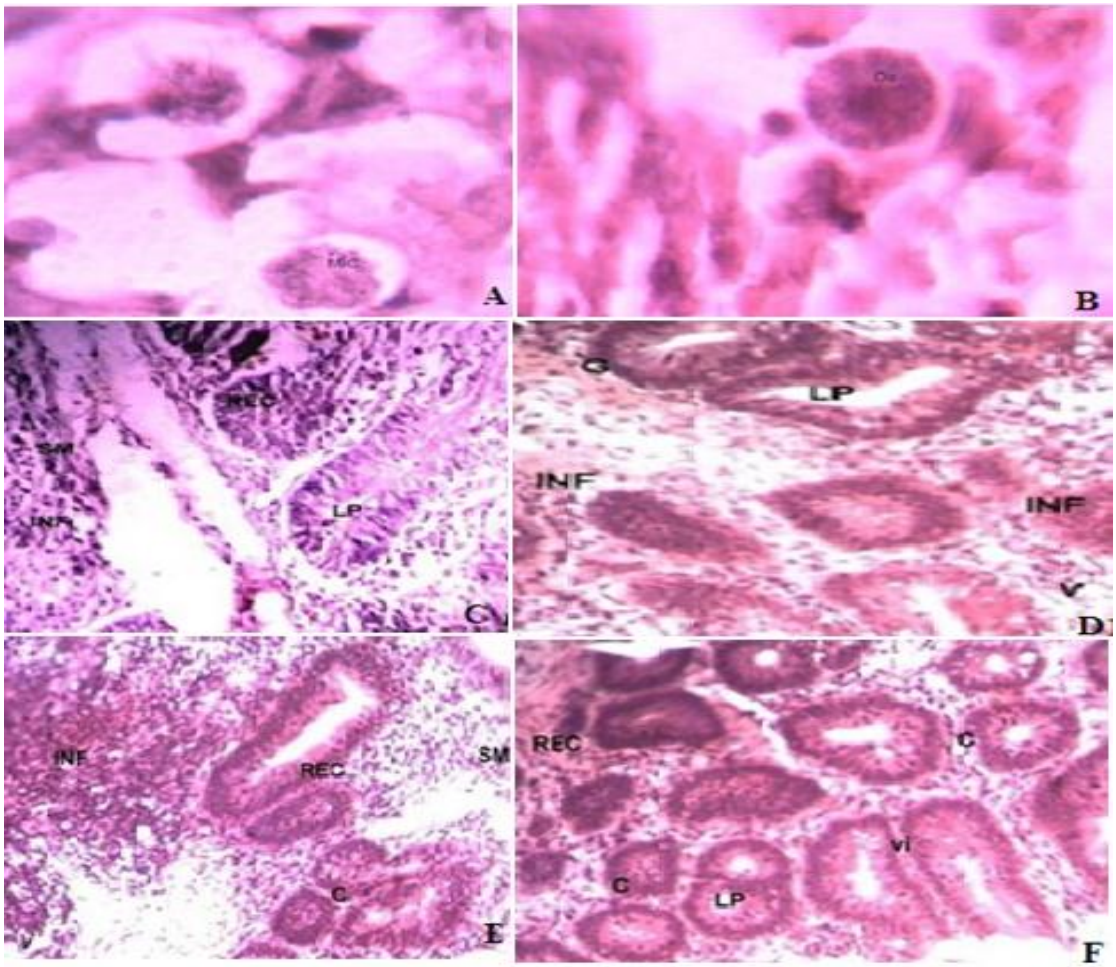

Fig: 6 (A- F): Photomicrographs of sections 5µ of infection caecum in chicken with E. tenella and treated with Plectranthus spp. at different days. Stained with H&E (A&B): At 9th dpi appeared some parasitic stages macrogamete (MAC) and microgamete (MIC) with damaged cells of caecum tissues. Photo. X1000. (C): At 11th d p.i .Show n the change of Lamnia propria (LP) and caecum glands in shape and size, inflammatory cells (INF) and damaged cells as vacuoles. Photo. X400. (D): At 13th dp.i. Illustrated recovery (REC) and Lamnia propria (LP) become normal. However, there are som inflammatory cells (INF) in the sub muscles layer (SM). Photo X400. (E): At 15th dp.i 5th to7th dp.t .shown inflammatory cells (INF), semi normal of Lamnia propria (LP) and crypts glands (C) with recovery cells (REC). Photo X400. (F): At 23 day p.i (15th dp.t) Illustrating recovery crypts glands (C), the shape and size of villi glands (v) and Lamnia propria (LP) became normal , no parasite vacuoles seen. Photo X400.

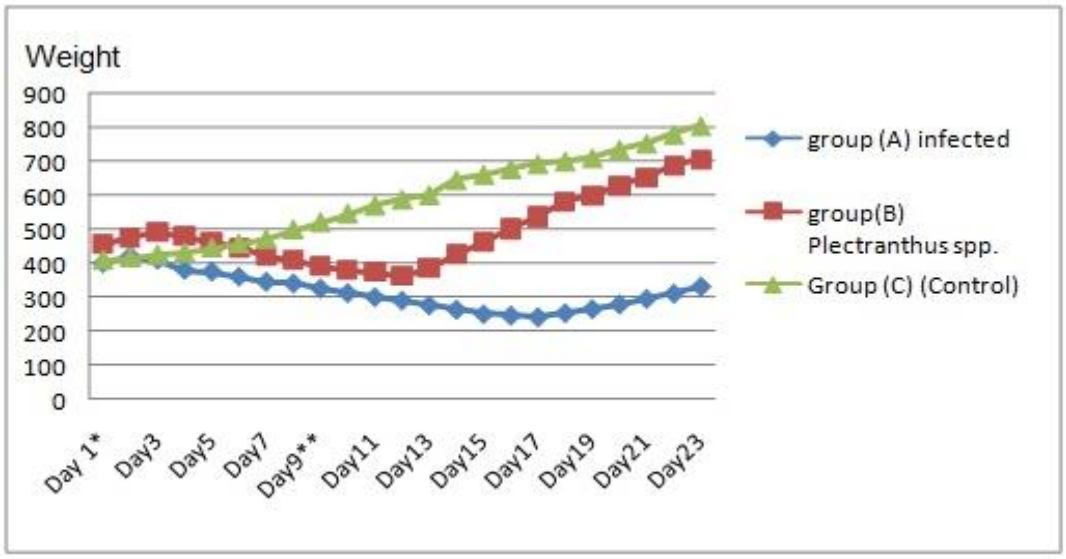

Fig. (3): Standard deviation and percentage of change in body weight of the experimental groups infected with E. tenella and treated with Plectranthus spp. compared with control group of birds

Table (1): Experimental chickens groups

Group name	No. of chickens	Categorize
A	10	With E. tenella / non treated positive control challenged
B	10	Infected then treated with Plectranthus spp. extract.
C	10	Control: non infected / non treated negative control

Table2: Identification of E. tenella sporulated and unpopulated oocysts infected chickens experimental.

Measures	Unsporulated oocyst average size (µ m)	Sporulated oocyst average size (µ m)	Sporocyst average size (µ m)	Sporozoite average size (µ m)
Width	20.30	16.64	5.97	3.67
Length	22.35	20.21	9.97	5.57

Table 3: The average body weight, of birds experimentally infected with E. tenella and treated with Plectranthus spp. extrat.

Day	Infected	Plectranthus	Control	P-value	Day	Infected	Plectranthus	Control	P-value
1 Mean	400a	455a	408a	0.406367N.S	13Mean	276b	385c	600a	3.62E-08*
S.D	34.5	43	67.2		S.D	24.1	61.2	46.4	
2 Mean	420a	475a	417a	0.350154N.S	14Mean	263b	425c	645a	4.61E-09*
S.D	25.5	48	68		S.D	27.7	61	39.2	
3 Mean	410a	488a	423a	0.112974N.S	15Mean	250b	460c	661a	1.15E-09*
S.D	30.8	46.6	52.7		S.D	15.8	67.7	38	
4Mean	380b	478a	430a	0.007543*	16Mean	250b	500c	678a	4.09E-10*
S.D	25.5	48.3	53		S.D	12.2	70.4	35.3	
5Mean	375b	462a	445a	0.01308*	17Mean	241b	536c	692a	6.42E-11*
S.D	24	50.7	52.2		S.D	11.4	59.4	38.8	
6Mean	360b	445a	456a	0.016356*	18Mean	253b	578c	700a	1.09E-11*
S.D	23.5	64.2	49.7		S.D	9.7	56.3	38.2	
7Mean	345b	418a	470a	0.007391*	19Mean	267b	600c	710a	3.16E-12*
S.D	22.4	59.9	47.8		S.D	17.9	49.1	35.5	
8Mean	340b	405a	498a	0.000995*	20Mean	278b	630d	735a	2.88E-13*
S.D	20.9	57.9	45.4		S.D	16.4	36.7	34.8	
9Mean	325b	390c	518a	0.000039*	21Mean	295b	654d	753a	1.7E-13*
S.D	15.8	61.5	41		S.D	19.4	33.6	35.8	
10Mean	312b	379c	545a	8E-07*	22Mean	310b	689d	780a	3.32E-14*
S.D	7.6	63.7	39.4		S.D	20	31.3	32.2	
11Mean	300b	369c	569a	1.13E-07*	23Mean	331b	705d	805a	3.61E-14*
S.D	15.8	61.3	42.5		S.D	18.2	27.8	34.3	
12Mean	290b	359c	587a	1.12E-07*					
S.D	26.5	66.2	45.2						

*= Significant (P < 0.05), N.S=Non significant (P > 0.05) and identical letters each row indicate not significantly different at P = 0.05%

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الملخص العربي

دراسة مبدئية عن تأثير خلاصة بلاكترنشس سبيشيز علي التغيرات المرضية النسيجية ومعدلات الأداء للدجاج اللاحم المصاب تجريبيا بالايميريا تينيلا، في تعـــز- اليمن

بدرية محمد عبد الواسع ,منال علي الاشول ومحمد العزي
قسم البيولوجي- كلية العلوم التطبيقية - جامعة تعــز

تصنف الكوكسيديا تحت مملكة البروتوزوا شعبة الابيكمبلكسا جنس الايميريا. ومرض الكوكسيديا هو مرض يصيب القناة الهضمية للعائل بواسطة طفيل اولي من جنس الايميريا، وهو المسؤول عن نقص انتاج الغذاء عالميا و الذي ينتجه الحيوان ويعتبر طفيل الايميريا تينيلا من النوع الممرض والذي يصيب الدواجن.
وتهدف الدراسة لاختبار التأثيرات الممرضة نسيجيا (الهستوباثولوجي) للقولون الخاص بالدواجن المصابة تجريبيا بواسطة الايميريا تينيلا والمعالجة بالاعشاب الطبية اليمنية من النوع (بلاكترنشس سبيشيز). فقد وجد ان بعض الاعشاب الطبية اليمنية لها تأثير قوي على بعض الالتهابات والحمى وايضا على الطفيليات الاولية الداخلية .
استخدم المستخلص المائي لنبات النوع (بلاكترنشس سبيشيز) لتحديد تأثيره على مرض الكوكسيديا (الكوكسيديوزز) خاصة الذي يصيب القولون في الدواجن . استخدم في التجربة 30 من الدواجن اللاحمة بعمر 20 يوم وقسمت في ثلاث مجاميع هي A, B , C ولكل مجموعة 10 دواجن .المجموعتان A, B تمت اصابتهما ب15000 من الاكياس البيضية للأيميريا تينيلا عن طريق الفم للجرعة الواحدة ، بينما المجموعة الثالثة C تركت بدون اصابة او معالجة استخدمت كمجموعة ضابطة (كنترول) ، وبعد 9 ايام من الاصابة والتأكد من ذلك برؤية الاسهال المدمي عولجت المجموعة الثانية B بمستخلص مائي لنبات (بلاكترنشس سبيشيز) ولمدة 15 يوم وكل جرعة تعادل 15 مل / كيلو جرام من الوزن . اما المجموعة الاولى A فتركت بدون معالجة لدراسة تأثير الطفيل على النسيج وعلى الوزن الدواجن . جميع الدواجن في المجاميع الثلاث غذيت بالغذاء الخاص بالدواجن والماء.
وبإختبار براز الدواجن لوحظ نقص متزايد لاعداد الاكياس البيضية وتغيرات في الوزن في كل من المجموعتين الاولى والثانية وكذلك التغيرات الهستوباثولوجية والاضرار الناتجة عن الاصابة بهذا الطفيل مقارنا بالمجموعة الكنترول.

مفتاح الكلمات/ كوكسيديا ، ايميريا تينيلا ، القولون ، هستوباثولوجي ، العلاجات العشبية ، (بلاكترنشس سبيشيز) ، تعـــز - اليمن