Republic of Iraq Ministry of Higher Education & Scientific Research University of Al-Qadisiyah College of Veterinary Medicine



Diagnostic study of internal parasites in sheep in Al-Diwaniyah provinces

Study Submitted to the council of the College of Veterinary Medicine of Al-Qadisiyah University, it's apart of the requirements for the degree of bachelor's in Veterinary Sciences.

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"سورة طه" الاية 114

Dedication

- Attended to the great Prophet and his family infallible.
- To my Father who died, and he is a student of knowledge until his death.
- To my Mother who spent her life to us.
- To my Brothers and my Sisters with love.
- To my big home / Iraq I dedicate this work.

Ahmed fadhel jawad

Certification

I certify that this study entitled "Diagnostic study of internal parasites in sheep in Al-Diwaniyah provinces" was prepared under my supervision at the College of Veterinary Medicine / Al-Qadisiyah University in partial fulfillment of the requirements for the degree of bachelor's in Veterinary Science.

> Assist. Lecture Hadeel H. Jawad Al-Bayati

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Ahmed fadhel jawad

Abstract

This study was carried out to detect the prevalence of intestinal parasites of sheep in Diwaniyah city within the period from October 2017 to the end of February 2018, by fecal examination. A total of 50 fecal samples were examined, among them, 38 sheep were found infected with intestinal parasites by one or more species with percentage reach to 76%. *Eimeria* spp. was maximum (60%), followed by *Giardia lamblia* (24%) and *Fasciola* spp. (16%).

Chapter One Introduction

Introduction

Parasitic diseases of captive animals constitute one of the major problems causing serious diarrhea and even mortality (1).

As gastrointestinal parasite infection is the most important limiting factor of sheep productivity, parasitism has a highly detrimental effect on the sheep industry (2).

A major cause of ovine coccidiosis is *Eimeria ovinoidalis*, but other species, such as *Eimeria crandallis*, may also be associated with this disease (3)

In sheep, eimeriosis has great economic importance due to its high prevalence in many parts of the world (4).

Fifteen *Eimeria* species were considered to have the capability of infecting sheep (5)

In most many researchers have been record different types of parasites in captive and wild animals at zoological gardens of the world, like *Giaridia* (6).

Giardia lamblia is the etiological agent of giardiasis, a gastro intestinal infection of humans, companion animals, livestock and wild life (7).

Giardiasis has worldwide distribution (8), it is traditionally considered an epidemic and zoonosis disease between the human and animals (9).

The importance of the liver fluke, *F. hepatica* to farming ruminants is clear from the range and important of this parasite in sheep and cattle (10).

Chapter Two Literature Review

Literature review

Parasitic diseases of captive animals consider one of the major problems causing severe diarrhea and even mortality (1).

Eimeria spp.

Eimeriosis is an endoparasitosis, in ruminants, is characterized by severe diarrhea that can lead to death, the subclinical form causes intestinal function failure (11) and decreases its execution (12). All ages of sheep are susceptible to *Eimeria* infection but lambs are most intensive affected by coccidiosis and disease outbreak (13).

The severity of symptoms depends on the size of the infecting dose and the capability of the host (14). The diarrhea continues for one or more weeks and sometimes ends death (15). Small ruminants under 4 months of age may be killed by Coccidiosis (16).

Giardia sp.

Giardia are mostly asymptomatic in ruminants, but subclinical signs like decrease in growth rate, failure in feed diversion capacity and survive diarrhea are noticed sometimes (17).

In farming animals, acute signs of giardiasis in economic important as it causes scours in young animals and adult animals and has been related with frothy and pasty diarrhea that may be bad smelling and lack of weight, feed efficiency and reduced production (18), (19).

Giardiasis can cause lack of weight and decreased in absorbing fat, lactose, vitamins (A and B12) (20).

Fasciola spp.

Among the trematods, *Fasciola hepatica* and *Fasciola gigantica* causes essential economic losses (21).

Fasciolosis, mainly caused by *F. hepatica* in temperate climates and by *F. gigantica* in tropical areas, is characterized by sudden death with froth stained with blood at the natural openings in severe cases (22), (23), while diarrhea, jaundice, ascites and bottle jaw are general signs in chronic cases, yearly economic losses caused by the disease is mainly due to death (24).

Chapter Three Materials and Methods

Materials and Methods

3-1- Materials:

3-1-1- Chemical and Biological materials:

Table (1) Chemical and biological materials used in study.

No.	Name of chemical and biological materials	Origin
1.	Formaldehyde 40%	U. K
2.	Normal saline	India
3.	Sugar powder	Iraq
4.	Xylol	England

3-1-2- Equipments and Instruments:

Table (2) The equipment and instruments that were used in this study.

No.	Equipment & instrument	Company / origin
1	Blastic tubes 10ml	Jorden
2	Centrifuge	Bioneer / Korea
3	Cover slide	China
4	Disposable syringe 10ml, 5ml, 3ml	Sterile EO. / China
5	Disposable Gloves (large, middle)	China
6	Microscope	Olympus / Japan
7	Microscope slides	China
8	Micropipettes 5-50, 0.5-10, 100- 1000µ1	CYAN / Belgium
9	Sensitive Balance	Sartorius / Germany
10	Sterile test tube	Superestar / India
11	Sticks	China

3-2- The solutions and methods:

3-2-1- Solutions:

1-Normal saline 0.9% (PH 7.4)

Prepared by dissolving 9gm of sodium chloride in 1 litter of distal water.

2- Sheather solution: which perpetrated as follow

454 g granulated sugar

355 ml tap water

6 ml full-strength (37%) formaldehyde

Heat the tap water to near boiling. Add the granulated sugar, and stir until the sugar is dissolved. Allow the mixture to cool to room temperature, and then add the formaldehyde. Check the solution's specific gravity, and adjust it to 1.27 by adding water or sugar (25).

3-2-Methods

3-2-1-Fecal samples collection

Total of 50 fecal samples are collected from sheep. Some of these sheep were suffered from diarrhea and other asymptomatic in the house slaughter and other areas in Al-Diwaniyah provinces during the period from October – 2017 to the end of February 2018 from age $1 \le 1$ year to more than 1 year.

These samples were collected in the sterile plastic containers and stored in the large containers containing ice bags, then transported to the parasitology laboratory in veterinary medicine /Al-Qadisiyah University to perform the examination.

3-2-2- Floatation method

Two grams of feces were mixed thoroughly with 10 ml of sugar flotation solution in a cup and strained through two layers of gauze into a conical 15-ml centrifuge tube, the liquid remaining in the gauze strainer was squeezed from the feces by tongue depressor, after centrifugation at 1,000xg for 5 minutes, the tube was removed, placed in a test-tube rack, and filled to the top with sugar flotation solution, a 22 x 22 mm coverslip was placed on the tube, left for 10 minutes, removed and placed on a glass slide, the entire coverslip was then examined under a light microscope (26), (27).

3-2-3- Sedimentation method

Fecal samples were processed by fecal centrifugal sedimentation method as described (28).

Chapter Four Results

Results

In the present study, 50 faecal samples of sheep were examined 38 of them are infected by internal parasite with total percentage reach to 76%.

The study diagnosed many protozoal oocysts and helminths eggs. *Eimeria* spp. were maximum species-wise prevalence of parasites indicated (60%), followed by *Giardia lamblia* (24%), *Fasciola* spp. (16%). Table (1) Figure (1), (2), (3), (4), (5).

Table (1): The number of infected samples and percentage of infection

Parasites	Number of positive samples	Percentage %
Eimeria spp.	30	60%
Giardia lamblia	12	24%
Fasciola spp.	8	16%



Figure (1) *Eimeria* spp. 100X unsporulated oocyst



Figure (2) *Eimeria* spp. 40X unsporulated oocyst



Figure (3) *Eimeria* spp. 40X unsporulated oocyst



Figure (3) *Eimeria* spp. 40X sporulated oocyst



Figure (4) Giardia lamblia X100



Figure (5) Fasciola spp. X40

Chapter Five Discussion

Discussion

In the present study, 50 faecal samples of sheep were examined 38 of them are infected by internal parasite with total percentage reach to 76 %.

The study diagnosed many protozoal oocysts and helminths eggs. *Eimeria* spp. were maximum species-wise prevalence of parasites indicated (60%), followed by *Giardia lamblia* (24%), *Fasciola* spp. (16%).

Respecting of *Eimeria* spp. infection, our result corresponds with (29) which showed that the incidence was 67.5% in sheep in the province of AL- Muthanna. And agreed with (30) Which found prevalence rate of *Eimeria* spp. infection in sheep was 78.7%. Also, conformity with results of (31) which recorded ratio of coccidiosis in sheep in Omerga region 72.45%. And agreed with findings of (32) which found *Eimeria* spp. oocysts ratio 68.3% of the fecal samples. While these results disagreed with results of (33)which recorded prevalence of coccidiosis 16.7% in sheep of different age groups in Sanandaj city, Iran. Also, disconformity with the findings from (34) which reported prevalence rate 27.77% of coccidia in sheep in and around Rawalpindi and Islamabad, Pakistan.

Concerning of *Giardia lamblia* infection, we conformity with findings of (35) was reported rate 13.5% of giardiasis in sheep in AL-Diwaniya province. However, disagrees with (36) results revealed that overall prevalence was 49% in sheep at Holy Karbala City, Iraq. Also, disconformity with the result of (37) who was recorded the giardiasis in adult sheep and lambs with prevalence rate 6.92% in Al-Diwaniyah province and (38) reported that the prevalence rate 6.71% respectively in the same province.

With regarded to *Fasciola* spp. infection, our results agreed with (39) were reported prevalence rate 14.67% in diarrheic sheep in and around Lahore. Also, conformity with findings of (40) has reported 11.50% infection rate of *F. hepatica* in sheep in Pakistan. While, this result disconformity with (34) which recorded prevalence rate of *Fasciola* spp. infection in sheep 4.4%, and (41) were reported rate 3.5% in sheep in Pakistan.

Chapter six Conclusion and Recommendations

Conclusions

- 1- This study refers to infection rate with Eimeria spp. Is highest than Giardia spp. And Fasciola spp. Infection.
- 2- The healthy care of animals and cleanliness play important role in decrease of intensity and infection rate.

Recommendations

- 1- Necessity of expansion in epidemiological study of internal parasite of sheep and depending on modern diagnostic method such as ELISA and PCR .
- 2- Dependent on using regular prevention & treatment program of sheep because of most it carrier of parasites without appear the clinical signs and consider source of infection .
- 3- Make sure about absent of drinking and feed sources from parasites .
- 4- Avoid of grazing in wet or exposed pastures to rains even dry.

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الخلاصة

هدفت الدراسة الى التحري عن الطفيليات الداخلية في الاغنام في مدينة الديوانية للفترة من تشرين الاول 2017 ولغاية نهاية شباط 2018 بواسطة فحص البراز. من مجموع 50 عينة براز فحصت بلغ عدد العينات المصابة 38 بنوع واحد او اكثر بنسبة تصل 76%. أعلى نسبة إصابة كانت بطفيلي .*Eimeria* spp (60%) يتبعها طفيلي *Giardia lamblia* بنسبة (24%) ثم .*Fasciola* spp بنسبة (16%).

جمهورية العراق وزارة التعليم العالي والبحث العلمي جامعة القادسية كلية الطب البيطري



در اسة تشخيصية للطفيليات الداخلية في الاغنام لمحافظة الديوانية

رسالة مقدمة إلى مجلس كلية الطب البيطري في جامعة القادسية و هي جزء من متطلبات نيل درجة البكالوريوس في علوم الطب والجراحة البيطرية

