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Detection of Eimeria Spinfectin Rates in Sheep of Some Regions of Thi-Qar Province

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Abstract
One of the most significant parasitic diseases in domestic animals that results in financial losses is coccidiosis. In order to determine the prevalence of infection (*Eimeria spp*.) This research was carried out on sheep in a specific region of the Thi-qar the province. A total infction rate was 26.74% from 86 sheep was obtained in the study utilizing the direct wet smear approach and the flotation method. for the period from November 2022، to the end of January 2023. Males had infection rates of 29.62%, while females ha infection rates of 25.42%. According to the study, there were non-significant differences in the infection rates between the adult and young age groups (25.45%) and adults (29.03%). There was a significant difference between the Al-Rifai region and the other study regions in terms of the infection rate, which was documented as being 30%.
Keywords: Coccidiosis, Eimeria sp, Sheep

الملخص

الكوكسيديا من أهم الأمراض الطفيلية التي تسبب خسائر اقتصادية للحيوانات الأليفة. لذلك صممت هذه الدراسة للكشف عن نسب الاصابة لطفيلي (الاكريات) في الأغنام في بعض مناطق محافظة ذي قار. باستخدام طريقة المسحة الرطبة المباشرة وطريقة التطويف، وسجلت الدراسة معدل إصابة إجمالي قدره 26.74٪ للفترة من تشرين الثاني 2022 حتى نهاية كانون الثاني 2023. كانت معدلات الإصابة عند الذكور والإناث (29.62٪) و (25.42٪) على التوالي. وبينة الدراسة عدم وجود فروق معنوية في معدلات الإصابة بين الفئات العمرية حيث كانت نسبة الإصابة (25.45٪) و (29.03٪) في الحيوانات البالغة والصغيرة على التوالي وفيما يتعلق بمناطق الدراسة، سجلت منطقة الرفاعي أعلى نسبة إصابة (30٪) مع اختلاف معنوي مع المناطق الاخرى.
لكلمات المفتاحية: الكوكسيديا، الايميريا، الاغنام

Introduction

A protozoan in intestinal known as coccidiosis is brought on by parasite of genus the *Eimeria sp* that grow and spread in animals' small and large intestines and are particularly acute in young animals.[1, 2] Small ruminants over the world and in other animal species are susceptible to the deadly disease coccidiosis.[3, 4] Coccidiosis may develop into an infection of substantial economic consequence that could reduce the thriftiness and productivity of small ruminants in intensive breeding systems that are also accompanied by high animal density and high output.[5] *Eimeria* sp infection can affect small ruminants of all ages, coccidian infection outbreaks most commonly affect lambs between the ages of 3 weeks and 5 months, with the rest of the flock having the potential to spread the infection.[5, 6] Clinically, coccidiosis is indicated by bloody diarrhea in adult sheep.[7] While young animals clinically watery diarrhea with in the colors of feces brown or yellow.[8] Reduced milk production in dairy sheep and goats has also been observed in the subclinical type, with weakness of growth being the predominant clinical signs.[9]

The majority of animals are infected with a variety of Eimeria species from an early age, according to surveys based on the investigation of ruminant feces. (*E. ovinoidalis, E. crandalis, E. ahsata, E. weybridgensis, E. bakuensis (ovine), E. intricate, E. fare, E. pallida*). The diagnosis of Eimeria is often made using a light microscope to morphologically identify the oocysts. [10],[11]. *Eimeria* identification including PCR amplification technique DNA [12].

In the exogenous phase of the Eimeria life cycle, theoocysts are released into the environment, and in the endogenous phase, the parasite develops in the gut of the host[13]. Numerous cycles of schizogony, or asexual reproduction, occur during the endogenous phase, followed by the sexual differentiation of the gametes and fertilization. The oral-fecal pathway is the mode of transmission for parasites. In farming settings where numerous animals are confined in a limited area, infections are frequent.[14].

The study aimed at the following: Detection of infection rates in some regions of Thi Qar province Methods

Samples Collection

During the period beginning on November 1st, 2022, feces samples were taken from (86) sheep of both sexes (males and females) and of various ages. to end the January 2023, from three different regions in Thi-qar province (Al-Nasiriyah, Al-Shatrah and Al-Rifai).

Fecal samples were taken straight from the rectum, placed in a clean plastic container, and carefully closed. Age, sex, and the date of the sample collection were all included in the data. The samples were delivered in chilled bags to a parasitology lab at the College of Veterinary Medicine-University of Thi-qar.

Laboratory Tests

Direct Wet Smear:-

1-3 gm fecal sample dilute with distilled water and mixed with a wood stick and filter with a piece of gauze was taken drop and put on a glass slide and put the coverslip. The examination was done with light microscopy at 40X magnification powers (15).

Flotation method**:**

A sample of 1-3 gm feces was mixed with small amounts (10ml) of distilled water. Treated with saturated saline solution and put the cover of the slide on tub, After 10 minutes examine the sample under the microscope at 40Xmagnification power to look for the *Eimeria* oocysts (16). Sporulation of *Eimeria sp* Oocysts. When the oocysts were submerged in 2.5% potassium dichromate (K2CR2O7), they sporulated. This process takes place at room temperature (17).

Statistical analysis:

The data were analyzed by using Chi-square test for compared between the different values of factors that effect in the infection rate(18).

Results and discussion:

The morphological description of *Eimeria spp* in sheep by Microscopy, results Both the direct wet smear approach or flotation methods were used to find *Eimeria spp* oocystes for this study. Under a microscope, oocyst morphological traits were investigated.

Nonsporulation Oocyst of *Eimeria* sp (x40)

Sporulation Oocyst of *Eimeria* sp (x40)

Total infection rate

The total infection of *Eimeria* sp was recorded (23) Out of a total of 86 samples collected from regions (Al-Nasiriyah, Al-Shatrah and Al-Rifai). A study showed that the infection rate in both males and females were (29.62%) and (25.42%) respectively, with non-significante when (χ2=1.766). The relationship between age of sheep and rates of infection. Adults and young of the sheep respectively, had infection rates of (25.45%) and (29.03%), with non-significante difference when (χ2) = 1.835).

Infection rates of *Eimeria* spp. according to study regions. The current study recorded 23 cases of *Eimeria* spp in three regions of Thi qar province and the higher rate of infection was (30 %) in AL-Rifai region, While the infection rates for other regions were AL-Shatrah and AL-Nasiriyah (28.57% and 21.42%) respectively, with significant difference when (χ2= 4.527).

Eimeria spp. are the principal etiologic agents for coccidiosis in farm animals, and the spread of the parasite's oocysts is possible, especially on highly productive, crowded farms. Due to the disease's effects on farm animals' ability to produce milk and meat, as well as their frailty

and increased risk of mortality, farms suffer economic losses. (19).

A study, the Oocystes of *Eimeria* sp that infects sheep was diagnosed and identified from via morphological characteristics, Ellipsoidal and spherical shape and present polar cap. This diagnosis was agreed with (20,21). The study recorded infected rate were 26.74 %. The different rates of *Eimeria* infection in sheep are attributed to the number of samples, health status and the use of anti-coccidiosis, in addition to raising different ages in the same farm. Al-Saadoun recorded high infection (52.09%). It can be claimed that due to these variations in the sex relationship of the host, male infection rates occasionally outweigh female infection rates, and vice versa. Without the other, it is impossible to demonstrate the existence of sex-related factors that influence parasite infection and cause it to lean toward a particular sex of a host (20). Age-related rates of infectious diseases in young's and adults were (25.45%) and (29.03%), respectively.. The infection rate may be higher in young animals because there is insufficient immunity against coccidiosis in sheep. That was confirmed by the significant high prevalence of *Eimeria* oocyst in the lambs than an the adult in sheep (22). The current study recorded highest infection in AL-Rifai city was (30%). was an approach to management that was used to the production of sheep. Also, it was generally accepted that crowded, circumstances with moisture were beneficial to the spread of the Eimeria infection. (23) . The difference in infection rates for the study areas may be sheep farming health care and use of anticoccidial programs.

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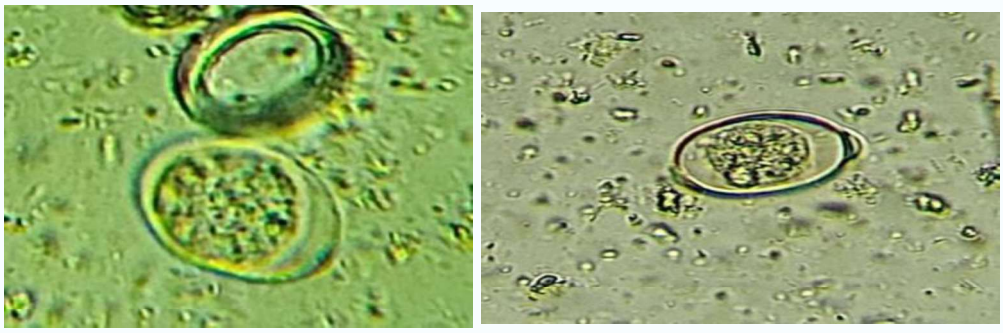

Figure 1: Non sporulation Oocyst of *Eimeria* sp (x40).

Figure 2: Sporulation Oocyst of *Eimeria* sp (x40).

Table 1: Total infection rate of *Eimeria spp* in sheep

Examined fecal samples	Positives samples	Percentage
86	23	26.74

Table 2: The relationship between sex of sheep and rates of infection.

Sex	Examined fecal samples	Positives samples	Percentage
Males	27	8	29.62
Females	59	15	25.42

Table 3: The relationship between age of sheep and rates of infection.

Age groups	examined fecal samples	Positives samples	Percentage
Adult	55	14	25.45
Young	31	9	29.03

Table 4: Rates of infection of *Eimeria* spp. in sheep among regions of present study.

Regions	examined fecal samples	Positives samples	Percentage
AL-Rifai	30	9	30
AL-Shatrah	28	8	28.57
AL-Nasiriyah	28	6	21.42