

Detection of Goat Digestive Tract Protozoa Through Feces Examination in Kwanyar Sub-District, Bangkalan District

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Abstract

This study aims to determine the prevalence and species of protozoa that infect the digestive tract of goats in Kwanyar Sub-District, Bangkalan District. This study was conducted in June-July 2019 with 100 samples of stool examination in the laboratory of the Division of Parasitology, Faculty of Veterinary Medicine, Airlangga University. On examination found two types of protozoa, which were: *Eimeria* sp and *Blastocystis* sp. The results of this study showed the prevalence of 48% digestive tract protozoa. The results of statistical analysis using the Chi-Square test showed significant differences in age under one year and over one year in goats ($p < 0.05$).

Keywords: *Eimeria* sp, *Blastocystis* sp, Kwanyar, Goat, Bangkalan District, Protozoa

Introduction

Bangkalan District is one of the Districts that has a large population of goats, according to data from the Animal Husbandry Service of East Java Province (2016) Bangkalan District has a goat population of 73,003 heads, one of the Sub-Districts that has a large goat population is Kwanyar Sub-District with a goat population of 73,003 4,112 heads, this shows that many people raise goats. Raising goats usually has several obstacles faced, the main disease of goats is a parasitic disease of the digestive tract that inhibits livestock growth, weight loss, and causes economic losses for farmers. Single or mixed infection by coccidia greatly affects the production, even death of young livestock (Winarso, 2018). Based on research conducted by Hastutiek, *et al.*, (2019) in 10 Sub-Districts in Bangkalan District, Madura cattle showed high results, namely 71.4% of the samples tested positive for gastrointestinal protozoa, which consisted of species *Eimeria* sp, *Balantidium* sp, *Isoospora* sp, *Blastocystis* sp, *Entamoeba* sp, and *Cryptosporidium* sp. Research on gastrointestinal protozoa conducted in Kwanyar Sub-District found 50 stool samples, 50% of which were positive and zoonotic, consisting of species *Blastocystis hominis*, *Balantidium coli*, and *Entamoeba* sp (Hastutiek *et al.*, 2018). Cases in cattle can occur in goats and can be transmitted to humans including *Blastocystis* sp with clinical symptoms in the form of abdominal pain,

bloating, and diarrhea (Badparva *et al.*, 2015). *Balantidium* sp in acute infection can cause abscesses and ulcers in the mucosa and submucosa of the large intestine with a picture like amoebic dysentery (Yulfi, 2006)

Materials and Methods

Fecal samples that have been taken are placed in a stool pot. Due to the distance between the sampling sites, the sample was added with 2.5% potassium bichromate as a preservative and then labeled with the owner's name, age, gender, and sampling location (Suwanti *et al.*, 2011). Then the sample was put into an ice box to be taken to the laboratory. The feces were made into a suspension with a ratio of 1 : 10 and then filtered. The filtrate obtained was put into a centrifuge tube and then centrifuged at 1500 rpm for two to five minutes. Furthermore, the supernatant was discarded, then added with aquadest and centrifuged again. This was done repeatedly until the supernatant looks clear and a clear sugar solution was added up to 1 cm from the mouth of the tube, then stirred with a stirrer. Then it was centrifuged at 1500 rpm for three to 5 minutes. Then a clear sugar solution was added using a pipette until the surface looked convex. Then the cover glass was placed on the surface of the tube for 5 minutes. The cover glass was removed and then placed on the object glass and examined under a microscope with a



magnification of 100x-400x (Suwanti *et al*, 2011). The results of the examination were declared positive if protozoa were found from the fecal examination method. Protozoa identification was carried out by looking at the morphology and measurements of the protozoa using the Soulsby (1986) identification key.

A positive sample was calculated the prevalence rate with the formula:

$$\text{Prevalence} = \frac{\text{Number of infected samples} \times 100\%}{\text{Number of samples observed}}$$

The prevalence results indicated the level of a problem in the disease for administrative purposes and can be used as a strategic consideration in disease control (Thrusfield, 2005). The results of observations regarding the detection of digestive tract protozoa in goats were analyzed qualitatively by calculating the percentage of positive samples. Examination of the infective stage of the protozoa in feces was analyzed using the Chi-Square test. Statistical analysis using the SPSS (Statistical Product and Service Solution) for Windows rel 22.0 program.

Results and Discussion

Based on laboratory examinations using the floating method on 100 samples of goat feces taken in Kwanyar Sub-District, Bangkalan

District, precisely in Dlemer Village during June 2019 to July 2019, 48 samples were positive and 52 were negative. The results of the prevalence of digestive tract protozoan infections in goats in Kwanyar Sub-District, Bangkalan District can be seen in Table 1.

Protozoa found in this study were *Blastocystis* sp, and *Eimeria* sp. Protozoa identification is done by observing the morphology of the shape and size of the protozoa. Protozoa were measured and observed with a microscope connected to an optilab. *Eimeria* sp. was the main single infection, the lowest single infection was *Blastocystis* sp. In mixed infections, namely *Eimeria* sp. and *Blastocystis* sp. measurement of protozoa using Imageraster program. The types of protozoa found in goats can be seen in Table 1.

The *Eimeria* sp. oocyst found in this study was oval in shape, had a thin and smooth wall, had 4 sporocysts, *Eimeria* sp. had a size of 29.3 x 19.8 m. *Eimeria* sp. became the single highest source of infection with 34 positive samples from 100 samples, the second single source of infection was *Blastocystis* sp. as many as 6 positive samples from 100 samples and mixed infection sources by 8 samples from 100 samples. Images of *Eimeria* sp. can be seen in Figures 1 and 2.

Table 1. Prevalence of Gastrointestinal Protozoa Infection in Goats in Kwanyar Sub-District, Bangkalan District

Sample	Infection			Type		
	Kind of Infection	Number	Percentage	Protozoa	Number	Percentage
Positive	Single	40/48	40	<i>Eimeria</i> sp	34/48	34
				<i>Blastocystis</i> sp.	6/48	6
	Double	8/48	8	<i>Eimeria</i> sp. and <i>Blastocystis</i> sp.	8/48	8
Negative	-	52	52	-	52	52
Total	-	100	100	-	100	100

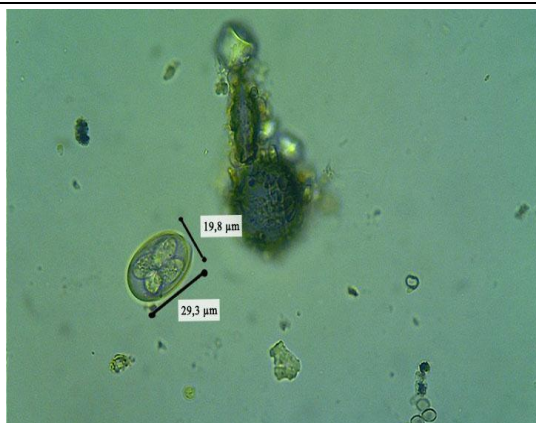


Figure 1. Sporulated *Eimeria* sp oocyst, four sporocysts were found through examination using floating method (400x magnification).



Figure 2. Unsporulated *Eimeria* sp. oocyst was examined by floating methods (400x magnification)

Blastocystis sp. cyst found in this study measuring 21.3 x 20.1 μm thick-walled, consisting of many vacuoles, having 1-2 nuclei. Having positive single infection in 6 out of 100 samples and mixed infection with *Eimeria* sp. as many as 8 of 100 samples. *Blastocystis* sp. can be seen in Figure 3.



Figure 3. *Blastocystis* sp cyst was examined by the floating method (400x magnification).

The results of microscopic examination showed that 19 goats (39.6%) aged over one year were positively infected with digestive tract protozoa and 29 goats (60.4%) aged under one year were positively infected with digestive tract protozoa. The results of the prevalence of digestive tract protozoa by age and type of protozoa can be seen in Table 2.

Conclusions

Examination of 100 fecal samples in goats in Kwanyar Sub-District, Bangkalan District, the types of protozoa found were *Eimeria* sp and *Blastocystis* sp. The prevalence of digestive tract protozoal infection in goats in Kwanyar Sub-District, Bangkalan District was 48%. The prevalence of gastrointestinal protozoa infection in goats is influenced by the age of the goats, which can be seen from the prevalence percentage of goats aged more than one year of 39.6% and goats aged less than one year of 60.4%.

Table 2. Prevalence of Gastrointestinal Protozoa Infection in Goats in Kwanyar Sub-District, Bangkalan District based on Age and Type of Protozoa.

Kind of Protozoa	Infected Sample	Prevalence (%)	
		Age is less than 1 year	Age is more 1 year
<i>Eimeria</i> sp	34	17/48 (35.4)	17/48 (35.4)
<i>Blastocystis</i> sp.	6	4/48 (8.3)	2/48 (4.2)
<i>Eimeria</i> sp. and <i>Blastocystis</i> sp.	8	8/48 (16.7)	0/48
Total infected sample	48	29/48 (60.4)	19/48 (39.6)

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