

# PREVALENCE OF *Cryptosporidium* sp INFECTION IN CATTLE FROM CIAMIS AND TASIKMALAYA WEST JAVA INDONESIA

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## Abstract

*Cryptosporidium* sp is a genus of protozoan parasite and causes a diarrheae illness in mammals including animals and humans. The source of infection *Cryptosporidium* spis oocysts that is sporulated and infective when excreted in the feces and resulting environmental contamination. Cryptosporidiosis can be transmitted from animals to humans and vice versa (zoonosis). This study aimed to determine the prevalence of cryptosporidiosis in cattle from Ciamis and Tasikmalaya, West Java, Indonesia. The feca l specimens from 348 cattle (295 female and 53 male) were randomly collected. The examined for the presence of *Cryptosporidium* oocysts used floating stool with Sheatersugar and acid - fast staining method (ZiehlNeelsen stain). The results showed that the overall prevalence of infection was 12.07 % ( 42/348). Prevalence of infection related to the age were 14.58%, 19.64 % and 9.84 % in cattle less than 6 months, 7-12 months and over 12 months, respectively, also 10.85 % and 18.87 % in female and male, respectively. Although no significant difference exists between the age groups, calves less than 12 months of age are more likely to be infected than over 12 months. The result indicate that *Cryptosporidium* sp infection is prevalent in Ciamis and Tasikmalaya that could serve as reservoirs for the zoonotic infection in humans.

**Keywords:** *cryptosporidium, cattle, prevalence, West Java*

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## 1. INTRODUCTION

Cryptosporidiosis is one of the most common enteroparasite causing diarrhea in animals and humans, including cattle (Fayer, 2004). *Cryptosporidium* has become a concern not only because of the direct economic losses associated with the infection, but also from a public health perspective because of the potential for environmental contamination with *Cryptosporidium* oocysts. (Satin *et.al.*2008). This study aimed to determine the prevalence of cryptosporidiosis in cattle from Ciamis and Tasikmalaya, West Java, Indonesia, this region where predominant the cattle.

## 2. METHODS

Fecal sampling.

Three hundred fourty eight fecal specimens were collected from rectum or immediately after defecation using disposables plastic gloves. At the time of sampling, labelled the date of sampling, aged and sex of the animal, kept in a coller box then store in the refrigerator before examination. Detection of oocyst.

Oocyst were concentrated from feces with floating feces in Sheater Sugar. Briefly, 1 gram of feces from each specimen was mixed with 14 ml of water, and then was centrifugated at 1500 rpm for 10 minutes. Supernatant was aspirated from each suspension, then the pellet was resuspended in 15 ml Sheater Sugar solution, centrifuged again at 1500 rpm for 10 minutes. Five millilitres of supernatant, aspirated from the top of each suspension, was transferred to 15 ml centrifuge tube, and dH<sub>2</sub>O added to reach a final volume of 15 ml. Specimens were centrifuged at 1500 rpm for 10 minutes. The pellets were smeared directly onto glass microscope slide and examined for *Cryptosporidium* oocysts with acid-fast stain (ZiehlNeelsen stain).

### 3. RESULTS

The prevalence results of *Cryptosporidium* sp oocysts from cattle in Ciamis and Tasikmalaya, West Java are presented in Table 1. Analysis showed an overall pre-valence of 12.07 % in the cattle examined with ZiehlNeelsen staining method.

**Table 1.** Prevalence of *Cryptosporidium* sp oocysts from cattle in Ciamis and Tasikmalaya, West Java Indonesia

Location	No. examine	No. positive	Prevalence (%)
Ciamis	145	20	
Tasikmalaya	203	22	
Total	348	42	12.07 %

The prevalence of *Cryptosporidium* sp related to the sex in females and males were 10.85 % and 18.87 %, respectively.(Table 2).

**Table 2.** Prevalence of *Cryptosporidium* sp oocysts from cattle with sex group.

Sex	Location		No. examine	No.positive	Prevalence(%)
	Ciamis	Tasikmalaya			
Female	127	168	295	32	10.85
Male	18	35	53	10	18.87

The prevalence of *Cryptosporidium* sp related to the age in less than 6 months, 7-12 months and more than 12 months were 14.58%, 19.64 % and 9.84 %, respectively.(Table 3).

**Table 3.** Prevalence of *Cryptosporidium* sp oocysts from cattle with age group.

Age	Location		No. examine	No.positive	Prevalence(%)
	Ciamis	Tasikmalaya			
<6 months	20	28	48	7	14.58
7-12 months	33	23	56	11	19.64
>12 months	92	152	244	24	9.84

The presence of *Cryptosporidium* sp in this location (Ciamis and Tasikmalaya) can be a source of transmission and reservoir. Factors that can cause infection is the presence of *Cryptosporidium* sp sporulating oocyst. Oocysts sporulation influenced by the environment such as temperature, humidity and oxygen. Cattle can be infected with *Cryptosporidium* sp due to a decrease in immunity and the number of oocysts ingested. (Siverlas, 2010). Transmission of the disease through drinking water and food contaminated with oocysts that have been sporulated (fecal-oral route) (Smith and Nicholas, 2009). Housing and hygiene also influence the spread of infection in cattles, so that possible control measures can be established.

In this study, the prevalence of *Cryptosporidium* sp related to the sex of cattle showed males higher than in females. This is not in accordance with the research of Ayinmode and Benjamin (2010) which states that the females were higher than males. Actually, males and females have the same risk of infection with *Cryptosporidium* because it has the same immune system. (Nasir *et.al.* 2009). Cattle can be infected by ingested oocysts (Silverlas, 2010).

The prevalence of *Cryptosporidium* sp related to the age of cattle showed that the age of less than 12 months is higher more than 12 months. This study showed young ages are more sensitive than adults, according to the research of Faubert and Litvinsky (2000).

The results of this study indicate that in Ciamis and Tasikmalaya, cryptosporidiosis was potentially a source of infection and the reservoir. Cryptosporidiosis are zoonotic which can infect animals and humans thus it is necessary to control the disease.

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