COMUNICACIONES

Eimeriosis in capybaras (Hydrochaeris hydrochaeris) in the state of Rio Grande do Sul, Brazil

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ABSTRACT

*Capybaras are the largest of living rodents and are the most common wild rodent in the state of Rio Grande do Sul, Brazil. They are commercially bred for their meat, hide, and oil. The present study aims to shed some light upon intestinal protozoa of capybaras using Sheather's method modified by Benbrook to analyze 250 fecal samples. The following *Eimeria* species were detected in 52.4% of the fecal samples: *E. trinidadensis*, *E. ichiloensis*, *E. boliviensis*, in addition to another species that could not be identified. With regard to the total oocyst count, the relative frequency of different *Eimeria* species was as follows: *E. trinidadensis* (55%), *E. ichiloensis* (32.6%), *E. boliviensis* (4.8%), and an unidentified *Eimeria* species (7.6%). The unidentified species was called *Eimeria araside* sp.n. (Apicomplexa: Eimeriidae).*

Key words: capybara, *Eimeria*, faeces.

INTRODUCTION

Capybaras are relatively frequent in several regions of the state of Rio Grande do Sul, Brazil, and along with coypus (*Myocastor coypus*), according to a recent study carried out with six families of wild rodents, were considered to be the most abundant type of rodent in the state of Rio Grande do Sul¹.

The experience of more industrialized countries in the rearing and exploitation of capybaras has shown that their hide is widely used for the manufacture of gloves, shoes, belts, etc², with a great potential for the production of meat and oil³.

Eimeriosis is a contagious catarrhal enteritis

that affects the small and/or large intestine and is caused by different *Eimeria* species⁴. It usually occurs among young animals, whereas successive infections in adult animals make their body develop a resistant immune system, turning them into carriers of the disease⁵.

Unsporulated oocysts consisting of a nucleated protoplasmic mass wrapped by a resistant wall are passed in the feces. Under appropriate oxygen conditions, high humidity and ideal temperatures (of approximately 27 °C) and within two to four days, oocysts sporulate and become infective⁶.

The clinical diagnosis of eimeriosis is established by the following signs: sudden onset of bloody diarrhea, accompanied by dehydration,

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weight loss, loss of appetite, lethargy, and sometimes, death. The laboratory diagnosis is made by coproparasitological analysis, with Sheather's method being the most widely used technique, and also by necropsy, which takes macroscopic and microscopic lesions into consideration⁷.

According to Carini⁸, two new *Eimeria* species have been found in capybaras: *E. capibarae* and *E. hydrochoeri*.

MATERIAL AND METHODS

The capybaras were from the zoo in Sapucaia do Sul, from a privately-owned rearing station in Santo Antônio da Patrulha and from an experimental center (CEULBRA - Centro Experimental da Universidade Luterana do Brasil), located in the town of Montenegro. In these places, animals of different ages lived together. A total of 250 fecal samples were collected from the rearing stations. The samples were collected at an interval of approximately 30 days. Freshly shed feces were collected from the ground, placed in plastic vessels, kept on ice and taken to the Laboratory of Protozoology at FAVET-UFRGS. At the laboratory, the samples were kept in a refrigerator at approximately 8° C, for later processing.

The samples were collected between February and August 2004 and the study was completed in March 2005.

The fecal samples were submitted to Sheather's method modified by Benbrook, based on the study by Hoffmann⁹, used to detect *Eimeria* spp. After the detection of *Eimeria* oocysts through this method, they were submitted

to ocular micrometry. The aim of this method was to measure the length and width of oocysts and then to identify them. These data, coupled with morphological characteristics, allowed classifying the species found in the experiment.

Afterwards, the unsporulated oocysts were protographed at x100 and x400 magnification and sporulated in 2.5% potassium dichromate. Sporulation occurred on the 25th day and the sporulated oocysts were photographed again at x100 and x400 magnification.

RESULTS AND DISCUSSION

The genus *Eimeria* was detected in 52.4% of fecal samples of the analyzed capybaras, and four species were found: *E. trinidadensis* (55%), *E. ichiloensis* (32.6%), *E. boliviensis* (4.8%) and *E. araside* (7.6%).

Table 1 shows the occurrence (%) and the micrometric parameters of oocysts (mean $\pm$ standard deviation) of different *Eimeria* species found in capybaras, in Santo Antônio da Patrulha, Montenegro and Sapucaia do Sul, state of Rio Grande do Sul, Brazil.

The oocysts classified as *E. araside* had the following morphological characteristics: ellipsoidal oocyst of uniform thickness consisting of two layers: a very smooth and well-delineated, dark brown outer layer, and a homogeneous inner layer. No micropyle, micropylar cap and oocyst residuum were observed (Figure 1).

Moreno et al¹⁰, carried out a study about gastrointestinal parasitism of capybaras in Venezuela, where 41.7% of 84 fecal samples were positive for *Eimeria* spp, yielding similar results to the present study (52.4%).

Table 1. Occurrence (%) and micrometric parameters of oocysts (mean $\pm$ standard deviation) from different *Eimeria* species found among capybaras in Santo Antônio da Patrulha, Montenegro and Sapucaia do Sul, in southern Brazil

Species	Oocysts (mean $\pm$ standard deviation)			Occurrence (%)
	Length	Width	Morphometric index	
<i>E. trinidadensis</i>	20.79 $\pm$ 1.57	20.79 $\pm$ 1.57	1.15 $\pm$ 0.1	55
<i>E. ichiloensis</i>	25.08 $\pm$ 1.88	25.08 $\pm$ 1.88	1.26 $\pm$ 0.1	32.6
<i>E. boliviensis</i>	32.42 $\pm$ 2.91	24.87 $\pm$ 2.08	1.31 $\pm$ 0.17	4.8
<i>E. araside</i>	18.56 $\pm$ 2.51	15.3 $\pm$ 0.92	1.22 $\pm$ 0.19	7.6

Figure 1. Unsporulated oocyst of *Eimeria araside*, at the center of the slide, detected in capybaras by Sheather's method (x400).

Authors reported three new *Eimeria* species in capybaras in Bolivia and Venezuela: *E. trinidadensis*, *E. ichiloensis* and *E. boliviensis*¹¹. They found an occurrence of 76% and 37% for *E. trinidadensis* in Bolivian and Venezuelan capybaras, respectively¹¹. The same authors found an occurrence of 86% and 84% for *E. ichiloensis* in Bolivian and Venezuelan capybaras, respectively, which differs from the results obtained in the present study (32.6%). In Venezuela, they found an occurrence of 26% of *E. boliviensis* in Bolivian capybaras and of 26% in Venezuelan capybaras, which differs from the results herein (4.8%)¹¹.

According to Casas et al¹¹, *E. trinidadensis* resembled *E. hydrochoeri*, found in some Brazilian animals, as they had the same size, despite different morphological characteristics⁸. According to these authors, *E. ichiloensis* resembled *E. capibarae*, found by Carini⁸ in some Brazilian capybaras, since they had the same morphological characteristics, but were of different sizes.

The present study revealed an oocyst type that belongs to an *Eimeria* species not yet described in the literature, which was therefore first described in the present study.

The new species, *E. araside* sp.n. (Apicomplexa: Eimeriidae), was named after the three researchers who first described this type of *Eimeria*¹².

The lack of similar studies in the literature does not allow for a more in-depth analysis. However, the present study is a starting point

for future studies on protozoa in the feces of capybaras.

Our conclusion is that capybaras are susceptible to *Eimeria* spp., with three species being identified: *E. trinidadensis*, *E. ichiloensis* and *E. boliviensis*. One of the species was not identified because its size did not match any species portrayed in the literature, so a new species called *E. araside* sp.n. (Apicomplexa: Eimeriidae) was described.

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