Tyzzeria parvula (KOTLAN, 1933) KLIMES, 1963 (APICOMPLEXA: EIMERIIDAE) IN THE GREYLAG GOOSE (*Anser anser* LINNAEUS, 1758) IN SOUTHEASTERN BRAZIL*

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ABSTRACT:- BERTO, B.P.; TEIXEIRA, M.; LOPES, C.W.G. *Tyzzeria parvula* (Kotlan, 1933) Klimes, 1963 (Apicomplexa: Eimeriidae) in the greylag goose (*Anser anser* Linnaeus, 1758) in southeastern Brazil. [*Tyzzeria parvula* (Kotlan, 1933) Klimes, 1963 (Apicomplexa: Eimeriidae) no ganso cinzento (*Anser anser* Linnaeus, 1758) no sudeste do Brasil]**.** *Revista Brasileira de Parasitologia Veterinária*, v. 16, n. 3, p. 156-158, 2007. Curso de Pós-Graduação em Microbiologia Veterinária, Universidade Federal Rural do Rio de Janeiro, km 7 da BR-465, Seropédica, RJ 23.890-000. E-mail: bertobp@ufrrj.br

Tyzzeria parvula from the greylag goose (*Anser anser*) is described in Southeastern Brazil. Oocysts are spherical to subspherical ranging from 12.4-180 to 10.7-15.9µm (15.4 X 13.4 µm), shape index 1.15, with a double layered wall 0.4 to 0.7 µm thick (n=20), outer smooth and colorless, inner pale greenish. Micropyle is absent, but oocyst residuum is present containing numerous granules and spherules. Surrounded by residuum there are eight sporozoites having one end round and other fine and slightly curved.

KEY WORDS: *Tyzzeria parvula*, oocysts, greylag goose, *Anser anser*.

RESUMO

Tyzzeria parvula é descrita no sudeste do Brasil em ganso doméstico, *Anser anser*. Os oocistos com parede constituída de duas membranas, a externa lisa e translúcida, e a interna verde pálido, variando de esféricos a subesféricos e sem micrópila. Os diâmetros, maior e menor mediram de 12,4 a 18,0 por 10,7 a 15,9µm (15,4 x 13,4µm) respectivamente com índice morfométrico de 1,15. Possuíam oito esporozoítas livres dentro do oocisto embebidos pelo corpo residual do oocisto. Uma das extremidades dos esporozoítas era arredondadas, enquanto a outra era estreita e levemente curvada.

PALAVRAS-CHAVE: *Tyzzeria parvula*, oocistos, ganso doméstico, *Anser anser*, Brasil.

INTRODUCTION

The greylag goose, *Anser anser* L., 1758 is a waterfowl very common in Brazil. This species is worldwide, with an estimated global extend of occurrence of 1,000,000-10,000,000 Km^2 and population of 920,000-970,000 animals (BIRD LIFE INTERNATIONAL, 2006). In Europe and North America, *A. anser* and others species from the family Anatidae (*A. albifrons, A. caurelensis, A. rossii, Branta canadensis* and *B. bernicla*) are frequently found parasitized by the coccidian protozoan *Tyzzeria parvula* (Levine 1985; Arslan et al. 2002). Although *T. parvula* have been considered as the principal causative agent of intestinal coccidiosis in geese, the parasite has not been so far identified in Brazil.

The aim of this paper is to present the morphological description of sporulated oocysts of *T. parvula* from the greylag goose, *A. anser,* in southeastern Brazil.

MATERIAL AND METHODS

Samples

Fecal samples (n=9) were collected from geese of a small farm located in the municipality of Rio de Janeiro, placed into plastic vials containing potassium dichromate solution ($K_2Cr_2O_7$) at 2.5% 1:6 v/v and transported to Laboratório de Coccídios e Coccidioses, Projeto Sanidade Animal (Embrapa/UFRRJ), De-

*Supported by CNPq.

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partamento de Parasitologia Animal, Instituto de Veterinária da Universidade Federal Rural do Rio de Janeiro. To permit sporulation, the fecal material was filtrated with double gauze and placed on Petri dishes at laboratory temperature (23-28°C) for ten days until most oocysts (70%) were sporulated. Oocysts for being studied were recovered from the feces using the saturated sugar flotation technique (DUSZYNSKY; WILBER 1997).

Morphology

Morphological observations and measurements were performed using a binocular microscope Carl Zeiss with apochromatic oil immersion objective and micrometer ocular K-15X PZO (Poland). Line drawings were prepared with a binocular microscope Wild M-20 with drawing tube.

Photographies

Pictures were prepared using a digital camera model CD Mavica MVC-CD250 Sony®, and a photographic camera f-KAS Automatic-2 with films ISO 100 (21 DINA) (Kodak, Mexico).

Cross transmission experiment

To determine the transmissibility of this specie from geese to ducks, two waterfowls one month old from the State of Rio de Janeiro and free of coccidia, Muskovy Duck (*Cairina moschata*) and Mallard (*Anas platyrhynchus*) were orally inoculated with 1,550 sporulated oocysts of *T. parvula*/500µL. Oocysts and the infective doses were prepared according to Eckert et al. (1995). After inoculation fecal observations were performed daily during ten days to observe the presence of oocysts in the feces.

RESULTS

Tyzzeria parvula (Kotlan, 1933) Klimes, 1963

Morphology

Oocysts (Figures 1 and 2) are spherical to subspherical ranging from 12.4-18.0 to 10.7-15.9µm (15.4 X 13.4 µm), shape index 1.15, with a double layered wall 0.4 to 0.7 µm thick (n=20), being the outer smooth and colorless, and the inner pale greenish. Micropyle is absent, but oocyst residuum is present containing numerous granules and spherules. Surrounded by residuum there are eight sporozoites having one end round and other fine and slightly curved.

Taxonomic summary

Host: The greylag goose *Anser anser* (Anseriformes: Anatidae).

Synonymy: *Eimeria parvula, Tyzzeria anseris.*

Site of infection: not investigated.

Locality: Rio de Janeiro, Brazil.

Geographic distribution of the host: worldwide

Sporulation time: 4-7 days.

Type material and specimens deposited: oocysts in 10% formaldehyde-saline solution deposited at the Parasitology Collection. Laboratory of Coccidios e Coccidioses in the Department of Animal Parasitology, UFRRJ, Seropédica, Rio de Janeiro, Brazil. Repository number is P-013/2007, including phototypes and line drawings.

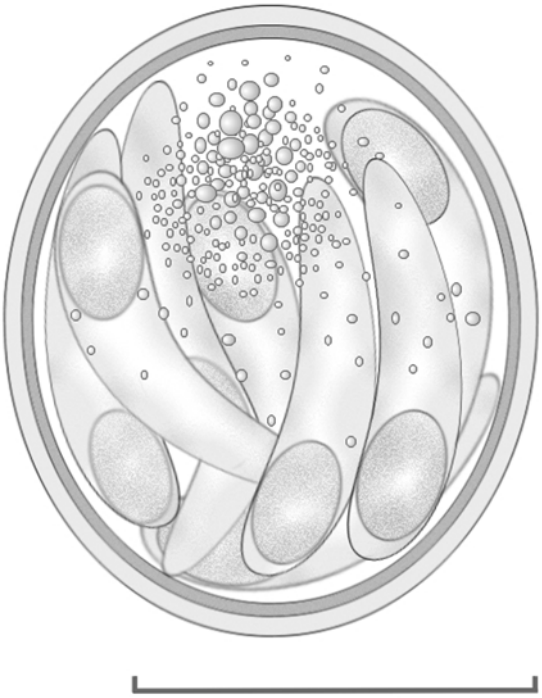

Figure 1: Line drawing of sporulated oocysts of *Tyzzeria parvula* (scale bar = 10µm).

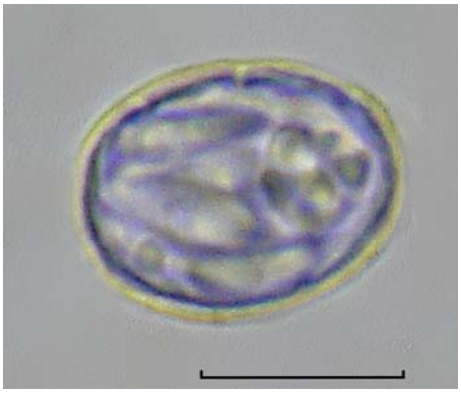

Figure 2. Sporulated oocyst of *Tyzzeria parvula*. Saturated sugar solution (scale bar = 10µm).

Cross transmissibility

Cairina moschata and *A. platyrhynchus* did not shed oocysts in the feces until ten days after inoculation.

Disease

None reported.

DISCUSSION

According to the data presented above the oocysts found in the Brazilian waterfowl *A. anser* belongs to the specie *T. parvula*. This parasite was first observed by Kotlán (1933) who named it as *Eimeria parvula*. Later, Allen (1936) working with the Mallard *A. platyrhynchus* observed the same type of oocysts and established the new genera *Tyzzeria*. Later, the

specie was renamed by Nieschulz (1947) as *T. anseris* and by Klimes (1963) as *T. parvula,* this last accepted until now. After this *T. parvula* was found parasitizing some species of the Subfamily Anserinae around the world but unfortunately, as reported by Gajadhar et al. (1983), this coccidium in geese is still being referred to by old names. As reported by Nieschulz (1947), Klimes (1963) and Svanbaev and Rakhmatullina (1967), the coccidium described here is not transmissible from geese to ducks.

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Received on March 12, 2007.
Accepted for publication on July 10, 2007.