

## AN ADELEID COCCIDIA, A PSEUDOPARASITE OF *Didelphis aurita* (MARSUPIALIA: DIDELPHOIDEA)\*

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**ABSTRACT.**- TEIXEIRA M., ALBUQUERQUE G.R., LOPES C.W.G., FLORENTINO M.V.N. **An adeleid coccidia, pseudoparasite of *Didelphis aurita* (Marsupialia: Didelphoidea).** [Um coccídio adeleide, pseudoparasito de *Didelphis aurita* (Marsupialia: Didelphoidea.) *Revista Brasileira de Parasitologia Veterinária*, v. 12, n. 1, p. 43-45, 2003. Curso de Pós-Graduação em Ciências Veterinárias, Universidade Federal Rural do Rio de Janeiro, Km 7 da BR 465, Seropédica, Rio de Janeiro, 23890-000, Brazil. E-mail: teixeira@ufrj.br

In a survey of intestinal coccidiosis from 27 adults southeastern common opossum, *Didelphis aurita*, from the southeastern region of Brazil, a large number of a polysporocystid oocysts measured  $34.28 \pm 4.51$  by  $31.63 \pm 4.62$  mm with shape index of 1.09, containing from 8 to 12 sporocysts was observed in two (7.41 %) animals. According to the diet habits of the opossum, plus the morphological characteristics of oocysts, this organism was identified as adeleid coccidia, a pseudoparasite of this vertebrate host.

**KEY WORDS:** Adeleidae, Coccidia, sporulated oocysts, pseudoparasitism, Didelphidae, *Didelphis aurita*, southeastern common opossum.

### RESUMO

Num levantamento sobre coccidiose intestinal em 27 gambás do sudeste de orelha preta adultos, *Didelphis aurita*, na região sudeste do Brasil, um grande número de oocistos com  $34,28 \pm 4,51$  por  $31,63 \pm 4,62$  mm de diâmetro e com índice morfométrico de 1,09, contendo de 8 a 12 esporocistos foram observados em dois (7,41 %) animais. De acordo com a dieta dos gambás, mais a característica morfológica dos oocistos esporulados, este organismo foi identificado como um coccidia da família Adeleidae, sendo assim considerado como um pseudoparasito deste animal.

**PALAVRAS-CHAVE:** Adeleidae, Coccidia, oocistos esporulados, pseudoparasitismo, Didelphidae, *Didelphis aurita*, gambá do sudeste de orelha preta.

### INTRODUCTION

Protozoa is a diverse and heterogeneous group of microorganisms. In the subclass Coccidia, the majority is parasites of vertebrates, but many are associated with invertebrates in relationships ranging from commensalic to pathogenic (BROOKS, 1988).

Most species of Coccidia because of the resistance of oocyst or sporocyst wall are able to pass through the intestinal tract without having any changes in its morphologic characteristics. Coccidia as adelids are frequently observed in invertebrate hosts and occasionally in the intestinal contents of these hosts predator. Such situations were responsible to consider erroneously vertebrates as their definitive hosts (DUSZYNSKI et al., 2003). Based on this problem, the objective of this work is to report adeleid coccidia as a pseudoparasite of *Didelphis aurita* from the Southeastern of Brazil.

### MATERIALS AND METHODS

Fecal samples from 27 adults opossums were collected freshly passed from live-trapped animals, or rectal contents removed at necropsy. The samples were placed in separated vials containing 2.5% aqueous potassium dichromate ( $K_2Cr_2O_7$ ) solution and processed with a saturated sugar flotation solution technique following Duszynski and Wilber,

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(1997). Oocysts were measured (n=50) using a Jenaval microscope with a 10x eyepiece, 40x objective and calibrated ocular micrometer GF-p16x (Carl Zeiss). All measurements are given in micrometers ( $\mu\text{m}$ ) as means and standard deviation, which were calculated by using the computer program Excel (Microsoft®). To determine the number of layers and visualize sporocysts was used friction of the coverglass to fracture the oocysts. Photographs of the oocysts were taken in a Jenamed microscope, using a Kodak film (100 ISO). Plus the morphological study was carried out an ecological investigation about food habits of these marsupials.

## RESULTS

A large number of a polysporocystid oocysts was found in fecal samples from two (7.41%) of 27 marsupials.

### Morphology

Sporulated oocysts were spherical to subspherical in shape with a smooth, double layered, thick wall. Micropyle and oocysts residuum were absent. In a small number of oocysts a few refractile polar granules were present. Sporulated oocysts (n=50) measured  $34.66 \pm 3.70$  by  $31.64 \pm 3.94$  mm, with 1.11 shape index, containing from 6 to 12 round sporocysts (n=50) measuring  $11.02 \pm 0.87$  by  $10.65 \pm 0.76$  mm with shape index 1.04, with a consistent body residuum and 2 sporozoites in each. No visible Stieda body, substieda or parastieda bodies were observed. (Figure1).

**Type host:** unconcluded

**Type location in the host:** unknown, oocysts found in the feces

**Sporulation time:** unknown, oocysts found sporulated in the feces

**Type locality:** Municipality of Mangaratiba, State of Rio de Janeiro, Southeastern Region of Brazil.

## DISCUSSION

Several works on parasitic research have been reported new genera and new species of coccidia. Due to the complexity of these organisms, findings of these works sometimes are inconclusive. Polysporocystid oocysts were previously described from vertebrates, by that, Duszynski (1969) found an oocyst containing 16 sporocysts each with four sporozoites from a Costa Rican Lizards and classified it in the genus *Pythonella*. Later, Mcquistion (1990) described oocysts with 9-15 dizoic sporocyst in the feces of *Nesomimus parvulus*, the Galapagos mockingbird naming it as *Polysporella genovesae*, but suggested caution in naming the hosts when describing coccidia due to the possibility of spurious parasitism derived through the diet. Daszak e Ball (1998) reported few oocysts with spherical dizoic sporocysts from iguanid lizards, which carefully called of unnamed polysporocystid oocyst. In this same work were cited others vertebrates reported as hosts, including birds, mammals and reptiles. Kawazoe e Gouvêa (1999) found polysporocystid oocysts from the bird Rufous Brested Leaf Tosser, *Sclerurus scansor*, and also classified them in the genus *Pythonella*. Nowadays this genus is considered as dubious valid by Duszynski et al., (2003). Previously Cox (1994) considered coccidian parasites as a massive coherent group, containing some of the most advanced sporozoans separated in two major groups: the adeleid and the eimeriid coccidia with are best regarded as parallel lines each with more primitive and more advanced forms. The life cycles of both are essentially similar. In the family Adeleidae Mesnil, 1903 (WENYON, 1926) parasites lives in the epithelium of the intestine and appended organs, chiefly in invertebrates (LEVINE, 1980). There are few genera in the Adeleidae and the range of hosts and sites of infection of the remainder of these coccidia are considerable, and the homoxenous forms can be found in the guts of several arthropods and annelids (COX, 1994). RIOUX

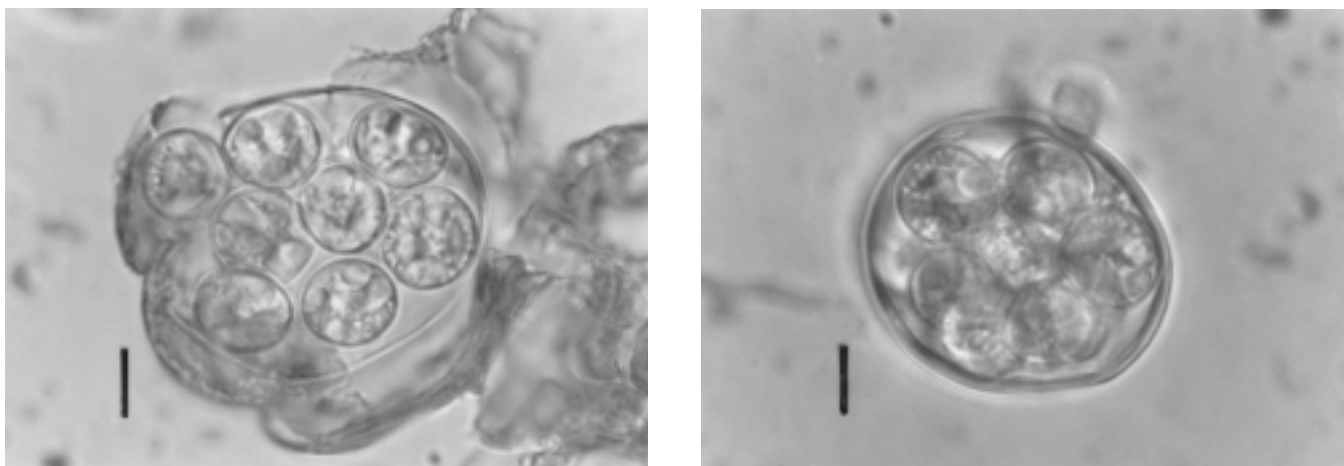


Figure 1. Sporulated oocyst of adeleid coccidian. A. Subspherical oocyst with 8 sporocyst and 2 sporozoites each. B. Sporulated oocyst after been fractured from the tissue of unknown invertebrate. Saturated sugar solution. ( scale bar = 10 $\mu\text{m}$ )

et al., (1984) reported the presence of adeleid coccidians from arthropods insects, classified in the genus *Adelina* Hesse, 1911. Afterwards Ghosh et al., (2000) and Lange et al., (2001) found an *Adelina* sp in the fat tissues and body fluid of three different coleopteram insects and crickets, respectively. Based on these remarks, the coccidia found in this work is classified in the family Adeleidae, eventhough the genus classification was not concluded. There was great variation in the number of sporocysts in the oocysts and also the sporozoites were not well observed due to consistent residuum. Plus, the presence of more than one genus or species of these coccidians in the feces are possible since the range of invertebrates in the diet of this opossum are varied. The Southeastern common opossum is one of the commonest marsupials species in the eastern neotropical region of Brazil with relatively wide distribution, living in many different environments. Santori (1995) and Cáceres; Monteiro-Filho (2001) studied food habits of this animal, classified *D. aurita* as an insectivorous-omnivorous marsupial and an occasionally consumer of fruits and vertebrate prey. A wide spectrum of invertebrates as food, includes: Molusca, Crustacea, Arachnida, Miriapoda, Decapoda, Isopoda, Blatarie, Coleoptera, Hymenoptera, Lepdoptera, Orthoptera, Isoptera, Diptera, Hemiptera, Dermaptera, Diplopoda, Opiliones, Gastropoda and others. This strongly variety of prey supports the idea that oocysts observed in this study were probably found because of the diet habits of these animals.

More studies and attention are necessary when working with coccidians, specially from wild animals which food habits are partially or frequently unknown. In these cases, the possibility of description of spurious parasitism is very common.

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