

TWO NEW HOSTS FOR *Isoospora tiesangui* BERTO, FLAUSINO, LUZ, FERREIRA & LOPES, 2008 (APICOMPLEXA: EIMERIIDAE)*

DOIS NOVOS HOSPEDEIROS PARA *Isoospora tiesangui* BERTO, FLAUSINO, LUZ, FERREIRA & LOPES, 2008 (APICOMPLEXA: EIMERIIDAE)

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ABSTRACT. Berto B.P., Luz H.R., Ferreira I., Flausino W. & Lopes C.W.G. **Two new hosts for *Isoospora tiesangui* Berto, Flausino, Luz, Ferreira & Lopes, 2008 (Apicomplexa: Eimeriidae).** [Dois novos hospedeiros para *Isoospora tiesangui* Berto, Flausino, Luz, Ferreira & Lopes, 2008 (Apicomplexa: Eimeriidae).] *Revista Brasileira de Medicina Veterinária*, 32(3):169-171, 2010. Laboratório de Coccídios e Coccidioses, Departamento de Parasitologia Animal, Instituto de Veterinária, Universidade Federal Rural do Rio de Janeiro. BR-465 km-07. Seropédica, 23890-000, RJ, Brasil. E-mail: bertobp@ufrj.br

This study report palm tanagers, *Thraupis palmarum*, and blue dacnis, *Dacnis cayana*, parasitized by *Isoospora tiesangui*. This coccidium was originally described parasitizing the Brazilian tanager *Ramphocelus bresilius dorsalis* and has never been described in other hosts. Its oocysts were spherical to sub-spherical, with a smooth, bilayered wall. Micropyle, oocyst residuum and polar granule were absent. The sporocysts were slightly ovoid. The Stieda body was flattened and the substieda body was prominent and rounded. The sporocyst residuum was composed of granules of different sizes, and the sporozoites were large and elongate, with refractile body and nucleus. Thus, based on this study, the palm tanager, *T. palmarum*, and the blue dacnis, *D. cayana* are considered as new hosts for *I. tiesangui*.

KEY WORDS. Morphology, sporulated oocysts, Coccidia, Thraupidae, Passeriformes, Marambaia Island.

RESUMO. Este estudo relata sanhaços-do-coqueiro, *Thraupis palmarum* e saís-azuis, *Dacnis cayana*, parasitados por *Isoospora tiesangui*. Este coccídio foi originalmente descrito parasitando o tiê-sangue *Ramphocelus bresilius dorsalis* e nunca foi descrito em outros hospedeiros. Seus oocistos foram esféricos a

subesféricos, com parede lisa e dupla. Micrópila, resíduo e grânulos polares estavam ausentes. Os esporocistos foram levemente ovóides. Corpo de Stieda achatado e corpo de substieda proeminente e arredondado. Resíduo do esporocisto composto de grânulos de diferentes tamanhos, e esporozoítos grandes e alongados,

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com corpo refrátil e núcleo. Assim, com base neste estudo, o sanhaço-do-coqueiro, *T. palmarum*, e o saí-azul, *D. cayana* são considerados como novos hospedeiros para *I. tiesanguui*.

PALAVRAS-CHAVE. Morfologia, oocistos esporulados, coccídios, Thraupidae, Passeriformes, Ilha de Marambaia.

INTRODUCTION

The palm tanager, *Thraupis palmarum* Wied, 1821, and the blue dacnis, *Dacnis cayana* Linnaeus, 1766 are endemic thraupid birds from South America. Both species habit in Argentina, Bolivia, Brazil, Colômbia, Costa Rica, Ecuador, French Guiana, Guyana, Honduras, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, and Venezuela. When compared with the Brazilian tanager *Ramphocelus bresilius dorsalis* Sclater, 1855 can be observed the similarity of its ecological niches and distributions in South America (Sick, 1997; CBRO, 2009; IUCN, 2010).

Protozoosis associated with the genus *Isospora* are closely related to the order Passeriformes. A total of 11 isosporoid species were reported from thraupids in South America: (1) *Isospora thraupis* Lainson, 1994; (2) *I. andesensis* Templar, McQuiston & Capparella, 2004; (3) *I. irisidornisi* Metzelaars, Spaargaren, McQuiston & Capparella, 2005; (4) *I. tiesanguui* Berto, Flausino, Luz, Ferreira & Lopes, 2008; (5) *I. marambaiensis* Berto, Flausino, Luz, Ferreira & Lopes, 2008; (6) *I. sepetibensis* Berto, Flausino, Luz, Ferreira & Lopes, 2008; (7) *I. cadimi* Berto, Flausino, Luz, Ferreira & Lopes, 2009; (8) *I. navarroi* Berto, Flausino, Luz, Ferreira & Lopes, 2009; (9) *I. sanhaci* Berto, Balthazar, Flausino & Lopes, 2009; (10) *I. sayacae* Berto, Balthazar, Flausino & Lopes, 2009; e (11) *I. silvasouzai* Berto, Balthazar, Flausino & Lopes, 2009 (Lainson, 1994, Templar et al., 2004, Metzelaars et al., 2005, Berto et al., 2008, 2009a,b).

Isospora tiesanguui was originally described from *R. b. dorsalis*. In this description, this species only parasitized Brazilian tanagers from Marambaia Island, State of Rio de Janeiro, Brazil (Berto et al., 2008).

The aim of this study was to report two new hosts for *I. tiesanguui* in Marambaia Island: the palm tanager, *T. palmarum*, and the blue dacnis, *D. cayana*.

MATERIALS AND METHODS

Nineteen blue dacnis and four palm tanagers were captured using nets at Marambaia Island (23°04'S, 43°53'W) in the State of Rio de Janeiro. They were kept in individual cage, and feces were collected immediately after defecation. After identification, the birds were released

and the fecal samples were placed in plastic vials containing 2.5% potassium dichromate solution ($K_2Cr_2O_7$) 1:6 (v/v). Samples were carried to the Laboratório de Coccídios e Coccidioses, PSA (Embrapa/UFRRJ), Departamento de Parasitologia Animal, UFRRJ.

Samples were placed in a thin layer (c.5 mm) of $K_2Cr_2O_7$ 2.5% solution in Petri plates and incubated at 23-28°C for 10 days or until 70% of the oocysts were sporulated. Oocysts were recovered by flotation in Sheather's sugar solution (S.G. 1.20) and examined microscopically using the technique described by Duszynski & Wilber (1997).

Morphological observations and measurements, given in micrometers (µm), were made using a Carl Zeiss binocular microscope with an apochromatic oil immersion objective lens and an ocular micrometer (K-15X PZO, Poland).

Pictures were taken using a digital camera model CD Mavica MVC-CD250 Sony®. Size ranges are in parenthesis followed by average and shape index (length/width). Means comparisons by analysis of variance (ANOVA) were performed using the software Excel XP (Microsoft Co., Redmond, WA, USA), based on Sampaio (2002).

RESULTS AND DISCUSSION

Nineteen blue dacnis and four palm tanagers were examined; being that four and two were positive for coccidia respectively. Initially, the oocysts were non-sporulated, while 70% sporulated by day five.

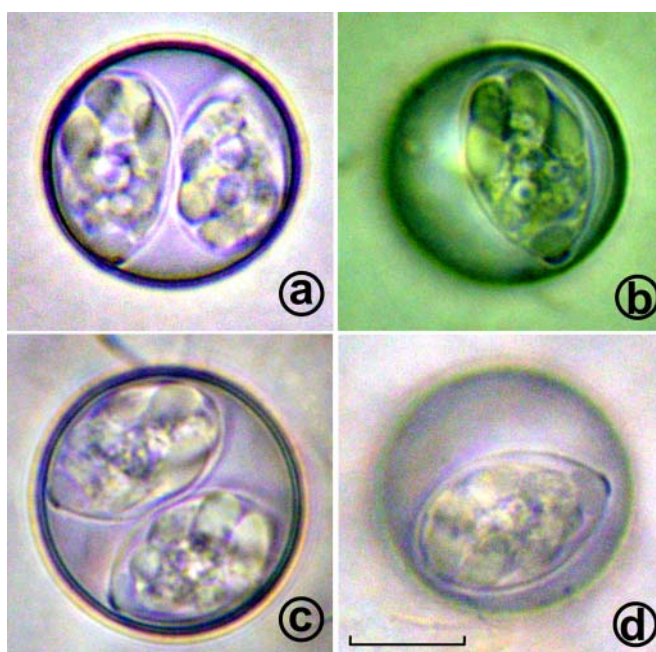


Figure 1. Photographs of sporulated oocysts of *Isospora tiesanguui* recovered from the thraupids - *Thraupis palmarum* (a, b) and *Dacnis cayana* (c, d). Scale-bar: 10 µm

Table 1. Comparisons of the sporulated oocysts of *Isoospora tiesanguui* recovered from thraupids - *Thraupis palmarum*, *Dacnis cayana* and *Ramphocelus bresilius dorsalis*.

Means	Oocysts samples (µm)		
	Berto et al. (2008)	Present study	
	<i>Ramphocelus bresilius dorsalis</i>	<i>Thraupis palmarum</i> (n= 7)	<i>Dacnis cayana</i> (n= 15)
Oocysts:			
Width	24.2 (22–26) ^a	23,7 (22-26) ^a	23,1 (21-26) ^a
Length	23.4 (21–26) ^a	22,9 (21-26) ^a	22,3 (21-25) ^a
Shape-index	1.03 (1.0-1.1) ^a	1,04 (1,0-1,1) ^a	1,03 (1,0-1,1) ^a
Sporocysts:			
Width	17.7 (17–19) ^a	17,8 (17-19) ^a	16,5 (15-19) ^b
Length	11.5 (11–13) ^a	11,7 (11-13) ^a	11,0 (10-14) ^a
Shape-index	1.54 (1.4-1.7) ^a	1,52 (1,5-1,6) ^a	1,51 (1,4-1,6) ^a

^aSame letters within each line denote statistically equivalent means (P>0.05) by ANOVA.

These sporulated oocysts (Figure 1) were spherical to sub-spherical, with a smooth, bi-layered wall. Micropyle, oocyst residuum and polar granule were absent. The sporocysts were slightly ovoid. The Stieda body was flattened and the substieda body was prominent and rounded. The sporocyst residuum was composed of granules of different sizes, and the sporozoites were large and elongate, with refractile body and nucleus.

These oocysts were similar to *I. tiesanguui* oocysts. Table 1 shows the means comparisons between the oocysts recovered in this study and the *I. tiesanguui* oocysts of the original description of Berto et al. (2008). The means were equivalent among all the morphometric aspects, with the exception of the sporocyst length. This significant difference can be justified due to variables that can influence the accuracy of the measurement of the sporocyst as: the position of the oocyst under coverslip; the position of the sporocyst within oocyst, and the pressure which the sporocysts are submitted within the oocyst.

Based on the morphological features and means comparisons mentioned in this study, the palm tanager, *T. palmarum*, and the blue dacnis, *D. cayana* are therefore considered as new hosts for *I. tiesanguui*.

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