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Helminths of White-bellied Opossum from Brazil

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ABSTRACT: Helminths were collected from 22 specimens of the white-bellied opossum (*Didelphis albiventris*) captured in the region of Pampulha (Belo Horizonte, Brazil), from May 1985 to March 1995. Ten species of helminths were collected; these included *Rhopalias coronatus*, *Brachylaema migrans*, *Aspidodera raillieti*, *Cruzia tentaculata*, *Turgida turgida*, *Gongylonema* sp., *Viannaia hamata*, *Travassostrongylus orloffii*, *Trichuris didelphis* and *Capillaria* sp.

Key words: *Didelphis albiventris*, helminths, opossum, survey.

Marsupials are primitive mammals found only in the Americas and Australia. Opossums of the genus *Didelphis* (Didelphidae) are widespread in the Americas and represented by *D. virginiana*, *D. marsupialis*, and *D. albiventris*. *Didelphis marsupialis* and *D. albiventris* are common in Brazil.

Studies of the helminth parasites of opossum have been limited mainly to *D. virginiana* and *D. marsupialis*. The purpose of the present work is to document the helminthic fauna of the white-bellied opossum from Brazil.

Helminth were collected during necropsies of 22 *D. albiventris*, all captured in the region of Pampulha, in the municipality of Belo Horizonte (Brazil; 19°49'S, 43°56'W), from May 1985 to March 1995. The animals were necropsied following methods for helminth collection outlined in Travassos, (1950). Trematodes were compressed between two glass slides, fixed and stored in AFA (240 ml distilled water, 36 ml formalin, and 120 ml 95% alcohol). Nematodes were fixed in hot AFA and stored in AFA until the identification. Prior to examination under light microscopy, nematodes were clarified with Aman's Lactophenol (Ueno and Gonçalves, 1988) and trematodes were stained with Aceto alum-

carmine (Commonwealth Institute of Parasitology, 1982). Then, trematodes were mounted on a glass slide in Canada balsam. Measurements were taken, with an ocular micrometer (Wild, Heerburgg, Switzerland) and the specimens were drawn using a camera lucida (Wild). Nematodes genera were identified according to description in Chabaud (1975, 1978), Anderson and Bain (1982), and Durrett-Desset (1983). The terms prevalence and average intensity follow the definition in Margolis et al. (1982). Trematodes were identified according to the Yamaguti (1958) classification. Species were identified according to specific taxonomic references (see below).

The material examined was deposited in the helminthologic collection of the Institute Oswaldo Cruz (Rio de Janeiro, Brazil; accession numbers 33599, 33801, 33802, 33803, 33804, 33805, 33942, and 33943).

Two species of two genera of trematodes were identified including *Rhopalias coronatus* was found in the large intestine, and *Brachylaema migrans* in the small intestine. Eight genera and species of nematodes were identified including *Gongylonema* sp. in the wall of esophagus, *Turgida turgida* in the stomach, *Travassostrongylus orloffii* and *Viannaia hamata* in the small intestine, and *Aspidodera raillieti*, *Trichuris didelphis*, *Capillaria* sp., and *Cruzia tentaculata* in the large intestine.

Our identification of *R. coronatus* agrees with that of Gomes and Vicente (1972). The morphometric characteristics clearly identified *A. raillieti* following the description in Ortlepp (1924), Vicente (1966), and Foster (1939); it is of note that the measurements of the gubernaculum described by Proença (1937) are slightly larger than those measured in our study.

TABLE 1. Prevalence and mean intensity of helminths in *Didelphis albiventris* from Brazil.

Helminths species	Prevalence ^a (%)	Mean intensity of infection (range)	Ratios male/female
<i>Rhopalias coronatus</i>	18	36.0 (0–71)	—
<i>Brachylaema migrans</i>	9	4.0 (0–5)	—
<i>Aspidodera raillieti</i>	45	34.4 (0–101)	1:1.2
<i>Cruzia tentaculata</i>	91	246.1 (0–744)	1:2.1
<i>Viannaia hamata</i>	27	14.3 (0–25)	1:1.3
<i>Travassostrongylus orloffi</i>	14	5.3 (0–7)	1:15.0
<i>Trugida turgida</i>	73	21.7 (0–32)	1:1.6
<i>Gongylonema</i> sp.	9	3.5 (0–4)	1:1.3
<i>Trichuris didelphis</i>	36	5.8 (0–25)	1:3.6
<i>Capillaria</i> sp.	5	1.0 —	—

^a *n* = 22.

The identification of *C. tentaculata* was in accordance with the descriptions of Travassos (1922) and Ruiz (1947); the caudal papillae were as described by Ruiz (1947). Travassos (1920) divided the subfamily Physalopterinae into eight genera. Following Chabaud (1975), and according to the species classification proposed by Ortlepp (1937), we identified the specie in *D. albiventris* as *T. turgida*. Two genera of Trichostrongyloidea, were found in *D. albiventris*. The specimens we identified as *V. hamata* fit perfectly the description provided by Travassos (1914, 1937). The current literature, and especially Travassos (1937), also was used to identify the specimens of *T. orloffi*, although the prebursal papillae described by this author were not observed in the single male specimen. *Trichuris didelphis* were clearly identified according to Babero (1960). The average intensity of infection, the prevalence and the sex ratios (for the nematodes) of these species are shown in Table 1.

Macroscopic pathologic alterations were observed only in the stomach (and were caused by *Turgida turgida*). In *D. virginiana*, Krupp (1962) reported pathologic alterations in the stomach caused by *Physaloptera turgida*. Sherwood et al. (1969) emphasized the importance of helminth infections for these animals, having observed the death of a number of specimens only a few days after their capture, that were correlated with high intensities

of *Physaloptera* sp.. Jurgelski (1974) suggested that all wild-caught opossums should be treated for *Physaloptera* sp. prior to experimental usage because it will occasionally cause debilitation and death. Feldman et al. (1972) found focal necrosis, purulent inflammation and giant cell infiltration in stomachs parasitized by *P. turgida* and *Gnathostoma* sp.. Snyder et al. (1991) described lung lesions associated with *Capillaria didelphis*, and Potkay (1970) working with *D. marsupialis* reported *P. turgida* as a cause of hyperemic erosion and ulcers to the stomach and intestines with clinical signs of profuse diarrhea, loss of weight, deterioration of hair coat, anorexia and death.

Parasitism in *D. albiventris* has been accessed by Gomes (1979a) and Navone (1989). Bicalho et al. (1990) found *Physaloptera* sp., *Rhopalias* sp., *Viannaia* sp., *Cruzia* sp., and *Aspidodera* sp. in opossums captured in the municipality of Belo Horizonte (Minas Gerais, Brazil).

Herein we identified eight species of helminths in *D. albiventris*, from which four of them (*A. raillieti*, *R. coronatus*, *T. orloffi* and *B. advena*) are found also in *D. marsupialis* (Foster, 1939; Diaw, 1976; Diaz-Ungria, 1979; Gomes, 1979b) also common in South America. *Trichuris didelphis* also occurs in *D. virginiana*. The three remaining species of helminths (*C. tentaculata*, *V. viannaia* and *P. turgida*) also are found in *D. marsupialis* and in *D.*

virginiana (Araújo et al. 1990; Sherwood et al., 1969; Feldman et al., 1972). The omnivorous diet of *D. albiventris*, which includes fruit, eggs, insects, mollusks, birds, small reptiles, and mammals, explains the diversity of these infections, involving species with both direct and indirect cycles.

LITERATURE CITED

- ANDERSON, R. C. AND O. BAIN. 1982. CHI Keys to the Nematode Parasites of Vertebrates No. 9. Keys to genera of the super families Rhabdithi-dea, Dioctophymatoidea, Trichinelloidea and Muspiceoidea. Commonwealth Agricultural Bureau, Edinburgh, UK, 14 pp.
- ARAÚJO, P. R. F., S. G. M. PAIVA, L. E. CHAPLIN AND S. R. N. SILVA. 1990. Fauna parasitária intestinal de *Didelphis marsupialis* no município de Porto Alegre, RS. Arquivos da Faculdade de Veterinária da Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brasil 18: 5–11.
- BICALHO, R. S., E. M. BRAGA, J. C. NOGUEIRA, H. M. A. COSTA, AND L. H. PEREIRA. 1990. Incidência de helmintos em gambás (*Didelphis albiventris* Lurid, 1841) na Região de Belo Horizonte, Minas Gerais. In Resumos de 17º Congresso Brasileiro de Zoologia, Sociedade Brasileira de Zoologia (ed.). Londrina, Paraná, Brazil, p. 374.
- BABERO, B. B. 1960. Further studies on helminths of the opossum, *Didelphis virginiana*, with a description of a new species from this host. The Journal of Parasitology 46: 455–463.
- CHABAUD, A. G. 1975. CHI Keys to the Nematode Parasites of Vertebrates No. 3. Keys to genera of the Order Spirurida. Commonwealth Agricultural Bureau, Edinburgh, UK, 27 pp.
- . 1978. CHI Keys to the Nematode Parasites of Vertebrates No. 6. Keys to genera of the superfamilies Cosmoceroidea, Seuratoidea, Heterakoidea and Subuluroidea. Commonwealth Agricultural Bureau, Edinburgh, UK, 71 pp.
- COMMONWEALTH INSTITUTE OF PARASITOLOGY. 1982. Stains (Preparation of) and Technique for preparing stained whole mounts of Cestodes, Trematodes and Acanthocephalans. First International Course on Identification of Helminth Parasites: 14–16. CIP, St. Albans, UK.
- DIAM, O. T. 1976. Contribution à l'étude de Nématodes Trichostrongyloidea parasites de Xenarthre, Marsupiaux et Rongeurs néotropicaux. Bulletin Museum National D'Histoire Naturelle Zoologi 282: 1065–1089.
- DIAZ-UNGRIA, C. 1979. Algunas especies de Helmintos nuevas para Venezuela. Revista Ibérica de Parasitologia 39: 313–336.
- DURRETTE-DESSET, M. C. 1983. CHI Keys to the Nematodes Parasites of Vertebrates No. 10. Keys to genera of the superfamily. Trichostrongyloidea. Commonwealth Agricultural Bureau, Edinburgh, UK, 71 pp.
- FELDMAN, D. B., J. A. MOORE, M. W. HARRIS, AND J. L. SELF. 1972. Characteristics of common helminths of the Virginia opossum (*Didelphis virginiana*) from North Carolina. Laboratory Animal Science 22: 183–189.
- FOSTER, A. O. 1939. Some helminths of the wooly opossum in Panama. Transactions of the American Microscopical Society 58: 185–198.
- GOMES, D. C. 1979a. Contribuição ao conhecimento de helmintos parasitos de marsupiais no Brasil, da coleção helmintologica do Instituto Oswaldo Cruz—(Cestoda, Archiacanthocephala e Linguatulida). Revista Iberica de Parasitologia 39: 587–599.
- . 1979b. Contribuição ao conhecimento de helmintos parasitos de marsupiais no Brasil, da coleção helmintológica do Instituto Oswaldo Cruz—Trematoda. Atas da Sociedade de Biologia Rio de Janeiro 20: 33–43.
- , AND J. J. VICENTE. 1972. Estudo do gênero *Rhopalias* Stiles & Hassal, 1989 (Trematoda, Rhopalasidae). Memórias do Instituto Oswaldo Cruz Rio de Janeiro 70: 115–133.
- JURGELSKI, W. JR. 1974. The opossum (*Didelphis virginiana* kerr) as a biomedical model. I. Research perspective, husbandry and laboratory technics. Laboratory Animal Science 24: 376–400.
- KRUPP, J. H. 1962. Treatment of opossums with *Physaloptera* infections. Journal American Veterinary Medicine Association 141: 369–370.
- MARGOLIS, L., G. W. ESCH, J. C. HOLMES, A. M. KURIS, AND G. A. SCHAD. 1982. The use of ecological terms in parasitology (Report of an Ad Hoc Committee of the American Society of Parasitologists). The Journal of Parasitology 68: 131–133.
- NAVONE, G. I. 1989. *Pterygodermatites* (*Paucipectines*) *kozeki* (Chabaud & Bain, 1961) n. comb., parásito de *Lestodelphys halli* Tate, 1934, *Didelphis albiventris* L. y *Thylamys pusilla* (Desmarest) de la Republica Argentina. Anatomia and sistematic position. Revista Iberica de Parasitologia 49: 219–226.
- ORTLEPP, R. J. 1924. On a collection of helminths from Dutch Guiana. Journal of Helminthology 2: 15–40.
- . 1937. Some undescribed species of the nematode genus *Physaloptera* Rud, together with a key to the sufficiently known forms. Journal of Veterinary Science and Animal Industry 9: 71–84.
- POTKAY, S. 1970. Diseases of the opossum (*Didelphis marsupialis*): A Review. Laboratory Animal Care 20: 502–511.
- PROENÇA, M. C. 1937. Revisão do gênero *Aspidode-*

- ra Railliet & Henry, 1942. (Nematoda: Subuluroidea). Memórias do Instituto Oswaldo Cruz Rio de Janeiro 32: 421–438.
- RUIZ, J. M. 1947. Revisão do gênero *Cruzia* (Nematoda: *Oxyuroidea*) e estudo das espécies brasileiras. Tese Faculdade de Farmácia e Odontologia da USP, São Paulo, Brasil, 105 pp.
- SHERWOOD, B. F., D. T. ROWLAND, D. B. HACHEL, AND J. C. LEMAY. 1969. The opossum, *Didelphis virginiana*, as a laboratory animal. Laboratory Animal Care 19: 494–499.
- SNYDER, D. E., A. N. HAMIR, C. A. HANLON, AND C. E. RUPPRECHT. 1991. Lung lesions in an opossum (*Didelphis virginiana*) associated with *Capillaria didelphis*. Journal of Wildlife Diseases 27: 175–177.
- TRAVASSOS, L. 1914. Tricostrogylideos brasileiros. Brazil-Medico, Anno XXVIII, 34: 325–327.
- . 1920. Contribuições para o conhecimento da fauna helmintológica brasileira. X—Sobre as espécies do gênero *Turgida*. Memórias do Instituto Oswaldo Cruz Rio de Janeiro 12: 73–77, ests. 13–16, 9 Figs.
- . 1922. Contribuições para o conhecimento da fauna helmintológica brasileira. XVI—*Cruzia tentaculata* (Rud., 1819). Memórias do Instituto Oswaldo Cruz Rio de Janeiro 14: 88–94.
- . 1937. Revisão da Família Trichostrongylidae Leiper, 1912. Monografias do Instituto Oswaldo Cruz, Rio de Janeiro, Brazil, 512 pp.
- . 1950. Introdução ao Estudo da Helmintologia. Edited by Revista Brasileira de Biologia, Rio de Janeiro, Brazil, 173 pp.
- UENO, H., AND P. C. GONÇALVES. 1988. Manual para diagnostico das helmintoses de ruminantes. Japan International Cooperation Agency, Tokyo, Japan, 166 pp.
- VICENTE, J. J. 1966. Revisão da subfamília Aspidoderinae Skyabin & Shikhobalona, 1947 (Nematoda). Memórias do Instituto Oswaldo Cruz, Rio de Janeiro 64: 131–161.
- YAMAGUTI, S. 1958. Systema Helminthum. Volume I, Part. I. Intercience Publishers Ltd., London, UK, 979 pp.

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