



Serological survey of toxoplasmosis in birds from Cracidae family in a wild bird center facility at Pernambuco State, Northeast of Brazil

(Levantamento sorológico da toxoplasmose em aves da família Cracidae provenientes de criadouro de aves silvestres no Estado de Pernambuco, Nordeste do Brasil)

"Nota/Note"

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Abstract

Toxoplasmosis is a parasitic disease which affects most species of warm-blooded animals, including birds. However in many avian species, toxoplasmosis can be fatal. The goal of this research was to evaluate antibodies IgG anti-Toxoplasma gondii in Cracidae family birds from Chaparral Wild Bird Center Facility in Paulista County, State of Pernambuco, Northeast Brazil. Serum samples of 252 birds belonging to the genera Aburria, Crax, Mitu, Notocrax, Ortalis, Pauxi, Penelope and Pipile were studied by using the Indirect Haemagglutination Test (HI). The results showed T. gondii antibody positive sera in 84.92% of wild birds. No statistical difference was observed between the number of reactive males and females birds ($p < 0.01$). On the other hand the old-age dependency was observed between young and adult. This study showed that the captive reared environment may influence the rate of positive birds ($p < 0.01$). In conclusion, the wild birds must be an important intermediate host to T. gondii life cycle.

Key-words: *Toxoplasma gondii, birds, serology, zoonosis*

Resumo

Toxoplasmose é uma infecção parasitária que acomete a maioria das espécies homeotérmicas, incluindo os pássaros. Contudo em muitas espécies aviárias a toxoplasmose pode ser fatal. O objetivo deste trabalho foi avaliar a presença de anticorpos IgG anti-Toxoplasma gondii em pássaros da família Cracidae provenientes do criadouro Chaparral, localizado no Município de Paulista, Estado de Pernambuco, Nordeste do Brasil. Amostras séricas de 252 pássaros pertencentes aos gêneros Aburria, Crax, Mitu, Notocrax, Ortalis, Pauxi, Penelope e Pipile foram testadas pelo teste de Hemaglutinação indireta (HI). Os resultados mostraram anticorpos IgG anti-Toxoplasma gondii no soro de 84,92% das aves. Não foi observada diferença estatisticamente significativa ($p < 0.01$) entre o número de aves sororreagentes e o sexo. Por outro lado, o número de sororreagentes foi maior nas aves adultas que nas jovens. Neste estudo, o ambiente onde são criadas as aves influenciou na taxa de reagentes ao T. gondii ($p < 0.01$). Em conclusão, as aves silvestres podem constituir-se em importantes hospedeiros intermediários do T. gondii.

Palavras-chave: *Toxoplasma gondii, aves, sorologia, zoonoses*

Toxoplasmosis is a parasitic zoonosis with world-wide distribution which affects

man and warm-blooded animals (HUBBARD et al., 1986; DUBEY, 1994). Birds serve as

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intermediate hosts, as they constitute prey for wild felids, providing them with infective stages (RUIZ and FRENKEL, 1980; DUBEY, 1994).

The first register of toxoplasmosis in wild birds was made in 1913 by Marullaz, in *Padda oryzivora*, and the earliest epizootic case was reported in *Columba livia* (SANGER, 1977). Observation of the epidemic occurrence of toxoplasmosis in zoological gardens facility has been described in several research papers (POELMA and AWART, 1972; TACKAERT-HENRY et al., 1977; BORST, 1984; HUBBARD et al., 1986, QUIST et al., 1995).

The goal of this study was to determine the frequency of toxoplasmosis by the Indirect Haemmaglutination Test in birds of the Cracidae family in a Wild Bird Center Facility, located at Paulista County, Pernambuco State.

A total of 252 sera samples from birds belonging to the Cracidae family, of both sexes and different ages, distributed in eight genera and twenty-three species, kept indoors and in open aviaries were collected from Wild Bird Center Faculty which one is registered in the Brazilian Institute of Environment and Natural Resources (IBAMA). The obtained sera were taken to the Laboratory of Parasitic Diseases of the Rural Federal University of Pernambuco State, Brazil, and were processed using a commercial kit according to manufacture's specifications (*Hap Toxoplasmose - SALCK Indústria e Comércio de Produtos Biológicos Ltda. - São Paulo - SP - Brasil*).

The Chi-square test (χ^2) was used to compare the frequencies of positive and negative specimens to test within the different sexes, ages, aviaries, and species, employing tables of contingency with 1% of probability.

Antibodies IgG against *Toxoplasma gondii* detected by using Indirect Haemmaglutination Test was observed in 84.92% (214/252) of wild birds. This results are consistently higher than those from previous research found by Lindsay et al. (1994), which observed 71% of prevalence of

toxoplasmosis in *Melleagris galopavo* by using the Modified Agglutination Test, and also by Ippen et al. (1981), that found 18.71% of positive galliformes by the Indirect Haemmaglutination Test.

The seroprevalence reported in this study was also more elevated than that found in many others families of birds, that showed 2.7% to 6.7% of reactive individuals to *T.gondii*, respectively at the zoos of Seul and Kobe (CHOI et al., 1987; MURATA, 1989), and those results presented by Quit et al. (1995) which observed 10% of *T. gondii* antibody prevalence in birds from 21 areas from the southeastern United States.

No statistical difference was observed between the number of reactive males and females birds ($p < 0.01$). On the other hand the old-age dependency was observed between young and adult birds. The relative frequency of positives was 70.59% among the youngest and 88.56% in adult birds. These data agree with Murata (1989) in Kobe zoo, Japan. The rate of birds which have *T. gondii* antibodies in outdoors aviaries (82.86%) was similar to that found among adult individuals, while the young birds kept indoors showed 43.75% positive specimens ($p < 0.01$). There was also no statistical difference between reactive birds and their gender ($p < 0.01$).

In conclusion, the high prevalence on antibodies IgG observed in this study showed that the wild birds must be an important intermediate host to *T. gondii* life cycle.

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