In 1999, visceral leishmaniasis in cats was first recorded in Spain by Hervas et al. In Brazil, the first occurrence of Leishmania infantum in a cat was recorded in 2004 by Savani et al. Some authors consider this animal an accidental host, while others suggest that felids can act as potential peridomestic reservoirs. However, the role of cats in the epidemiology of leishmaniasis remains to be clarified.

The present study was approved by the Animal Ethics Committee (protocol 65/2007) of the School of Veterinary Medicine and Animal Husbandry, São Paulo State University, following the Ethical Principles in Animal Experimentation. A total of 50 cats (Felis catus) that were domiciliated in the City of Campo Grande (20°26'34''S, 54°38'47''W) in the State of Mato Grosso do Sul, Brazil were selected randomly from different locations in the prefectures of Campo Grande and a City of Campo Grande (20°26'34''S, 54°38'47''W) in the State of Mato Grosso do Sul, Brazil were selected randomly from different locations in the prefectures of Campo Grande and São Paulo State University, respectively. Blood samples were obtained to detect antibodies for T. gondii and Leishmania spp.

The immunofluorescence antibody test (IFAT) was performed, according to the method described by Camargo, which used whole Leishmania major-like promastigote and the RH strain as the antigen for the diagnosis of leishmaniasis and toxoplasmosis, respectively. Modified agglutination test (MAT) using the RH strain was performed, as described by Desmonts and Remington. The cutoff T. gondii antibody titer for both tests was 16, and the corresponding value in IFAT for Leishmania spp. was 40.

Two (4%) of the 50 animals presented titers of antibodies for T. gondii and Leishmania spp., which suggested coinfection by these two protozoa in the same animal. Cat #1 was a female of undefined breed, 2 years of age, and presented T. gondii antibody titers of 64 (based on IFAT) and 1,024 (based on MAT), and an antibody titer of 320 for Leishmania spp. Cat #2 was also a female of undefined breed, 3 years of age, and presented T. gondii titers of 16 (based on IFAT) and 1,024 (based on MAT), and a Leishmania spp. titer of 320 (Table 1). Neither cat presented clinical signs. Similar results were obtained by Cardia et al. with specific anti-Toxoplasma immunoglobulin G (IgG) in 63 (16.3%) of 386 cats and IgG against Leishmania spp. in two serum samples with titers of 1:160 and 1:320, respectively. In a study conducted by Sobrinho et al. in another Brazilian endemic area, 25.7% cats were coinfected with both agents. However, the authors did not observe a significant association between these infections.

In this study, the MAT and IFAT were used, based on the results for cats obtained by Macri et al., with a concordance of 0.98 (i.e., nearly perfect), an MAT sensitivity of 97.8% and specificity of 100%, and using IFAT as the gold standard test.
TABLE 1 - Antibody titers in the immunofluorescence antibody test and modified agglutination test against *Toxoplasma gondii* and *Leishmania* spp. in two naturally infected cats from Campo Grande, State of Mato Grosso do Sul, Brazil.

<table>
<thead>
<tr>
<th>Animal</th>
<th><em>Toxoplasma gondii</em></th>
<th><em>Leishmania</em> spp.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IFAT</td>
<td>MAT</td>
</tr>
<tr>
<td>Cat #1</td>
<td>64</td>
<td>1,024</td>
</tr>
<tr>
<td>Cat #2</td>
<td>16</td>
<td>1,024</td>
</tr>
</tbody>
</table>

IFAT: immunofluorescence antibody test; MAT: modified agglutination test.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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REFERENCES