RESEARCH NOTE

# Measurements of *Trypanosoma evansi* from the Pantanal

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Key words: *Trypanosoma evansi* - measurements - Pantanal - dog - *Nasua nasua* - horse - Brazil

*Trypanosoma evansi* has the widest distribution of all species of trypanosome and the greatest range of mammalian hosts. This parasite has a very wide geographical distribution in a wide variety of mammals (Z-R Lun & SS Desser 1995 *Parasitol Today 4:* 131-133). In the Pantanal and Central region of Brazil it has been reported in capybaras (*Hydrochaeris hydrochaeris*), coatis (*Nasua nasua*), dogs, horses (RAMS Silva et al. 1995 *Vet Parasitol 60:* 167-171, VLB Nunes & ET Oshiro 1990 *Trans R Soc Trop Med Hyg 84:* 692) and small wild rodents (*Oryzomys* sp.) (VLB Nunes et al. 1995 *Brazil J Vet Parasitol 1:* 29-35). *T. evansi* has been considered by some authors to be monomorphic and exclusively in the slender intermediate form, and previous observations have suggested all geographical strains to be morphologically indistinguishable (BS Gill 1977 *Trypanosomes and trypanosomiasis*, ICAR Publ., p. 3). In the present study we record significant morphological differences in some isolates of *T. evansi* obtained from domestic and wild animals in the Pantanal region of Brazil.

Four isolates of *T. evansi* (horse: CPAP-A, coati: CPAP-NN5, dog 1: CPAP-negão and dog 2: CPAP-lobão) were collected from animals with trypanosomosis in the Pantanal region, Brazil. Blood smears from naturally infected animals were examined after staining with Giemsa stain. All isolates were identified based on morphological and biometrical data. Biometrical studies were carried out as mentioned by Silva et al. (*loc. cit.*).

The isolates were cryopreserved and maintained by syringe passage in mice and rats. The measurable data were obtained from 100, 100, 50 and 100 observations on different trypanosomes from thin smears of each isolate, respectively. In each case, five sets of smears were taken from primary isolates for the biometrical study. The data were analyzed statistically using a T-test.

Parasite measurements were designated as follows: PK: distance from posterior end to kinetoplast; KN: from kinetoplast to middle of nucleus; PN: from posterior end to middle of nucleus; NA: from nucleus to anterior end; F: free flagellum length; T: total length including free flagellum; PN/NA: nuclear index.

The measurable data of *T. evansi* isolates from horse, coati and dogs are given in Table. All isolates were identified as *T. evansi*. There was no significant difference in the PN/NA measurements of the horse, dog 1 and coati trypanosomes ($p>0.05$). In contrast, in the dog 2 stock of *T. evansi* the PN/NA was significantly different from that of parasites of the other three isolates. PN and NA biometrical measurements of horse, dog 1 and coati isolates were highly significant ($p<0.001$). The NA measurement was significantly different ($p<0.05$) from the horse and the dog 2 isolates. The analysis of F and T measurements showed highly significant differences between horse, coati and dog 2 isolates. F measurements of horse and dog 1 isolates and T measurements of coati and dog 1 isolates were not significant ($p>0.05$). The horse isolate presented slender and stumpy forms, with predominance of slender forms. In dog 1 isolate only slender forms were observed and in dog 2 isolate slender and stumpy forms were observed. No stumpy forms were observed in the coati isolate. All four isolates displayed akinetoplastic forms.

MC John et al. (1992 *Vet Parasitol 43:* 143-145), reported a mean of 17.65µm in total length of dog strain from thin smears of passages in laboratory rodents. S Nani and A Vergatti (1951 *Rev Parasitol 12:* 141), described a dog strain with a measure of 24.1µm in total length. However, the dog 1 isolate from the Pantanal had a greater total length compared with the horse isolate from the same region and the dog strain reported by John et al. (*loc. cit.*); the dog 2 isolate had a smaller total length when compared with the other isolates. CA Hoare (1956 *Parasitology 46:* 130-172) found that

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Received 30 September 1996
Accepted 21 February 1997

strains of *T. evansi* from different geographical regions appear to be morphologically indistinguishable. *T. evansi* has been described as being monomorphic though in additional studies many strains have rarely presented stumpy forms (GJ Losos 1980 *Vet Res Commun 4:* 165-181). Contrary to the findings of some authors our results showed significant differences in measurements among four primary isolates of *T. evansi*. Although all four isolates showed variations in measurements, only the dog 2 isolate presented a measurement smaller than 15-34µm in length, as described by CA Hoare (1972 *The Trypanosomes of Mammals. A Zoological Monograph*, Blackwell Scientific Publication, Oxford, 749 pp.). This study showed that *T. evansi* from host species in the Pantanal region is biometrically distinct. In fact, the dog 1 and dog 2 isolates were different in length when compared with dog strains reported by John et al. (*loc. cit.*) and Nani and Vergatti (*loc. cit.*).

TABLE

Measurements of *Trypanosoma evansi* isolates from the Pantanal, Brazil, means ± SE (µm)

| Isolated from | PK | KN | PN | NA | F | T | PN/NA |
|---|---|---|---|---|---|---|---|
| Horse | - | - | 6.46 ± 0.56 [a] | * 5.07 ± 1.20 [a] | 5.63 ± 1.32 [a] | 17.16 ± 1.61 [a] | 1.35 ± 0.37 [a] |
| Coati | - | - | 9.19 ± 2.21 [b] | 7.48 ± 1.82 [b] | 8.01 ± 2.30 [b] | 24.69 ± 3.64 [b] | 1.29 ± 0.45 [a] |
| Dog 1 | - | - | 11.33 ± 2.74 [c] | 9.33 ± 3.22 [c] | 5.33 ± 1.30 [a,c] | 25.75 ± 3.35 [b,c] | 1.33 ± 0.41 [a] |
| Dog 2 | - | - | 5.32 ± 1.77 [d] | * 5.45 ± 1.02 [d] | 3.98 ± 1.35 [d] | 13.35 ± 4.90 [d] | 1.05 ± 0.30 [b] |

Values by column followed by different letter are statistically distinct at $p<0.001$. Values by column followed by asterisk are statistically distinct at $p<0.05$. PK: from posterior end to kinetoplast; KN: from kinetoplast to middle of nucleus; PN: from posterior end to middle of nucleus; NA: from nucleus to anterior end; F: free fagellum length; T: total length including free flagellum; PN/NA: nuclear index.