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## MÉMOIRES ORIGINAUX

*Trypanosoma* (*Megatrypanum*) *amilcari* n. sp.,  
isolated from *Oryzomys eliurus* (Wagner, 1845)  
(Rodentia-Cricetidae)

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### Summary.

A new species of trypanosome, *Trypanosoma* (*Megatrypanum*) *amilcari*, is described in the present paper. This new trypanosome was found in the circulating blood of a rodent species *Oryzomys eliurus* (Cricetidae). Some biological observations were made.

### Résumé.

*Trypanosoma* (*Megatrypanum*) *amilcari* n. sp., isolé du sang d'un *Oryzomys eliurus* (Rongeur, Cricétidé).

Description de *Trypanosoma* (*Megatrypanum*) *amilcari* n. sp., isolé du sang d'un Cricétidé *Oryzomys eliurus* du Nord-Est de Brasília. Quelques observations biologiques ont été faites.

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## Introduction

During a survey for searching of wild reservoirs of *Trypanosoma cruzi* in Goiás State, Brasil, several rodent species were captured. In the circulating blood of *Oryzomys eliurus*, a large trypanosome was observed. This protozoa is described here as a new species and is named *Trypanosoma (Megatrypanum) amilcari* in honour to professor Amilcar Vianna Martins, eminent parasitologist from the Federal University of Minas Gerais, Brasil.

## Description

**TYPE MATERIAL:** Holotype and seven paratype smears were filed in the personal collection of the author of this paper.

**LOCALITY:** Northern part of Formosa county, Goiás State, Brazil (BR-020 road northeast direction, 156 km from Brasilia city).

**HOST:** *Oryzomys eliurus* (Wagner, 1845) (Rodentia-Cricetidae) collected in June 16th, 1977.

**MORPHOLOGY:** This large trypanosome has a sharp posterior end; the kinetoplast is oval and situated near to the nucleus; a vacuole-like structure is seen surrounding or at side of the kinetoplast; the undulating membrane is slightly convoluted with 2-3 waves; granulations are found dispersed in the cytoplasm. The measurements taken in micra compared with the other species described in this subgenus are shown in table 1.

Photograph (*fig. 1*) was taken at magnification of 700 x. Drawings and measurements (*fig. 2*) of 20 parasites found in the smears of the infected blood stained with Giemsa, were made with camara lucida at magnification of 1,000 x.

**BIOLOGICAL OBSERVATIONS:** A low-grade infection was observed in the infected *O. eliurus*. The parasite disappeared from the peripheral circulation after five weeks. Inoculations made by intraperitoneal route with infected blood, in white rats, mice and *Calomys callosus* (Cricetidae), have shown negative results. Inoculations made by the same route in two specimens of laboratory bred *Oryzomys eliurus* have shown positive results in one specimen. This last animal has shown very scanty parasites that disappeared after four weeks. Histological sections, stained with haematoxylin and eosin; from fragments of heart, thigh muscle, esophagus, colon, liver and spleen from the natural infected *O. eliurus* and the experimentally infected animals did not demonstrate amastigote or other parasite forms. The only ectoparasites (Ixodidae) removed from the original infected rodent and dissected in saline for search of trypanosomes have shown negative results. Attempts to infect triatomine, *Rhodnius neglectus*

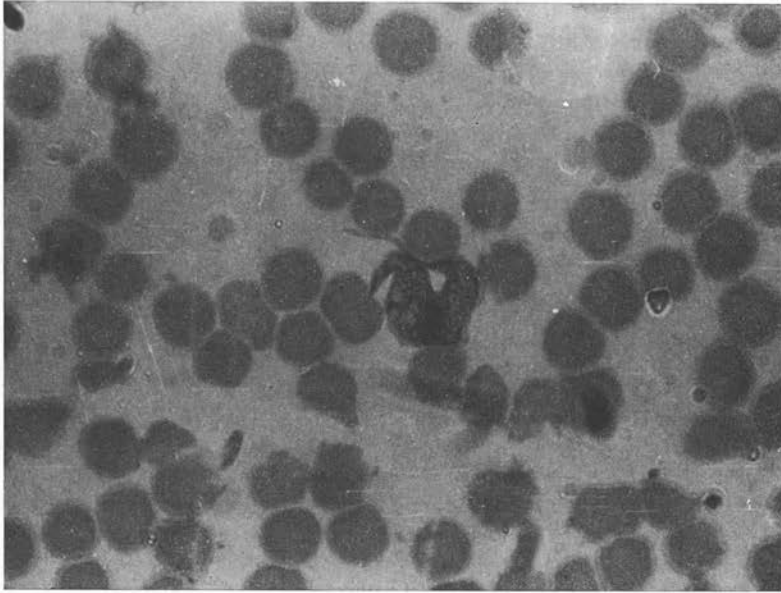


Fig. 1. Microphotograph of *T. (M.) amilcari* from blood smear of natural infected *Oryzomys eliurus*, stained with Giemsa (700 x)

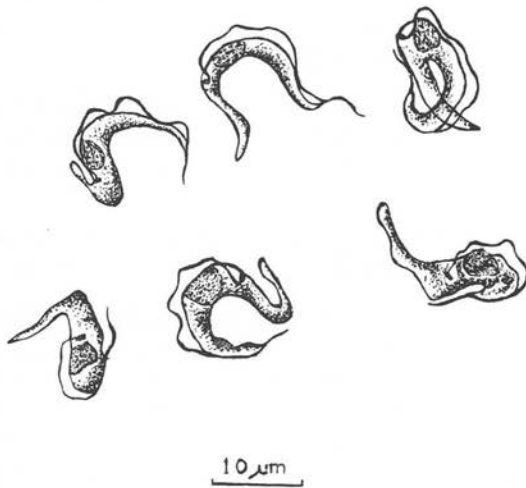


Fig. 2. Drawing of *T. (M.) amilcari* from blood smears of natural infected *Oryzomys eliurus*, stained with Giemsa, made in camera Lucida (1,000 x)

*tus*, *Panstrongylus megistus* and *Triatoma infestans*, by feeding them on infected *O. eliurus* were unsuccessful. The search for parasites in the gut and salivary glands of the triatomine have shown negative results. Attempts to culture the flagelates from infected blood on NNN media at 28 °C, 36 °C and room temperature averaging 23 °C, failed.

## Comments and Conclusion

The only following three rodent species of the subgenus *Megatrypanum* are quoted by Hoare (1972): *T. (M.) conorhini*, *T. (M.) phyllotis* and *T. (M.) zeledoni*.

*T. conorhini* was found in oriental, papuan and neotropical regions. In Brasil this species was found by Dias and Seabra (1944) in Rio de Janeiro and by Deane (1947) in Belém. His natural vertebrate host is *Rattus rattus* (Muridae) and the natural invertebrate host, is *Triatoma rubrofasciata*. Under experimental conditions Dias and Seabra (1944), using feces from positive triatomine, were able to infect mice and monkey through intraperitoneal route. Deane (1961) and other authors quoted by Hoare (1972) have also been able to infect mice with *T. conorhini*. This trypanosome species is easily cultivated on NNN and LIT media, at temperature of 28 °C or 37 °C.

*T. phyllotis* quoted by Hoare (1972) was identified by Herrer in 1942, in the circulating blood of the peruvian rodent *Phyllotis darwini* (Cricetidae). This trypanosome is easily cultivated in NNN media. Specimens of laboratory bred *Phlebotomus noguchii* fed on infected *P. darwini*, developed in their gut numerous epimastigote forms. Since this sandfly lives in nests of *P. darwini*, it is probable that this rodent is the vertebrate host of *T. phyllotis*.

*T. zeledoni* was isolated in Costa Rica by Esquivel *et al.* (1967) from *Liomys salvini* (Sciuridae). Attempts to infect house-mice and its own host-species by intraperitoneal route with infected blood failed. This trypanosome did not grow in NNN medium.

The main differences between the trypanosome described in this paper and the other known species of the subgenus *Megatrypanum* are as follow.

*T. almicari* differs from *T. conorhini* by having longer free flagellum and larger kinetoplasmic index (table I). *T. conorhini* infect triatominae, grows easily *in vitro* and infects Muridae, while *T. almicari* does not. There is strong evidence showing that the geographical distribution of *T. conorhini* corresponds to the distribution of its natural invertebrate host, *T. rubrofasciata*. In Brazil this triatominae' is limited to the coastal region of the country. The so-called mature forms of *T. conorhini* (Deane and Deane, 1961) are thinner, have smaller nucleus which does not occupy the whole width of the parasite, their kinetoplast is large and conspicuous, and have

Table I. Comparative measurements between *T. (M.) amilicari n. sp.*, *T. (M.) conorhini*, *T. (M.) zeledoni* and *T. (M.) phyllotis*

Measurements ( $\mu\text{m}$ )	<i>T. amilicari</i> n. sp.	<i>T. conorhini</i>	<i>T. zeledoni</i>	<i>T. phyllotis</i>
Total length .....	36.1 ( $\pm$ 3.8)	36.0-62.0	48.2	47.0
Breadth .....	3.6 ( $\pm$ 0.6)	3.0- 5.0	5.4	—
Distance from posterior end to kinetoplast ...	11.9 ( $\pm$ 1.6)	6.7-18.0	20.8	13.2
Distance from posterior end to middle of the nucleus .....	13.0 ( $\pm$ 2.0)	—	—	—
Distance from nucleus to anterior end .....	14.0 ( $\pm$ 3.6)	—	—	—
Distance from kinetoplast to middle of the nucleus .....	2.6 ( $\pm$ 0.1)	2.5- 7.0	4.6	5.8
Free flagellum .....	6.4 ( $\pm$ 0.6)	7.3-15.0	7.5	9.0
Nuclear index .....	0.9	0.7- 1.4	1.8	—
Kinetoplastic index .....	5.0	3.6	4.5	3.3

well developed undulating membrane with up to seven waves. These morphological features are not found in *T. amilcari*.

The total length, the K-N and the free flagellum of *T. amilcari* are smaller than those of *T. phyllotis*. This last species however, has a greater kinetoplastic index. The nucleus of *T. amilcari* occupies the whole width of parasite body, what is not seen in *T. phyllotis*. The undulating membrane of the trypanosome described in this paper is not so conspicuous as that found in *T. phyllotis*. While the undulating membrane of *T. amilcari* has 2-3 smooth waves, *T. phyllotis* has 5 conspicuous waves. According to the drawings presented by Hoare (1972) the body of *T. phyllotis* is wider than that of *T. amilcari*.

The total length, the P-K, the K-N, the breadth, the free flagellum, and the nuclear index of *T. amilcari* are smaller than that of *T. zeledoni*, while its kinetoplastic index is longer. The vertebrate host of *T. zeledoni* is a rodent belonging to the family Sciuridae, while *T. amilcari* has a rodent of the family Cricetidae, as definitive host *T. zeledoni* shows a very conspicuous undulating membrane bearing as much as 8 conspicuous waves. This feature is not seen in *T. amilcari*.

Considering, the comparison of the morphological aspects, the measurements presented in table I, the geographical distribution and known hosts of the species *T. conorhini*, *T. phyllotis* and *T. zeledoni*, we concluded that, the differences found between these species and the one studied here, are sufficiently great to separate them.

### Références

- Deane M. P. (1947): Ocorrência do *Trypanosoma conorhini* em barbeiros e rato na cidade de Belém, Para e seu cultivo em meio NNN. *Rev. Serv. Esp. Saude Pub.*, 1, 433-448.
- Deane L. M., Deane M. P. (1961): Estudos sobre o ciclo evolutivo do *Trypanosoma conorhini*. Crescimento e multiplicação dos trypanosomas sanguícolas « in vitro ». *Rev. Inst. Med. Trop. S. Paulo.*, 3, 149-160.
- Dias E., Seabra C. A. C. (1943): Sobre o *Trypanosoma conorhini* hemoparasito do rato transmitido pelo *Triatoma rubrofasciata*. Presença do vetor infectado na cidade do Rio de Janeiro. *Mém. Inst. O., Cruz.*, 39, 301-330.
- Esquivel R. R., Zuñiga J. A., Alfaro M., Kotcher E. (1967): Trypanosomes of Costa Rican Feral Mammals. *J. Parasitol.*, 55, 951-955.
- Hoare C. A. (1972): The Trypanosomes of Mammals. A zoological monograph. *Blackwell Scientific Publications*, Publ., Oxford, 749 p.
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