

PRELIMINARY STUDY OF A *TRYPANOSOMA LEWISI*-LIKE PARASITE OF RATS IN CHIANG MAI, THAILAND

NIWAT NATHEEWATTANA, LILIT HONGSBHANICH, CHIRASAK KHAMBOONRUANG and PRAYUTH THITASUT

Department of Parasitology, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand.

INTRODUCTION

Concurrent with the annual plague control survey of rodents conducted by the Chiang Mai Municipality, members of the Department of Parasitology, Faculty of Medicine, Chiang Mai University detected *Trypanosoma lewisi*-like haemoflagellates in blood of 155 out of 609 specimens of *Rattus rattus* and *Rattus exulans* (25%).

This preliminary report presents the identification and morphological comparison of this trypanosome in thin blood films.

MATERIALS AND METHODS

The infected rats were bled from the tail vein for thin blood films. The films were fixed in absolute methanol and stained with Giemsa. The following morphological measurements were made using a calibrated microscope; size of kinetoplast and nucleus; the distance from the posterior end to the centre of the kinetoplast (P-K); the distances from centre of the kinetoplast to the centre of the nucleus (K-MN); the distances from the centre of the nucleus to the anterior end (MN-A); the lengths of free flagellum (FF); the total length of the parasites (TL); and the maximum width of the parasites (W). (Fig. 1).

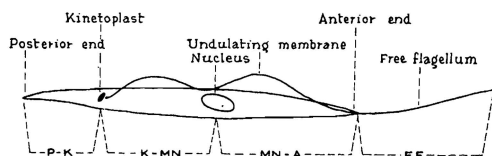


Fig. 1—Diagram of *Trypanosoma lewisi*-like organism showing the measurements used in this study.

RESULTS

In thin films of peripheral blood, the parasites appeared monomorphic and were frequently flexed (Fig. 2). The kinetoplasts were spherical and distinct. The bodies were long with tapering anterior and posterior ends. The measurement of various structures of 115 parasites are shown in Table 1. No morphological differences were seen for organisms in both species of rats.

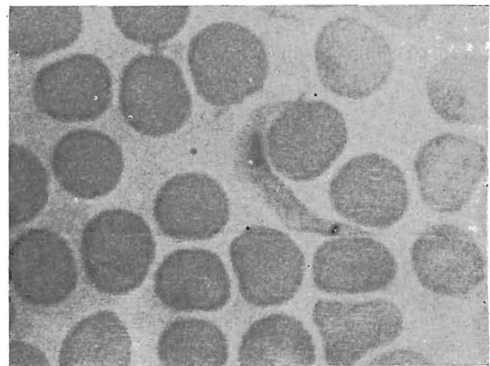


Fig. 2—Photomicrograph of a *Trypanosoma lewisi*-like organism from a Chiang Mai rat (*Rattus rattus*).

DISCUSSION

The results of a preliminary study of morphological structures of the trypanosome found in Chiang Mai rats indicated that the organism is closely comparable to *Trypanosoma lewisi*. Measurements of P-K, K-MN, MN-A and TL were similar to measurements given for *Trypanosoma lewisi* (Taliaferro, 1921). However, in the present study measurements of FF and W were slightly longer and larger than those reported by Taliaferro.

Table 1

Morphological parameter of 11 *Trypanosoma lewisi*-like parasites (in microns).

	Range	Mean	S.D.	Coefficient of variation
Kinetoplast				
width	0.3 - 0.6	0.375	0.606	1.624
length	0.8 - 2.0	1.003	1.101	1.097
Nucleus				
width	1.0 - 2.0	1.182	1.107	0.937
length	2.0 - 4.0	2.843	1.144	0.402
P-K	3.0 - 7.0	4.248	2.752	0.647
K-MN	6.25-12.25	9.54	2.768	0.29
MN-A	7.0 -12.5	9.69	2.87	2.296
FF	6.0 -10.0	7.81	4.469	0.572
TL	22.0 -34.0	31.80	6.444	0.202
W	1.5 - 5.5	2.74	3.428	1.253

The free flagellum in the latter work measured 6.619 ± 0.068 microns while in the present study it was found to measure 7.81 microns with a range from 6.0 microns to 10.0 microns. Likewise the width of the parasites in the present study was found to be 2.74 microns. (range 1.5 microns to 5.5 microns) while Taliaferro reported a width of 1.59 ± 0.015 , in other words, slightly longer and almost twice as fat but the difference is probably not significant.

Variation in size may have been due to the technique of measurement; ocular and stage micrometers do not give as precise results as the cameralucida or photographic measurement. In spite of the slight difference in size, we concluded that the organisms found in Chiang Mai rats were morphologically indistinguishable from *Trypanosoma lewisi*.

SUMMARY

Of 609 rats examined, 155 were found positive for a *Trypanosoma lewisi*-like haemo-

flagellate. A preliminary study of various morphological parameters of these organisms showed that they were indistinguishable from *Trypanosoma lewisi*.

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