Title: FILARIASIS IN TREE SHREWS (TUPAIA GLIS) AND WILD RODENTS OF THAILAND.

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Period of Report:

Objective

The collection of rodents and tree shrews infected with filariasis, with particular reference to Brugia tupaia, for maintainance in the laboratory as model systems for study.

Description

Animals were trapped from 17 January to 8 February 1968 in the thick deciduous forests approximately 75 kilometers south of Korat, Thailand on Highway 23 at coordinates 14°28'N., 101°50'E.

Live traps, designed by SMRL, were set out in the afternoons and then checked early the following mornings. All animals captured were ear-marked and blood smears made (via cardiac puncture). The blood smears were then stained and screened for microfilariae. Positive animals were placed in cages and returned to Bangkok; negative shrews were released in the area and the rats were killed.

In Bangkok periodicity studies were undertaken to determine the best times for mosquito transmission. Bleedings were made every 2 hours for a 24 hour period with blood samples taken from the peripheral circulation (usually the Femoral vein). Twenty cubic milimeters of blood was measured out and a thick film made. From this the density of microfilariae was determined for each bleeding time.

Several species of mosquitoes, viz, Aedes togoi, Aedes aegypti Armigeres subalbatus and Anopheles stephensi were fed on infected tree shrews. The mosquitoes were dissected 12 day later and a search was made for 3rd stage larvae.

Progress

A total of 201 rodents of various species were trapped, bled and examined from the Korat area. Twenty-eight rodents have also been included from Nam Tok Huay Kum, Chonburi, at coordinates 13°16'N., 101°2'E. The results of the bleedings are summarized in Table 1. There was no significant differences between numbers of infected males or females in any of the species.

From examination of the morphology of the microfilariae at least four distinct species can be distinguished. The microfilariae of Brugia tupaia were found exclusively in Tupaia glis, the tree shrew. The microfilariae average 175 microns in length, are sheathed, and have a long finely pointed tail. The microfilariae from Rattus rattus are unsheathed, and average 90 microns in total length. They have a short, stubby tail with dark staining nuclei extending to the tip. The microfilariae found in Rattus rajah are also unsheathed and average 200 microns in length, with a single row of nuclei extending to the tip of the tail. The fourth species of microfilariae, found in the ground squirrel Menetes berdmorei, average 240 microns in length with a definite cephalic space of 10 microns. It appears to be unsheahed and has a long, finely pointed tail with no nuclei in the posterior 10-15 microns. As yet specific identification has not been made on the latter three species.

The results of the periodicity studies are shown in Fig. 1. A typical circadian cycle was selected from each group and nsed as representative of that group. From these it can be seen that B. tupaia, from Tupaia glis, is fairly periodic, while the other two species, found in the rat, are more subperiodic.

An infection rate of over 90% was found in Aedes togoi and Armigeres subalbatus. Aedes aegypti and Anopheles stephensi failed to become infected.

Table I. Results of blood smear examination for microfilariae among rodents from two areas in Thailand.

KORAT AREA			
Animal	Number Examined	Number Positive	Percent Positive
Rattus rajah	132	20	15
R. rattus	16	2	13
R. berdmorei	1	0	0
Bandicota indica	1	1	100
Menetes berdmorei	3	0	0
Tupaia glis	48	8	17
TOTALS	201	31	15
CHONBURI AREA			
Rattus rajah	15	0	0
R. rattus	7	3	43
Menetes berdmorei	4	1	25
Tupaia glis	2	0	0
TOTALS	28	4	14

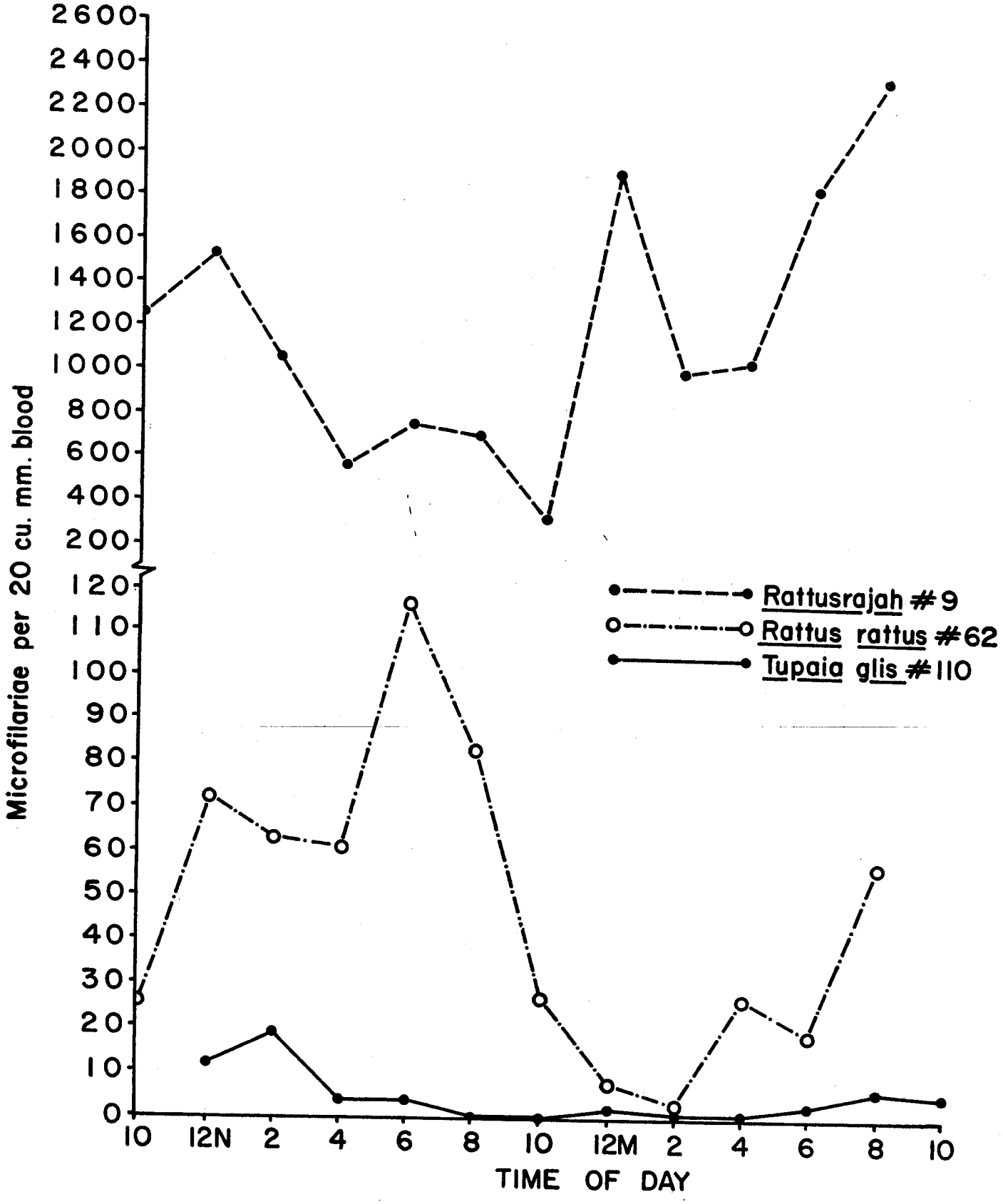

Figure 1. Periodicity of Microfilariae in Rodents