

2. Title : Studies on Brugia tupaia

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OBJECTIVES

The objectives of this study are to determine (1) what species of mosquitos are capable of transmitting Brugia tupaia under laboratory conditions, (2) what mammals are susceptible to infection, (3) the length of the prepatent period and (4) the progressive pathologic changes, and location of the parasite, in the intermediate and definitive hosts.

DESCRIPTION

Mosquitos are allowed to feed to repletion on infected tree shrews (Tupaia glis) and then examined for development of the larval stages (after 14 days).

Aedes aegypti was used to determine the efficiency of mosquito transmission in the laboratory. For this experiment 400 females were fed on a single infected tree shrew. At the end of the two week incubation period one-half of the remaining mosquitos were dissected and the number of infective larvae noted. The other half were allowed to feed on uninfected animals and then dissected and examined for infective larvae.

A method has now been worked out whereby mosquitos can be embedded and mounted on slides for study of the growth and development of the larval stages of B. tupaia as well as developmental sites and pathology to the mosquito.

As of 30 March, 20 rats have been injected (by inoculation) with either 10 or 20 infective larvae, with 2 animals having been fed on by infected mosquitos. Each week blood counts are made on at least 15 of the infected animals (erythrocyte count, differential leucocyte counts and hematocrits) so that any changes in the blood picture can be followed.

PROGRESS

Aedes togoi and Ae. aegypti were found to be suitable for use as laboratory vectors. Ae. togoi is the most receptive to infection and greater numbers of infective larvae can be harvested per mosquito. However, the developmental period of Ae. togoi is much longer than Ae. aegypti so fewer insects are available. Armigeres subalbatus and Ae. albopictus were also capable of sustaining the larvae, while Anopheles maculatus was completely refractory.

With the use of Ae. aegypti in determining the efficiency of mosquito transmission the following results were obtained:

	# Exam.	% Inf.	# Inf. larvae/Inf. mosq.
Group 1	98	36	1.3
Group 2	73	22	1.1

Group 1 was dissected (at the end of the incubation period), while group 2 was allowed to feed on uninfected animals, then dissected. From this it can be seen that even though Ae. aegypti is capable of sustaining an infection with B. tupaia it is not entirely suited as a vector because few if any larvae are transmitted. As a result, all future transmissions will be by syringe inoculation.

The weekly blood counts indicates that, in rats, shortly after injection of infective larvae, the eosinophil count rises slightly (4-9) and in one to two weeks returns to its normal level (0-2). This is the only change that has been noted.

As of 30 March none of the animals had developed a patent infection.

SUMMARY

Aedes aegypti, Ae. togoi, Ae. albopictus and Armigeres subalbatus have been found to be receptive to infection with Brugia tupaia, while Anopheles maculatus was completely refractory. Observations on experimentally inoculated rats are in progress.