

Studies of New Experimental Hosts Life Cycles and Modes of Transmission of Gnathostomes

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OBJECTIVE: To locate new experimental host animals susceptible to Gnathostoma spinigerum, G. hispidum and G. doloresi and to determine the life cycle of G. vietnamicum.

DESCRIPTION: Young fresh water shrimps (Macrobrachium rosebergi) and adult M. mirabile (Kemp) from the Bangkok area were obtained and tested as possible paratenic hosts of G. spinigerum. Advanced third-stage larvae from infected laboratory white mice were fed four M. rosebergi and maintained in fresh water.

Pieces of white mice flesh that had been infected with 55 gnathostome larvae were also fed to the four M. rosebergi. Three M. mirabile were fed 24 gnathostome larvae. The 2 groups of tested shrimps were autopsied 6-22 days and 3-16 days respectively after commencement of the experiment. Pieces of mice flesh infected with 16 G. hispidum advanced third stage larvae were fed to a four week old chicken. The chicken was autopsied 31 days after the feeding. A study was undertaken to determine whether fresh water fish would act as a possible intermediate host for G. vietnamicum. Many cyclops infected with 16 G. vietnamicum fully developed larvae were placed into a beaker containing 2 adult small fighting fish (Trichopsis vittatus). The fish were examined 21 and 60 days later.

In order to determine the natural infection, other shrimps, chickens and small fish obtained from the same areas were autopsied for the presence of gnathostomes.

PROGRESS: The results of experimental feeding of G. spinigerum advanced third stage larvae obtained from experimental white mice and fed to fresh water shrimps were as follows:

Number of shrimps	Larvae fed and source	Autopsy results
4 <u>Macrobrachium rosebergi</u>	55 larvae from white mice	Neg. at 6-22 days
3 <u>M. mirabile</u> (Kemp)	24 larvae from white mice	Neg. at 3-16 days
17 <u>M. rosebergi</u>	None (controls)	Negative
279 <u>M. mirabile</u> (Kemp)	None (controls)	Negative

It appears fresh water shrimps cannot act as paratenic hosts for G. spinigerum, but in as much as so few shrimps were studied, future studies should be expanded.

Advanced third stage larvae of G. hispidum obtained from white mice and fed to one chicken and the control were negative, but repeated studies using more animals will be performed later.

The results of feeding G. vietnamicum fully developed larvae in cyclops to small fighting fish showed, after 21 days, one living larva in the stomach wall of the fish which was of the same morphology and size of larvae found in cyclops. The controls were negative. This result indicates that the larva in

cyclops could not develop in the fish. Repeated studies using more animals are planned. Studies on G. doloresi were not conducted during the reporting period.

SUMMARY: Fresh water shrimps and a chicken were found on autopsies to be negative for gnathostome infection after the experimental feeding with G. spinigerum advanced third-stage larvae to the former and G. hispidum larvae to the latter. One of two experimental fresh water fish was found to contain in its stomach wall, 1 living G. vietnamicum undeveloped larva on autopsy 21 days after being fed with the fully developed larvae in cyclops.