Survey of Sylvatic Rodents for Serological Evidence of Rabies Virus Infection

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OBJECTIVE : To capture sylvatic rodents in selected forested areas of Thailand and to test their serum for rabies neutralizing antibodies.

BACKGROUND : On several occasions investigators at SEATO Medical Research Laboratory have examined wild rodents to determine if they were infected with rabies virus. In the first reported survey, Smith, et al., 1967-68, rabies virus was found in six different species of rodents in Thailand (1, 2). Subsequent surveys have yielded negative results. In the Annual Report of 1971, Hickman, et al., reported that negative results obtained during the four year period since rodents were implicated as a possible sylvatic reservoir of rabies virus infection, suggests that the hypothesis of a rodent reservoir of rabies in Thailand is false. In all of these surveys the basis for evaluating rodents for rabies virus infection was by examination of brain tissue using a fluorescent antibody test. Positive specimens were confirmed by intracerebral inoculation of weanling mice.

In this study we propose to screen select wild rodent populations for evidence of exposure to rabies virus by testing their serum for rabies neutralizing antibodies. Similar serological monitoring procedures has been used by other investigators to determine the incidence of rabies in a wildlife population. There are no records which indicate this type of survey has been performed in Thailand.

Serological test results will provide useful information. If, as recent surveys indicate, there is no evidence of rabies infection, one would favor the conclusion that rabies is not an endemic disease of sylvatic rodents in Thailand, and that the initial findings reported by Smith, et al., were false. However, positive serology would lend credence to the initial findings and suggest that rabies or a rabies-like virus is an endemic disease of rodents in Thailand.

METHODS : Rodents were trapped in forested areas using SMRL live animal traps. All trapping was coordinated with the Thai Forestry Division and entailed field trips of 4 to 5 days duration at each site.

Each rodent was assigned an identifying number, typed by genus, species, sex, age, and the trapping site was identified. Separately caged, the rodents

were transported to the Department of Veterinary Medicine for additional examination and bleeding. During collection of blood, rodents inadvertently killed were stored at -60°C until test results became available. Serum was tested for rabies neutralizing antibodies using the mouse test. A titer of 1:5 or greater will be considered indicative of exposure to rabies or rabies-like virus infection. Rodents serologically negative are killed. Any rodents with serological evidence of rabies virus infection are saved for additional study.

RESULTS : The study is in progress and only initial results are available. At the Sakaraj Scientific Research Center a total of 127 rodents have been trapped (Table 1). Limited trapping at Doi Suthep in Chiangmai yielded 19 rodents (Table 1). Serological testing is in process.

Table 1. Summary of rodent species trapped

Genus Species	Location	
	Sakaraj	Doi Suthep
Rattus sabanus	6	
Menetes berdmorei	1	4
Tupia glis	17	1
Rattus surifer	80	
Rattus koratensis	1	
Rattus rattus	13	5
Rattus fulvescens	8	
Civet cat	1	
Bandicoota indicus		6
Rattus exulans		1
Moongoose		1
Rattus bukit		1

REFERENCES :

1. Smith, P.C., Lawhaswasdi, K., Stanton, J.S., and Vick, W.E. : The Prevalence of Sylvatic Rabies in Thailand. SEATO Medical Research Laboratory Annual Report, (1967): 487-488.

2. Smith, P.C., Lawhaswasdi, K., Vick, W.E., and Stanton, J.S. : Enzootic Rabies in Rodents in Thailand, Nature, 217, (1968): 954-955.