Ecological and Epidemiological Survey for Rabiesvirus in a Cave Bat Population

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OBJECTIVE: The initial purpose of this study was to determine whether rabiesvirus is present among the population of bats resident in a large cave located in the Saraburi province district of Kangkoi so that the epidemiologic and ecologic aspects of this disease in bats could be studied.

DESCRIPTION: For a period of approximately one year both dead and live bats were collected from the cave at regular intervals and examined for the presence of rabiesvirus by both fluorescent antibody examination of their brains and intracerebral inoculation of brain and salivary gland suspensions into weanling mice.

PROGRESS: Rabiesvirus was not isolated in any of the more than 1000 specimens examined, which consisted mainly of the wrinkle lipped bat, (Tadarida plicata). However, agents other rabiesvirus were present which resulted in the death of approximately one third of all the mice inoculated. Following serial passage in mice, suspensions of mouse brain were inoculated into MK2 tissue culture monolayers. Eleven of the isolates grew well in tissue culture and were each used as a source of antigen to produce homologous antisera in guinea pigs. This antisera was used in tube neutralization tests against each of the eleven corresponding tissue culture isolates to determine if the various antigens were identical. The results of the test are listed in Figure 1. In only the case of isolate 174B was there clear evidence that more than one isolate was present in the group. Further work with virus 174B and the original prototype virus S19B confirmed that was different. Virus 174B, in contrast to S19B, is both ether and heat stable and may be an enterovirus. The identity of neither virus has been established.

SUMMARY: Viral isolates lethal for weanling mice were obtained from approximately 1/3 of 1000 bat brain and salivary glands examined. Most of the isolates are probably identical, but one isolate is physically and serologically discrete. Local attempts to identify these isolates using specific antisera have not been successful. Specimens have been sent to the Arbovirus Research Unit at Yale University for classification.

Figure 1.

Results of Cross Neutralization Tests Using Bat Virus Isolates Against Homologous Antisera Produced in Guinea Pigs*

	VIRUS										
Antiserum	19B	64B	176B	176S	174B	173S	6S	135S	243B	155B	133B
133B	$<\frac{1}{10}$	$\frac{1}{40}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{20}$
173S	$\frac{1}{10}$	$\frac{1}{40}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$
155B	$<\frac{1}{10}$	$\frac{1}{40}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{320}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{160}$	$<\frac{1}{10}$
176S	$\frac{1}{160}$	$\frac{1}{160}$	$\frac{1}{80}$	$\frac{1}{160}$	$<\frac{1}{10}$	$\frac{1}{40}$	$\frac{1}{40}$	$\frac{1}{160}$	$<\frac{1}{20}$	$\frac{1}{40}$	$\frac{1}{40}$
135S	$\frac{1}{20}$	$\frac{1}{40}$	$\frac{1}{80}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{40}$	$\frac{1}{20}$	$\frac{1}{160}$	$\frac{1}{40}$	$\frac{1}{20}$	$\frac{1}{40}$
6S	$\frac{1}{40}$	$\frac{1}{40}$	$\frac{1}{20}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{40}$	$\frac{1}{80}$	$<\frac{1}{10}$	$\frac{1}{20}$	$\frac{1}{20}$	$\frac{1}{10}$
176B	$<\frac{1}{10}$	$\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{20}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{20}$
64B	$<\frac{1}{10}$	$\frac{1}{20}$	$<\frac{1}{10}$	$\frac{1}{20}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{20}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{20}$	$\frac{1}{40}$
19B	$\frac{1}{80}$	$\frac{1}{80}$	$\frac{1}{20}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{80}$	$\frac{1}{20}$	$\frac{1}{40}$	$\frac{1}{20}$	$\frac{1}{20}$	$\frac{1}{40}$
174B	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{160}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
243B	$\frac{1}{40}$	$\frac{1}{40}$	$\frac{1}{160}$	$<\frac{1}{10}$	$<\frac{1}{10}$	$\frac{1}{320}$	$<\frac{1}{10}$	$>\frac{1}{640}$	$>\frac{1}{640}$	$>\frac{1}{640}$	$\frac{1}{40}$

* Titer listed is the highest dilution of antisera which prevented the appearance of cytopathic effect in MK2 cell tube monolayers.