

## Ecological and Epidemiological Survey for Rabies virus in Cave Bat Populations.

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**OBJECTIVE:** The objectives of the study are to determine whether rabies is present among cave bats whether diseases and ecological factors may be responsible for the many deaths in bats that occur frequently, and the relationship of bat zoonoses to individuals that work in a large limestone cave in the Saraburi province district of Kangkoi.

**DESCRIPTION:** Dead bats are picked up from several well defined areas in the cave each month by a native who collects guano in the cave. A careful count is kept of the bats collected from each area, and they are then kept in dry ice for laboratory examination. Continuous temperature recordings are also made in each of these areas and as an indicator of the population fluctuations the rate of guano deposition is measured. The overall population of bats within the cave has been estimated by taking a series of rapid photographs of the evening exodus from the cave. A record of meteorological data in the vicinity of the cave has also been kept to determine its effect on the other observations. In addition to dead bats, live bats, wild rodents, various ectoparasites and human sera have been collected from the area for laboratory examination. Laboratory rats, mice, and rabbits were also placed in the cave as sentinel animals to determine the effect of the zoonotic diseases there on newly introduced, and perhaps susceptible, animals.

**PROGRESS:** The brains and salivary glands of the dead bats were inoculated intracranially into weanling mice for the purpose of screening for rabies virus. Many of these mice subsequently died showing signs of paralysis or convulsions. Examination of their brains showed no evidence of infection by rabies virus or bacterial contamination. Following a second passage in suckling mice the isolates were placed in tissue culture using MK<sub>2</sub> cells where cytopathic effect was produced. One isolate, S-19 B, was characterized by several laboratory procedures, and has been used subsequently as an antigen for producing antisera in rabbits. Following this experience, all suspensions made from dead bat tissue which caused death in the first mouse passage were screened for rabies virus, passed a second time in mice and, if deaths occurred, placed on tissue culture. A total of 1014 bats were processed yielding 2028 tissue suspensions. From these suspensions 648 have been lethal for weanling mice. Following fluorescent antibody examination for rabies, 190 of the mouse isolates have been placed in tissue culture and 173 have produced cytopathic effects. As mentioned, antisera was prepared by inoculating rabbits with the viral isolate, S19B. Serum neutralization tests are currently being set up to determine if all the isolates made are serologically identical to S-19-B.

Material obtained from live bats, wild rodents, ectoparasites, and sentinel animals has been processed in a similar manner. One hundred and twenty three live bats were processed by passing brain and salivary gland material through both weanling and suckling mice. Four isolations have been made from mouse material but have not produced CPE when placed on tissue culture. Sixty-five wild rats, *Rattus rattus*, were collected and five isolates producing CPE on MK<sub>2</sub> cells have been obtained. Suspensions made from pools of collected ectoparasites, although they produced a few deaths in inoculated mice, have failed to produce any CPE in MK<sub>2</sub> cells. Five tissue culture isolates have been obtained from the various sentinel animals and of interest also is the fact that the serum of one of these rats had a 1:80 antibody titer in a neutralization test against the S-19-B isolate. Similarly, in neutralization tests run with the sera collected from fourteen people who worked in the cave, three have been shown to contain antibodies to the S-19-B isolate also.