BRIEF NOTE

TRANSMISSION EXPERIMENTS WITH *BABESIA MICROTI* (GRAY STRAIN) USING *DERMACENTOR ANDERSONI* STILES AS A VECTOR.[1]

Interest in *Babesia microti* has been stimulated recently by the observation of a number of *Babesia* infections in humans (Scholtens *et al*, 1968; Fitzpatrick *et al*, 1968; Western *et al*, 1970; Anderson *et al*, 1974). The ticks of the genus *Dermacentor* are very common in the United States and, as the larvae and nymphs of these ticks commonly feed on rodents (Bishopp and Trembley, 1945), we considered them likely candidates as vectors of *Babesia microti* and we undertook to determine if, in fact, *Dermacentor andersoni* could transmit *Babesia microti*.

The ticks were fed on Golden Syrian hamsters. Feeding was carried out within a chamber constructed from a plastic cap which had its lip placed against the hamster's abdomen and a hole cut in the other end. The cap was held in place with an adhesive tape belly band. The ticks were placed in the chamber through the hole in the cap and then a plastic lid was placed over the hole and secured with a water-proof adhesive tape band.

Transovarial transmission by *Dermacentor andersoni* was not observed, while transstadial transmission occurred sparingly. The hamsters were infested at parasitaemias ranging from 8% to 71% in order to determine if the parasite load had any effect in *Babesia* infectivity to ticks, but this factor did not influence tick infectivity. Out of 21 transstadial and 13 transovarial transmission attempts, two instances of stage-to-stage transmission from the nymph to the adult occurred (table 1). Adult ticks which had fed on infected hamsters as nymphs were placed on clean hamsters 7 days after molting and infection was detected in the hamsters 4 days after infestation.

Transmission was not observed in groups 1 and 3 (table 1). It is possible that the ingested parasites, if they infected the ticks either did not reach the salivary glands or the ovaries. There is also the possibility that the parasites were not infective for these ticks. In order to determine which situation occurred, week-old nymphs, fed on infected hamsters as larvae, were ground in physiological saline and injected intra-muscularly into a hamster. The blood of the hamster was monitered for parasites by the Giemsa method for 1 month, but the hamster did not develop babesiosis. Extracts of week-old eggs and larvae from ticks which had fed on infected hamsters as adults were

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TABLE 1

Attempts of transstadial (Groups 1 and 2) and transovarial (Group 3) transmission of Babesia microti *(Gray Strain) by larval (Group 1), nymphal (Group 2) and adult ticks (Group 3) fed on infected hamsters.*

Group	Feeding on infected hamsters	Feeding on uninfected hamsters		No. of transmissions*
		Instar	No. of hamsters	
1	Larvae	Nymphs	4	0
		Adults	5	0
2	Nymphs	Adults	7	2
		Larvae	5	0
3	Adults	Larvae	9	0
		Nymphs	4	0

*Transmission was indicated by babesiosis in clean hamsters on which adult ticks fed.

also prepared and injected into hamsters. The hamster which received the ground larvae did not develop the disease during a month of observation. The hamster which received the ground eggs died in 3 days apparently from egg toxicity (Steinhaus, 1942).

Since the two instances of transstadial transmission occurred between nymphs and adults, and as *Dermacentor andersoni* is a three-host tick, the adults of which usually infest large animals, it is probable that *D. andersoni* is not an important vector for the transmission of *Babesia microti* among rodents. As the adults of this tick often feed on humans, it is possible that this tick may be a vector for the transmission of rodent babesiosis to humans. Epidemiological and laboratory work by Andrew Spielman (Dept. of Tropical Health, Harvard School of Public Health, Boston) on Nantucket Island, Massachusetts indicates that the major vector there for *Babesia microti* is *Ixodes scapularis* (Personal Communication).—U. EDWARD GENGA AND JULIUS P. KREIER. *Department of Microbiology, The Ohio State University, Columbus, Ohio 43210.*

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