

3. Title: Feeding habits of mosquitoes of medical importance in Thailand.

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Objective: The host range of a mosquito vector is one of the important factors affecting the persistence and spread of mosquito-borne diseases. The vectorial capacity of a species depends, among other factors, on its preference for human blood and the frequency of its contact with man. The purpose of this study is to determine the natural hosts of the medically important species in Thailand in support of various mosquito-borne disease studies in progress.

Description: Blood engorged mosquitoes were collected during the course of studies on malaria and arthropod-borne viruses. Saline extracts of gut contents were tested by the precipitin ring-test and the agar-gel diffusion technique for reactions against a battery of antisera produced in chickens and rabbits against human, monkey, cow, buffalo, dog, pig, chicken, horse, and rat sera.

Progress-Problems with broad cross-reactivity have been encountered with some of the antisera when tested with heterologous antigens in the precipitin ring test. Consideration was given to replacing the ring test with the agar-gel diffusion technique. When parallel tests were run with both techniques using the same antisera and mosquitoblood meal extracts, wide cross reactions were obtained in the ring test with most of the antisera, while none occurred in the agar-gel test except between bovine blood and anti-buffalo serum and between human blood and anti-monkey serum. These cross reactions were considered of negligible practical importance, and the agar-gel diffusion technique was adopted in place of the ring test. While results were obtained within a few minutes in the precipitin ring-tests, it took over 24 hours at room temperature before the agar-gel tests could be read. Possibly, the slow migration of both antigen and antiserum in the agar-gel diffusion method eliminates or delays the appearance of cross-reactions.

Material tested by the agar-gel diffusion technique included 470 mosquitoes collected in a light trap located near a cattle barn at Bang Phra, Cholburi Province, where studies on mosquito-borne viruses were in progress. Results shown in Table 1 reveal that cattle appeared to be the preferred hosts for all of the species tested. Both Aedes mediolineatus and Aedes vexans fed occasionally on chickens or on both chickens and bovines, but vexans showed a larger portion of mixed feedings. Although the material tested represented collections made over the period between March and September, feeding of these two mosquitoes on non-bovine hosts occurred only during April and May. (See section on arbovirus studies for further details).

Summary—Because of very broad cross-reactions obtained with certain antisera in the precipitin ring test, it was replaced by the agar-gel diffusion technique which eliminated practically all cross-reactivity. Tests of mosquitoes from the Bang Phra arbovirus study area indicated that most of those tested had fed upon cattle with occasionally blood meals being taken from chickens.

Table 1.

Source of blood meals of mosquitoes collected from light trap at Bang Phra 1966 as determined by the agar-gel diffusion technique.

Species	Total number tested	Number positive reactions	% positives with antiserum*		
			B/C	C & Ch.	Ch.
<u>Aedes lineatopennis</u>	130	121	100		
<u>A. mediolineatus</u>	62	55	96	2	2
<u>A. vexans</u>	158	154	66	31	3
<u>Culex gelidus</u>	89	88	100		
<u>C. tritaeniorhynchus</u>	32	32	100		

* B/C, buffalo or cow; C & Ch., both cow and chicken; Ch., chicken only