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USE OF SUGAR CUBES AS A CARBOHYDRATE SOURCE FOR ADULT *CULEX QUINQUEFASCIATUS* SAY

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It was reported by Eliason (1963), that various species of mosquitoes could feed on crystallized sugar. However, there was no indication that this finding was put to practical usage in maintaining laboratory colonies of such species over an extended period of time. Nor was there mention of any comparative studies to determine if physiological differences such as increased oviposition or extended adult longevity could be detected between the utilization of solid sugar and other carbohydrate sources. I report now on laboratory research which addressed such problems.

A colony of *Culex quinquefasciatus* Say is maintained at this laboratory for insecticidal research. Our original rearing procedure required raisins as adult food for both sexes. In addition, the females received a blood meal to initiate oviposition. A chance observation that mosquitoes would feed on sugar cubes led to a study in which the cubes were compared with raisins as a carbohydrate source.

Two groups of 200-300 adult mosquitoes of mixed sexes were placed in identical 1 ft³ screened cages. They were supplied water *ad libitum*, 5 sugar cubes (group A), or 15 raisins (group B). After 3 days, both groups were starved for 24 hrs (sugar cubes and raisins removed) after which the females were provided a chicken as a blood source. Sugar cubes and raisins were replaced after the blood meal was completed. Oviposition cups containing tap water were placed inside each cage on the third day after the blood meal. Eggs were collected 24 hrs later. The experiment was repeated 3 times.

Females of group A (sugar cubes) took 3 to 4 blood meals and the same number of ovipositions were obtained (2 heavy, 1 medium, and 1 light). Adults of group B (raisins) did not live long enough to take more than 1 blood meal. Although no direct counts were made, the viability of the eggs appeared to be greater than 90%.

In summary, our research has shown that the insects not only prefer sugar cubes as a carbohydrate source, but that they live 3-4 times longer than those fed on raisins. Sugar cubes have now been used successfully as a carbohydrate source for both female and male adult mosquitoes in our colony for almost 2 years.

References Cited

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LARVAL SPECIMENS OF *CULEX TARSALIS* COQUILLET IN OHIO

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Weekly larval mosquito surveys have been conducted by the authors during the period May through September for the past 3 years in Bowling Green, Ohio. *Culex tarsalis* Coquillett larvae have not been previously reported from Ohio, although adults of this species have been collected occasionally in light trap surveys (Ms. Margaret Parsons, Ohio Dept. of Health, personal communication). *Cx. tarsalis* larvae (61 specimens) were collected at 10 different locations from 28 July through 9 September 1977. The habitats were usually temporary, standing water sites with emergent vegetation. The most common larval associates with *Cx. tarsalis* were *Cx. pipiens*, *Anopheles punctipennis*, and *Cx. restuans*, although *Cx. tarsalis* larvae were also found with an additional 8 species. Adults of this species were collected infrequently in New Jersey light traps and CO₂ baited CDC light traps. *Cx. tarsalis* adults were not collected from

a human volunteer during a mosquito biting study conducted in Bowling Green.

Cx. tarsalis is recognized as an important vector of Western encephalitis (WE) and St. Louis encephalitis (SLE) in the western and central United States and is a persistent biter of many birds and mammals. Arboviruses of California encephalitis (CE) have been infrequently isolated from this mosquito (Sudia et al. 1971). Populations of *Cx. tarsalis* may be somewhat cyclic in Ohio; Miller (1977) reported that this species was more abundant than in previous years. Siverly (1972) reported *Cx. tarsalis* populations to be declining in Indiana but he could not account for its diminished numbers. The extensive establishment of this species in our

area may depend to some extent on whether or not it can successfully overwinter in Ohio.

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