Thesis Title Measurement of Local Populations of *Aedes aegypti*(L.) for Variation in Dengue-2 Vector Efficiency in an Area of Known Virus Transmission.

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ABSTRACT

Temperature, larval density, and food availability had a distinct effect on body sizes and survival rate of *Aedes aegypti* (L.) in laboratory. Larval density was inversely correlated with body size and survival rate. Based on this experiment, the three size-class *Aedes aegypti* adult females were reared for studying their comparative susceptibility to dengue-2 virus by oral infection. Results showed that body size significantly affected infection rate, with 10.7 percent for large, 5.6 percent for medium, and 5.7 percent for small infected

mosquitoes. The source of mosquitoes also significantly affected infection rate, with 5 percent for Bangkok and with 8.5 percent and 10.7 percent for the two villages in Chachoengsao Province.

There was variation in body size of *Aedes aegypti* mosquitoes in nature. Average wing lengths of emerging and resting adults in a rural Thai community were significantly different. The number of adult females resting indoors was more than that resting outdoors, but no significant differences in the average wing lengths were detected between the two groups. These results indicate that large size mosquitoes had a higher survival rate and possibly moved freely between indoors and outdoors although they preferred to rest indoors. In conclusion, both locations and sizes of *Aedes aegypti* mosquitoes were important in dengue epidemics.