2. Title: Insecticide tolerance level of mosquitoes in Thailand

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The susceptibility tests of strains of Aedes aegypti and Aedes albopictus from Surat Thani Province to various insecticide have been completed. Interest in conducting these tests arose following an epidemic of Thai Hemorrhagic Fever on the island of Koh Samui during 1966 in which both species were implicated as vectors. Larvae of four strains of A. aegypti obtained from Ang Thong, Taling Ngam, Koh Phaluai and Koh Phangan were tested for susceptibility to DDT and dieldrin, and all were resistant except those of the Koh Phaluai strain which were resistant to DDT but still highly susceptible to dieldrin. Adults from the Taling Ngam and Koh Phangan strains were also completely resistant to DDT while those of the Ang Thong and Koh Phaluai strains developed an intermediate resistance to this insecticide. Larvae of Aedes albopictus from Ban Mae Nam were susceptible to DDT while the adults were suspected to have developed an intermediate resistance to this insecticide. Additional laboratory tests on the toxicity of the organophosphate, Abate, to larvae of both species showed that this insecticide was highly toxic to the larvae at extremely low concentrations (LC_{50} .0035—.00051 ppm).

Baseline data on the susceptibility of Anopheles subpictus to DDT and dieldrin were also established. Females of this species collected while biting man and/or cattle in the vicinity of Mo Ban Glum, Tambon Chark Magrood in Rayong Province were found to be susceptible to both insecticides. The calculated LC_{50} values for DDT and dieldrin were 0.29% and 0.053% respectively.

Surveillance on the susceptibility status of mosquitoes in Thailand was also continued. Anopheles vagus from Bang Khen showed an increase in vigor tolerance to DDT. Adults of this species were also found to be completely resistant to dieldrin. When the larvae were tested by the "time in concentration" technique, three genotypes for dieldrin resistance were distinguished.

During this period, studies were made on the susceptibility of larvae of three anopheline species to Abate. These species were Anopheles balabacensis, An. maculatus and An. stephensi, all of which are colonized in the department insectary. Baseline data on the susceptibility of the both maculatus and stephensi were accumulated while data for balabacensis are still incomplete due to insufficient numbers for testing. The calculated LC_{50} and LC_{90} values for Abate were 0.00135 and 0.00325 ppm for An. stephensi and 0.00125, 0.00241 ppm for An. maculatus, respectively.

Genetic studies of dieldrin resistance in Culex gelidus and Anopheles vagus were also initiated during this period. Resistance of both species to insecticides in Thailand was previously found and reported by these investigators. This study is designed to determine the mode of inheritance of this resistance, in whether mono—or multi—factorial and whether resistance in the F_1 generations is recessive, dominant or intermediate (incomplete). This study is still in progress.