## EFFICACY OF THREE INSECTICIDES AGAINST ANOPHELES DIRUS AND ANOPHELES MINIMUS, THE MAJOR MALARIA VECTORS, IN KANCHANABURI PROVINCE, THAILAND

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Abtract. We conducted this study to determine the insecticide susceptibility of two malaria vectors, Anopheles dirus and Anopheles minimus from Kanchanaburi Province, Thailand. The mosquitoes were collected and reared under laboratory conditions. The test was carried out on unfed F-1 female mosquitoes using a standard WHO testing protocol. The  $LD_{50}$  and  $LD_{90}$  of deltamethrin in both species were tested for by exposing the mosquitoes to various doses of deltamethrin for 1 hour. The lethal time was also tested among mosquitoes by exposing them to deltamethrin (0.05%), permethrin (0.75%) and malathion (5%), for different exposure times, ranging from 0.5 to 15 minutes. Percent knockdown at 60 minutes and mortality at 24 hours were calculated. The resistance ratio (RR) was determined based on the  $LD_{50}$  and  $LT_{50}$  values.  $LD_{50}$  of deltamethrin against *An.dirus* and *An.minimus* were 0.00077% and 0.00066%, respectively.  $LT_{50}$  values for deltamethrin (0.05%), permethrin (0.75%) and malathion (5%) against An.dirus and An.minimus were 1.20, 3.16 and 10.07 minutes and 0.48, 1.92 and 5.94 minutes, respectively. The study revealed slightly increased tolerance by both mosquito species, compared with laboratory susceptible strains, based on  $LD_{50}$  values. The two anopheline species had the same patterns of response to the three insecticides, based on  $LT_{50}$  values, although the LT<sub>50</sub> values were slightly higher in the An. dirus population. Both An. dirus and An. minimus were fully susceptible to all the insecticides tested, with 100% mortality at 24 hours post-exposure. Deltamethrin was the most effective insecticide, followed by permethrin and malathion.

**Keywords:** *Anopheles dirus, Anopheles minimus,* malaria vector, insecticide susceptibility, Thailand

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