RESISTANCE STATUS OF *AEDES AEGYPTI* TO MALATHION AND CYPERMETHRIN IN BENGKULU CITY, INDONESIA

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Abstract. Dengue is one of the most important vector-borne diseases and a public health problem in Indonesia including Bengkulu City. Malathion has been massively used since the 1990s in dengue control programs, while cypermethrin is used as a household insecticide in Bengkulu City. This study determined resistance status to malathion and cypermethrin of *Aedes aegypti* in dengue endemic (Sidomulyo Village) and sporadic (Tanjung Jaya Village) areas in Bengkulu City and also examined the mechanism of resistance. *Ae. aegypti* eggs were collected by ovitraps and reared to the 1st generation. Mortality of adult *Ae. aegypti* from dengue endemic and sporadic area after a 30-minute exposure to diagnostic dose of malathion (50 μg/bottle) was 93% and 98%, respectively, indicative of intermediate resistance but requiring verification, which using estimated resistance ratio at 50%, 90% and 99% lethal time ($ERR_{50, 90, 99}$) gave values of <5 indicating susceptible; while that to cypermethrin (10 μg/bottle) was 92% and 100%, respectively, with $ERR_{50, 90, 99}$ <5. Resistance mechanism to malathion and cypermethrin was based on measurement of increase in non-specific esterase and monooxygenase activity, respectively of *Ae. aegypti* larvae relative to insecticide sensitive control, which indicated mosquitoes dengue sporadic area showing evidence of initial malathion resistance while those from both dengue endemic and sporadic areas initial resistance to cypermethrin. Thus, *Ae. aegypti* from dengue endemic and sporadic areas in Bengkulu City were still susceptible to malathion and cypermethrin but there were indication of emergence of mechanisms of resistance. These data should be of value in formulating dengue vector control programs, which can avoid generating insecticide resistance.

Keywords: *Aedes aegypti*, bottle bioassay, cypermethrin, malathion, Indonesia

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