

KEPEKAAN TERHADAP SIPERMETRIN DAN *FITNESS COSTS* POPULASI *Aedes aegypti* DI DESA MOJAYAN, KLATEN TENGAH

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INTISARI

Latar Belakang: Fogging dengan insektisida sintetik piretroid menjadi salah satu pengendalian daerah endemis DBD di Desa Mojayan, Klaten Tengah. Akibatnya, populasi resisten terhadap insektisida menjadi hambatan dalam pengembangan program pengendalian serangga rumah tangga dan hama pertanian. Resistensi dikaitkan dengan adanya *fitness cost* yang dievaluasi dengan menganalisis parameter hidup nyamuk.

Tujuan: menganalisis status kerentanan nyamuk terhadap insektisida sipermetrin dan menganalisis perbandingan parameter *fitness cost* nyamuk lapangan dengan nyamuk *susceptible* dari laboratorium.

Metode: Telur *Aedes aegypti* dikumpulkan menggunakan 600 ovitrap (*indoor* dan *outdoor*) di Dusun Sendangan, Srogogede dan Grubul. Status kerentanan *Aedes aegypti* ditetapkan dengan metode *susceptibility* larva. Parameter *fitness cost* yang diamati: fekunditas, kemampuan pakan darah, lama siklus perkembangbiakan dan lama hidup nyamuk dewasa.

Hasil: Status kerentanan *Aedes aegypti* terhadap sipermetrin di Dusun Sendangan, Srogogede dan Grubul termasuk kategori rentan/*susceptible* dengan variasi nilai *Resistance Ratio*: Sendangan 3,40; Srogogede 2,10; dan Grubul 2,57. Kemampuan pakan darah terbesar ada pada koloni nyamuk *susceptible* (0,15249 gram). Fekunditas tidak berbeda signifikan antara koloni lapangan dan laboratorium. Lama siklus perkembangbiakan fase larva ke pupa berbeda signifikan untuk koloni Srogogede-laboratorium, fase pupa ke dewasa berbeda signifikan untuk koloni Sendangan-Srogogede dan Srogogede-laboratorium. Lama hidup nyamuk dewasa berbeda signifikan untuk koloni Sendangan dan Srogogede dengan laboratorium.

Kesimpulan: status kerentanan *Aedes aegypti* terhadap sipermetrin di Desa Mojayan termasuk kategori rentan/*susceptible*. Parameter kemampuan hisap darah koloni Sendangan dan Srogogede lebih sedikit dibandingkan koloni strain *susceptible*. Tidak ada perbedaan signifikan untuk parameter fekunditas. Ada perbedaan signifikan lama siklus perkembangbiakan dan lama hidup nyamuk dewasa.

Kata kunci: kerentanan, *Aedes aegypti*, *fitness cost*, sipermetrin

SUSCEPTIBILITY TO CYPERMETHRIN AND FITNESS COSTS OF *Aedes aegypti* POPULATIONS IN MOJAYAN VILLAGE, THE DISTRICT OF KLATEN

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ABSTRACT

Background: Fogging using synthetic pyrethroid insecticides is one of the control measure applied in dengue endemic areas in Mojayan Village, the district of Klaten which may lead to the development of resistance in the vector *Aedes aegypti*. Resistance can be associated with fitness costs that can be evaluated by analyzing several life parameters.

Objectives: to determine the susceptibility level of *A. aegypti* to cypermethrin and the fitness of this mosquitoes as the costs for developing resistance.

Methods: *A. aegypti* eggs were collected using 600 ovitrap (indoor and outdoor) from Sendangan, Srogogede and Grubul. The susceptibility status was determined using the WHO susceptibility larvae method. The parameters of fitness observed were fecundity, ability of blood feed, length of breeding cycle, and length of life of adult mosquitoes.

Results: All three populations of *A. aegypti* collected from Sendangan, Srogogede and Grubul, Mojayan Village, were still susceptible to cypermethrin with the Resistance Ratio of 3.40; 2.10; 2.57, respectively, compared to the laboratory susceptible population. The highest ability of blood feed was the susceptible population (0.15249 g). The longevity of field colonies (Sendangan and Srogogede) are shorter than that of laboratory colony. The duration of the Sendangan and Srogogede colonization breeding cycles is longer than susceptible laboratory colonies. However, there was no difference of fecundity that of field and colony laboratory.

Conclusion: The populations of *A. aegypti* collected from Mojayan Village was susceptible to cypermethrin. The field populations had lower blood feeding rate than that of the laboratory colony. Although there was differences in the duration of life cycle and longevity, the fecundity of the field and laboratory populations was similar.

Keywords: susceptibility, fitness costs, *Aedes aegypti*, cypermethrin