



INTISARI

Latar Belakang. Demam berdarah dengue (DBD) merupakan penyakit yang disebabkan oleh virus dengue dan ditularkan melalui gigitan nyamuk *Ae.aegypti*. Salah satu cara yang selama ini digunakan untuk mengendalikan penyakit DBD yaitu dengan memutus siklus hidup vektor menggunakan insektisida sintetik. Penggunaan insektisida sintetik dapat menimbulkan permasalahan, permasalahan tersebut dapat diminimalisir dengan insektisida nabati. Ekstrak daun zodia mengandung linalool (3,7-dimethyl-1,6-octadien-3-ol) bersifat racun kontak yang meningkatkan aktivitas sensorik pada serangga. Cara kerja dari linalool mirip malation, yaitu menghambat bekerjanya enzim asetilkolinesterase.

Tujuan Penelitian. Secara umum penelitian ini bertujuan untuk mengetahui pengaruh ekstrak etanol daun zodia pada larva *Ae.aegypti* melalui perubahan morfologi internal, aktivitas enzim asetilkolinesterase, dan kadar protein.

Metode Penelitian. Uji aktivitas enzim asetilkolinesterase dilakukan menggunakan *microplate reader* (405 nm). Uji kadar protein dilakukan menggunakan metode Bradford (505nm). Identifikasi Kerusakan morfologi internal larva *Ae.aegypti* dilakukan secara mikroskopis menggunakan reagen hoyers.

Hasil Penelitian. Uji larvasida ekstrak etanol daun zodia menghasilkan nilai LC50 4260 ppm dan LC90 6230 ppm. Pada larva yang dipapar malation terjadi penghambatan enzim asetilkolinesterase. Ekstrak etanol daun zodia tidak menyebabkan hambatan enzim asetilkolinesterase, menurunkan kadar protein pada larva, aktivitasnya < 1mg/ml serta menyebabkan kerusakan pada usus tengah (midgut) larva.

Kesimpulan. Ekstrak etanol daun zodia memiliki toksisitas yang lemah sebagai larvasida pada larva *Ae.aegypti*, dan tidak menurunkan aktivitas enzim asetilkolinesterase, serta menyebabkan kerusakan pada bagian midgut (usus tengah) pada larva *Ae.aegypti*.

Kata Kunci. *Aedes aegypti*, aktivitas asetilkolinesterase, ekstrak etanol daun zodia, malation.



ABSTRACT

Background. Dengue hemorrhagic fever refers to the disease that is caused and transmitted by the genus-type *Aedes* mosquito, specifically *Ae.aegypti*. One of the ways that have been used in controlling the spread of the fever is intercepting the vector lifecycle using synthetic insecticides. The use of synthetic insecticides continuously certain problems and these problems might be minimized by phyto-insecticide. The extract of zodia leaf contains linalool (3,7-dimethyl-1,6-octadien-3-ol) and it has the characteristics of contact poison that enhances the sensory activities of insects. The linalool works in a similar way to malation: it will inhibit the performance of acetylcholinesterase enzyme.

Objective. In general, the study aims at identifying the influence of the ethanol extract of zodia leaf toward the larva of *Ae.aegypti* through the change of internal morphology, the activity of acetylcholinesterase, and the rate of protein.

Method. The activity test of acetylcholinesterase test was performed using the reader microplate on the wave length of 450 nm. Then, the test of protein rate was performed using the Bradford method and was read on the wave length of 505 nm. The identification on the damages of internal morphology on the larva of *Ae.aegypti* was performed microscopically using the Hoyer's reagent.

Results. The larvacide test on the ethanol extract of zodiac leaf showed 4260 ppm on LC50 and 6230 ppm on LC90. In larvae exposed to malation occurs inhibition of acetylcholinesterase enzyme. In the larvae exposed to ethanol extract of zodia leaf no enzyme inhibition occurred, decreased the protein content, its activity <1mg / ml and damage the middle intestine of the larvae (midgut).

Conclusion. The ethanol extract of zodia leaf has the low toxicity that should be necessary for larvacide and do not decrease the activity of acetylcholinesterase enzymes, and cause damage to the midgut portion of the *Ae.aegypti* larvae.

Keyword. *Aedes aegypti*, acetylcholinesterase activity, ethanol extract of zodia leaf, malation