

## ABSTRAK

### UJI EFEKTIVITAS SENYAWA BIOAKTIF EKSTRAK ETANOL DAUN API-API HITAM (*Avicennia alba*) SEBAGAI LARVASIDA PADA LARVA NYAMUK *Aedes aegypti*

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Berbagai upaya pengendalian vektor, seperti fogging dan penggunaan larvasida sintesis, telah dilakukan namun belum memberikan hasil yang optimal dan menimbulkan dampak negatif terhadap lingkungan serta resistensi pada nyamuk, sehingga diperlukan alternatif larvasida alami. Penelitian ini bertujuan untuk mengetahui kandungan senyawa metabolit sekunder ekstrak etanol daun api-api hitam (*Avicennia alba*), mengetahui pengaruh ekstrak terhadap mortalitas larva *Ae. aegypti*, mengetahui efektivitas ekstrak, serta mengetahui pengaruh ekstrak terhadap perubahan morfologi larva *Ae. aegypti*. Rancangan penelitian menggunakan Rancangan Acak Lengkap (RAL) dengan 7 perlakuan yang terdiri dari 0,5%, 1%, 1,5%, 2%, 2,5%, kontrol positif (abate 1%), dan kontrol negatif (akuades) sebanyak tiga kali ulangan. Data mortalitas dianalisis menggunakan *One-way Analysis of Variance* (ANOVA) untuk mengetahui signifikansi antar perlakuan. Kemudian dilanjutkan dengan *Least Significant Difference* (LSD). Untuk menentukan efektivitas ekstrak etanol daun *Avicennia alba* menggunakan analisis probit. Hasil penelitian uji fitokimia menunjukkan ekstrak etanol daun api-api hitam (*Avicennia alba*) mengandung senyawa metabolit sekunder yaitu flavonoid, tanin, saponin, alkaloid, steroid, dan fenolik. Hasil analisis *One Way Anova* menunjukkan perbedaan signifikan ( $p < 0,05$ ), hasil uji lanjut LSD konsentrasi 1,5% yang paling tertinggi dengan mortalitas larva *Ae. aegypti* 96%. Hasil uji efektivitas didapatkan nilai  $LC_{50}$  pengamatan 72 jam sebesar 0,92% dikategorikan sangat efektif karena  $LC_{50} < 1\%$  dan nilai  $LT_{50}$  tercepat yaitu 11,32 jam. Berdasarkan pengamatan pengaruh ekstrak terdapat perubahan morfologi berupa lisisnya tubuh, kerusakan saluran pencernaan, dan kerusakan saluran pernafasan.

**Kata Kunci:** *Aedes aegypti*, larvasida alami, *Avicennia alba*, mortalitas larva.

## ABSTRACT

### EFFECTIVENESS TEST OF BIOACTIVE COMPOUNDS OF ETHANOL EXTRACT OF BLACK API-API LEAVES (*Avicennia alba*) AS LARVICIDE ON *Aedes aegypti* MOSQUITO LARVAE

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Various vector control efforts, such as fogging and the use of synthetic larvicides, have been carried out but have not provided optimal results and have caused negative impacts on the environment and resistance in mosquitoes, so that alternative natural larvicides are needed. This study aims to determine the content of secondary metabolite compounds of ethanol extract of black api-api leaves (*Avicennia alba*), determine the effect of the extract on the mortality of *Ae. aegypti* larvae, determine the effectiveness of the extract, and determine the effect of the extract on the morphological changes of *Ae. aegypti* larvae. The study design used a *Completely Randomized Design* (CRD) with 7 treatments consisting of 0.5%, 1%, 1.5%, 2%, 2.5%, a positive control (abate 1%), and a negative control (aquadest) with three replications. Mortality data were analyzed using *One-way Analysis of Variance* (ANOVA) to determine the significance between treatments. Then continued with *Least Significant Difference* (LSD). To determine the effectiveness of the ethanol extract of *Avicennia alba* leaves using probit analysis. The results of the phytochemical test showed that the ethanol extract of black api-api leaves (*Avicennia alba*) contains secondary metabolite compounds, namely flavonoids, tannins, saponins, alkaloids, steroids, and phenolics. The results of the One Way Anova analysis showed a significant difference ( $p < 0.05$ ), the results of the LSD further test with the highest concentration of 1.5% with *Ae. aegypti* larval mortality of 96%. The results of the effectiveness test obtained an  $LC_{50}$  value of 0.92% observed for 72 hours, categorized as very effective because  $LC_{50} < 1\%$  and the fastest  $LT_{50}$  value of 11.32 hours. Based on observations of the effect of the extract, there were morphological changes in the form of body lysis, damage to the digestive tract, and damage to the respiratory tract.

**Keywords:** *Aedes aegypti*, natural larvicide, *Avicennia alba*, larval mortality.