

**ABSTRACT**  
**THE EFFECTIVENESS OF 96% ETHANOL EXTRACT OF STAR ANISE**  
**(*Illicium verum*) AS LARVICIDE AGENT AGAINST LARVA STADIUM**  
**OF *Aedes aegypti* MOSQUITO**

By

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**Background:** Dengue Hemorrhagic Fever (DHF) is a disease transmitted by *Aedes aegypti* that remains a significant healthcare threat, especially in tropical countries. One way to prevent dengue fever is through using larvicides. Chemical larvicides that have been used for a long time carry some risks by causing environmental pollution and resistance. Therefore, developing alternative plant-based larvicides was considered a worthy step to reduce the risk of resistance to chemical larvicides. One of Indonesia's spice treasures is *Illicium verum* (IV), which contains secondary metabolites such as flavonoids, saponins, tannins, and alkaloids acting as larvicidal agents.

**Objectives:** The objectives were to determine the effective concentration for killing *larvae* and ethanol extract of IV's LC<sub>50</sub>, LC<sub>90</sub>, LT<sub>50</sub>, and LT<sub>90</sub> values.

**Methods:** The research design was an experimental method with a post-test-only control group design. The larvicide test in this study was divided into five groups: 0%, 0.0625%, 0.125%, 0.25%, and positive control (Abate 0.01%). Each group contained 25 *larvae* in 200mL of IV ethanol extract solution with four repetitions and analyzed by Kruskal-Wallis test, post-hoc Mann-Whitney test, and probit analysis conducted with a 95% confidence interval.

**Results:** No significant difference was shown between concentrations of 0.25%, 0.125%, and Abate 0.01%, which showed a value of  $p > 0.05$  on the Mann-Whitney test. The probit test showed the LC<sub>50</sub> value was 0.476%, and the LC<sub>90</sub> value was 2.42% at the maximum observation time. At the highest concentration, the LT<sub>50</sub> value was 0.037 hours, and the LT<sub>90</sub> value was 0.269 hours.

**Conclusion:** 96% ethanol extract of *Illicium verum* was effective as an alternative larvicidal agent at concentrations of 0.25% and 0.125% against abate 0.01%

**Keywords:** *Aedes aegypti*, *Illicium verum*, Larvicide, DHF

**ABSTRAK**  
**EFEKTIVITAS EKSTRAK ETANOL 96% BUNGA LAWANG (*Illicium verum*) SEBAGAI AGEN LARVASIDA TERHADAP STADIUM LARVA NYAMUK *Aedes aegypti***

**Oleh**

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**Latar Belakang:** Demam Berdarah Dengue (DBD) adalah penyakit yang ditularkan *Aedes aegypti* dan masih menjadi masalah kesehatan utama, terutama pada negara tropis. Pencegahan DBD salah satunya melalui penggunaan larvasida. Larvasida kimiawi yang telah lama digunakan berisiko menimbulkan pencemaran lingkungan dan resistensi. Sehingga pengembangan alternatif larvasida nabati layak untuk dikembangkan. Kekayaan rempah Indonesia salah satunya berupa *Illicium verum* (IV) dengan kandungan flavonoid, saponin, tanin, dan alkaloid sebagai agen larvasida.

**Tujuan Penelitian:** Untuk mengetahui konsentrasi efektif membunuh larva, nilai  $LC_{50}$ ,  $LC_{90}$ ,  $LT_{50}$ , dan  $LT_{90}$  dari ekstrak etanol IV

**Metode:** Desain penelitian ialah eksperimental dengan pendekatan *post test only with control group design*. Uji efektivitas larvasida dalam penelitian dibagi menjadi lima kelompok; 0%, 0.0625%, 0.125%, 0.25% dan kontrol positif (Abate 0,01%). Tiap kelompok diisi 25 larva dalam 200ml larutan ekstrak etanol IV dengan empat kali pengulangan dan dianalisis dengan uji Kruskal-Wallis, uji post-hoc Mann-Whitney, dan uji probit dengan interval kepercayaan 95%.

**Hasil:** Tidak terdapat perbedaan bermakna antara konsentrasi 0,25%, 0,125% dan abate 0,01% dengan nilai  $p > 0,05$ , Hasil uji probit didapatkan nilai  $LC_{50}$  0,476% dan  $LC_{90}$  2,42% pada waktu pengamatan maksimal. Pada konsentrasi terbesar didapat  $LT_{50}$  0,037 jam, dan  $LT_{90}$  0,269 jam.

**Simpulan:** Ekstrak etanol 96% *Illicium verum* memiliki efektivitas sebagai agen larvasida alternatif pada konsentrasi 0.25% dan 0.125% yang serupa dengan efektivitas Abate 0,01%

**Kata Kunci:** *Aedes aegypti*, *Illicium verum*, Larvasida, DBD