

## POTENSI LARVASIDA NABATI DAUN DAN BUNGA KEMBANG TELANG *Clitoria ternatea* Linnaeus TERHADAP *Aedes aegypti* (Linnaeus, 1762) DARI KOTA SURABAYA

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### INTISARI

*Aedes aegypti* adalah vektor utama dari beberapa virus penyebab penyakit, seperti demam berdarah, demam Zika, chikungunya, dan demam kuning. Keberadaannya yang adaptif terhadap lingkungan perkotaan meningkatkan potensi penularan penyakit. Populasi akan semakin meningkat seiring dengan perubahan lingkungan dan ketersediaan tempat bertelur. Di Indonesia, khususnya di Provinsi Jawa Timur, tercatat pada tahun 2023 sebanyak 9.401 orang terjangkit demam berdarah dengue (DBD), dengan 103 di antaranya meninggal dunia. Penelitian ini bertujuan untuk menganalisis kepadatan larva *Ae. aegypti*, identifikasi karakter morfologik, dan mengidentifikasi kandungan senyawa bioaktif ekstrak daun dan bunga *C. ternatea* L., serta potensi ekstrak daun dan bunga *C. ternatea* L. sebagai larvasida terhadap larva *Ae. aegypti* dari Perumahan Green Semanggi Mangrove, Surabaya. Kepadatan larva ditunjukkan dengan nilai *House Index* (7), *Container Index* (8), dan *Breteau Index* (8), serta Angka Bebas Jentik (ABJ) sebesar 44%, yang mengindikasikan risiko tinggi penularan DBD. Larva instar III *Ae. aegypti* dipapar dalam larutan ekstrak daun dan bunga kembang telang pada konsentrasi 500mg/L, 1000mg/L, 1500mg/L, 2000mg/L, dan 2500mg/L yang merupakan hasil maserasi. Pengamatan dilakukan selama 24 jam. Semakin tinggi konsentrasi ekstrak menyebabkan kematian yang semakin tinggi dan dengan nilai  $LC_{50}$  dan  $LC_{90}$  berturut-turut adalah pada konsentrasi 1093 mg/L dan 1457 mg/L untuk daun dan 1523 mg/L dan 2308 mg/L untuk bunga, setelah 24 jam. Data ini dianalisis dengan  $LC_{50}$ ,  $LC_{90}$ , Probit Analysis, dan ANOVA. Identifikasi senyawa menggunakan GC-MS. Hasil analisis GC-MS, ekstrak metanol *C. ternatea* L. menunjukkan kandungan beberapa senyawa terpenoid yang berpotensi sebagai pengendali nyamuk, yaitu neophytadiene, phytol, farsenol, squalene, dan lupeol, sedangkan ekstrak metanol bunga *C. ternatea* teridentifikasi senyawa seperti n-hexadecanoic acid, alpha-linolenic acid (ALA), sitosterol, stigmasterol, dan ethyl iso-allocholeate.

Kata kunci: *Aedes aegypti*, Daun dan Bunga Kembang Telang (*Clitoria ternatea* L.), Larvasida Nabati, Perumahan Green Semanggi Mangrove.

# THE LARVICIDAL POTENTIAL OF LEAF AND FLOWER EXTRACTS *Clitoria ternatea* Linnaeus AGAINST *Aedes aegypti* (Linnaeus, 1762) FROM SURABAYA CITY

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## ABSTRACT

*Aedes aegypti* is the primary vector of several disease-causing viruses, including dengue fever, Zika fever, chikungunya, and yellow fever. Its adaptability to urban environments increases the potential for disease transmission. The population of *Ae. aegypti* tends to rise in response to environmental changes and the availability of oviposition sites. In Indonesia, particularly in East Java Province, a total of 9,401 dengue fever (DF) cases were reported in 2023, with 103 fatalities. This study aims to analyze the larval density of *Ae. aegypti*, identify its morphological characteristics, and investigate the bioactive compounds present in the leaf and flower extracts of *Clitoria ternatea* L., as well as evaluate the larvicidal potential of these extracts against *Ae. aegypti* larvae collected from Green Semanggi Mangrove Residential Area, Surabaya. Larval density was determined using House Index (7), Container Index (8), and Breteau Index (8), along with a Larvae-Free Index (LFI) of 44%, indicating a high risk of dengue transmission. Third-instar larvae of *Ae. aegypti* were exposed to macerated extracts of *C. ternatea* leaves and flowers at concentrations of 500 mg/L, 1000 mg/L, 1500 mg/L, 2000 mg/L, and 2500 mg/L. Observations were conducted over a 24-hour period. Higher extract concentrations resulted in increased larval mortality, with LC<sub>50</sub> and LC<sub>90</sub> values recorded at 1093 mg/L and 1457 mg/L for the leaf extract, and 1523 mg/L and 2308 mg/L for the flower extract, respectively, after 24 hours. Data were analyzed using LC<sub>50</sub>, LC<sub>90</sub>, Probit Analysis, and ANOVA. Compound identification was carried out using Gas Chromatography-Mass Spectrometry (GC-MS). The methanolic extract of *C. ternatea* leaves was found to contain several terpenoid compounds with mosquito control, including neophytadiene, phytol, farnesol, squalene, and lupeol. Meanwhile, the methanolic flower extract was identified to contain compounds such as n-hexadecanoic acid, alpha-linolenic acid (ALA), beta-sitosterol, stigmasterol, and ethyl iso-allocholate.

Keywords: *Aedes aegypti*, Green Semanggi Mangrove Housing Complex, Leaves and Flowers of *Clitoria ternatea* L., Plant-based Larvicides.