

ABSTRAK

PENGARUH *ESSENTIAL OIL* DAUN SIRIH (*Piper betle* L.) SEBAGAI LARVASIDA, ADULTISIDA DAN OVIPOSISI TERHADAP NYAMUK *Aedes aegypti* DI DAERAH SLEMAN, YOGYAKARTA

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Penggunaan bahan kimia sintesis sebagai agen anti nyamuk menimbulkan efek resistensi terhadap vektor dan merugikan lingkungan. Kandungan senyawa aktif daun sirih (*Piper betle* L.) seperti *terpinen-4-ol*, *safrol*, *eugenol*, *hydroxyl chavicol*, dan *eugenyl acetat* memiliki kemampuan penolak gigitan nyamuk. Tujuan dari penelitian ini untuk mengetahui pengaruh larvasida, adultisida dan oviposisi dari *essential oil* daun sirih terhadap nyamuk *Aedes aegypti*. Sebanyak 3 kg daun sirih dikeringkan selama 8 jam dengan suhu 50°C lalu diolah dengan metode destilasi uap-air untuk menghasilkan *essential oil*. Konsentrasi dibuat secara dilusi yang menghasilkan *stock solution* senilai 1, 5, 10, 50, 100, 500, dan 1000 ppm untuk pengujian larvasida, adultisida dan oviposisi. Pengamatan larvasida dilakukan selama satu jam, 24 jam dan 48 jam sedangkan CDC-bottle assay pada uji adultisida dilakukan selama dua jam pemaparan. Hasil yang diperoleh LC₅₀ selama satu jam, 24 jam dan 48 jam pemaparan larvasida secara berturut-turut adalah 183, 92.7, 59.8 ppm, LC₉₀ = 637, 525, 434.7 ppm. Hasil uji adultisida menghasilkan nilai konsentrasi efektif 2.5 µl/ml yang menyebabkan 100% mortalitas dalam waktu 15-30 menit. Selain itu, daun sirih bertindak sebagai *oviposition-deterrent* (penolak oviposisi) pada konsentrasi 100 ppm secara signifikan ($P \leq 0.05$). Kesimpulannya, *essential oil* daun sirih (*Piper betle* L.) dapat menjadi alternatif pengganti terhadap penggunaan senyawa kimia sintesis dalam pengendalian nyamuk *Aedes aegypti*.

Kata kunci : Larvasida, adultisida, oviposisi, *Piper betle*, *Aedes aegypti*

ABSTRACT

THE EFFECT OF BETEL LEAVES (*Piper betle* L.) ESSENTIAL OIL AS LARVACIDE, ADULTICIDE AND OVIPOSITION TO *Aedes aegypti* MOSQUITOES IN SLEMAN REGENCY, YOGYAKARTA

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The use of chemicals as anti-mosquito agent caused resistance effect to the vectors and worst the environment. Betel plant (*Piper betle* L.) has contents bioactive compound as *terpinen-4-ol*, *safrol*, *eugenol*, *hydroxyl chavicol*, and *eugenyl acetate* which have repellent activity. The aim of this study to observe the effects of larvacide, adulticide, and oviposition of betel plant essential oil. Three kilograms betel leaves was dried for 8 hours at high temperature (50°C) and extract by water-steam distillation method to produce essential oil. The concentrations were diluted to produce a stock solution of 1, 5, 10, 50, 100, 500, and 1000 ppm for larvacide, adulticide and oviposition tests. The larvicidal observations were performed for one hour, 24 hours and 48 hours while the CDC-bottle assay on the adulticide test was performed for two hours of exposure. The results had values of LC₅₀ for one hour, 24 hours, and 48 hours of larvacide exposure were 183, 92.7, 59.8 ppm, LC₉₀ = 637, 525, 434.7 ppm, respectively. Adulticide test results showed effective concentration was 2.5 µl/ml which caused 100% mortality within 15-30 minutes. In addition, betel leaves had oviposition-deterrent activity at 100 ppm concentrations significantly ($P \leq 0.05$). The conclusion is essential oil of betel leaf (*Piper betle* L.) could be an alternative use of synthetic chemical compounds to control *Aedes aegypti* mosquitoes.

Keywords: Larvacide, adulticide, oviposition, *Piper betle*, *Aedes aegypti*