

**INSECTICIDAL POWER OF TAGETES OIL (*Tagetes erecta* L.)  
AS BASIC MATERIAL OF ELECTRIC LIQUID VAPORIZER AGAINST  
*Aedes aegypti***

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**ABSTRACT**

**Background:** Dengue haemorrhagic fever (DHF) is a disease that became a problem in public health in Indonesia. The morbidity of DHF is high. DHF is caused by *Aedes aegypti* bites. To prevent the transmission, vector control is needed. One of the most common methods is electric liquid vaporizer. Basic compounds which are less toxic to humans and environment, such as tagetes oil (*Tagetes erecta* L.) is preferred.

**Objectives:** To know the killing effect of tagetes oil (*Tagetes erecta* L.) 100% concentration as a basic compound of electric liquid vaporizer, knockdown time (KT<sub>50</sub> and KT<sub>90</sub>). And to know the comparison of KT<sub>50</sub> and KT<sub>90</sub> between tagetes oil and prallethrin 13,16 g/l against *Aedes aegypti*.

**Methods:** This experiment using Quasi experimental with post test only group design. Subjects were divided into 3 groups: group I (negative control), group II (tagetes oil 100% concentration), and group III (positive control). Each group using 25 *Aedes aegypti* aged 2-5 days. Mosquitoes were put in an experiment room previously exposed with electric liquid vaporizer based on the groups. Test replication was done 3 times. Knockdown time (KT<sub>50</sub> and KT<sub>90</sub>) were observed. Observation results were analyzed using Probit Analysis.

**Results:** The result showed that from group I (negative control), there was one mosquito knocked down in third replication. While in first and second replication knockdown results were not obtained. From group II (Tagetes oil), KT<sub>50</sub> was recorded in 148,58 minutes and KT<sub>90</sub> in 187,92 minutes. From group III (positive control), KT<sub>50</sub> was recorded in 64,21 and KT<sub>90</sub> in 109,83 with 95% CI.

**Conclusion:** Tagetes oil has insecticidal effect against *Aedes aegypti*, but the effect of tagetes oil was not better than prallethrin 13,16 g/l.

**Keywords:** *Aedes aegypti*, electric liquid vaporizer, tagetes oil, *Tagetes erecta* L.

## INTISARI

**Latar Belakang:** Penyakit demam berdarah dengue (DBD) merupakan salah satu masalah kesehatan masyarakat di Indonesia. DBD adalah penyakit infeksi yang disebabkan oleh gigitan nyamuk *Aedes aegypti* yang membawa virus dengue. Pemutusan rantai penularan penyakit DBD salah satunya dapat dengan penggunaan obat anti nyamuk elektrik cair. Untuk menghindari efek buruk dari bahan kimia sintetik, dibutuhkan bahan pengganti dari bahan alami. Salah satu alternatifnya ialah minyak atsiri daun tahi kotok (*Tagetes erecta L.*).

**Tujuan Penelitian:** Untuk mengetahui daya bunuh minyak atsiri daun tahi kotok (*Tagetes erecta L.*) pada konsentrasi 100% sebagai bahan dasar obat anti nyamuk elektrik cair, mengetahui waktu mencapai  $KT_{50}$  dan  $KT_{90}$  antara minyak atsiri daun tahi kotok (*Tagetes erecta L.*) konsentrasi 100% dan prallethrin 13,16 g/l terhadap mortalitas nyamuk *Aedes aegypti*.

**Metode penelitian:** *Quasi experimental* dengan *post test only group design*. Nyamuk dibagi menjadi 3 kelompok perlakuan, kelompok I (kontrol negatif), kelompok II (minyak atsiri daun tahi kotok 100%), kelompok III (kontrol positif). Nyamuk diamati sampai mengalami *knockdown* pada  $KT_{50}$  dan  $KT_{90}$ . Hasil pengamatan dianalisis menggunakan analisis probit.

**Hasil pengamatan:** Pada kelompok I (kontrol negatif), terdapat satu ekor nyamuk mati. Pada kelompok II (minyak tagetes) didapatkan  $KT_{50}$  dan  $KT_{90}$  adalah 148,58 dan 187,92 menit. Pada kelompok III (kontrol positif) didapatkan  $KT_{50}$  dan  $KT_{90}$  adalah 64,21 dan 109,83 menit. Dengan batas kepercayaan 95%.

**Kesimpulan:** Minyak atsiri daun tahi kotok (*Tagetes erecta L.*) konsentrasi 100% memiliki daya bunuh terhadap nyamuk *Aedes aegypti*, namun daya bunuhnya tidak lebih baik dibandingkan dengan prallethrin 13,16 g/l.

**Kata Kunci:** *Aedes aegypti*, Obat nyamuk elektrik cair, *Tagetes erecta L.*