

**Natural Insecticide Power of *Tagetes* flowers (*Tagetes erecta* L.) at  
Concentration of 50% Against Adult *Culex quinquefasciatus* Mosquitoes**

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**ABSTRACT**

**Background:** *Culex quinquefasciatus* is a species of mosquitoes that acts as an important disease vector, such as *West Nile Virus* and Filariasis. In Indonesia these mosquitoes spread fairly evenly, especially in the tropical climate precisely in Java. Filariasis disease is one of the public health problems in Indonesia. Termination of the chain of transmission of Filariasis disease one of them can be with the use of electric anti-mosquito drugs. To avoid the adverse effects of synthetic chemicals, a substitute of natural ingredients is required. One alternative is with the essential oil of *Tagetes* flowers (*Tagetes erecta* L.).

**Objective:** To know the effectiveness of essential oil from *Tagetes* flowers at concentration of 50% as the basic substance of electric liquid anti-mosquito drugs, to compare the time of  $KT_{50}$  and  $KT_{90}$  between the essential oil of *Tagetes* flowers at concentration 50% and transflutrin 12,38 g/l against the mortality of *Culex quinquefasciatus* mosquitoes.

**Methods:** Quasi experimental with post test only group design. The mosquitoes were divided into 3 treatment groups, group I (negative control), group II (essential oil of *Tagetes* flowers at concentration of 50%), and group III (positive control). Mosquitoes were observed until knockdown on  $KT_{50}$  and  $KT_{90}$ . The observed results were analyzed using probit analysis.

**Results:** The results showed that in group I (negative control) there were no *Culex quinquefasciatus* mosquitoes that died after 24 hours. Group II (essential oil of *Tagetes* flowers at concentration of 50%),  $KT_{50}$  at 192 minutes and  $KT_{90}$  at 443 minutes. Group III (positive control),  $KT_{50}$  at 40.99 minutes and  $KT_{90}$  at 77.41 minutes.

**Conclusion:** The essential oil of *Tagetes* flowers (*Tagetes erecta* L.) at concentration of 50% have a killing power against *Culex quinquefasciatus* mosquitoes, but its killing power is not better than transflutrin 12.38 g/l.

**Keywords:** *Culex quinquefasciatus*, Filariasis, Electrical liquid vaporizer, *Tagetes erecta* L., Essential oil.

## INTISARI

**Latar Belakang:** *Culex quinquefasciatus* adalah spesies dari nyamuk yang berperan sebagai vektor penyakit yang penting seperti West Nile Virus dan Filariasis. Di Indonesia nyamuk ini persebarannya cukup merata terutama di iklim tropis tepatnya di Pulau Jawa. Penyakit filariasis merupakan salah satu masalah kesehatan masyarakat di Indonesia. Pemutusan rantai penularan penyakit Filariasis 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 dengan minyak atsiri bunga tahi kotok (*Tagetes erecta* L.).

**Tujuan Penelitian:** Untuk mengetahui daya insektisida minyak atsiri bunga tahi kotok (*Tagetes erecta* L.) pada konsentrasi 50% sebagai bahan dasar obat anti nyamuk elektrik cair, mengetahui waktu mencapai  $KT_{50}$  dan  $KT_{90}$  antara minyak atsiri bunga tahi kotok (*Tagetes erecta* L.) konsentrasi 50% dan transflutrin 12,38 g/l terhadap mortalitas nyamuk *Culex quinquefasciatus*.

**Metode:** *Quasi experimental* dengan *post test only group design*. Nyamuk dibagi menjadi 3 kelompok perlakuan, kelompok I (aquadest), kelompok II (minyak atsiri bunga tahi kotok 50%), kelompok III (transflutrin 12,38 g/l). Nyamuk diamati sampai mengalami *knockdown* pada  $KT_{50}$  dan  $KT_{90}$ . Hasil pengamatan dianalisis menggunakan analisis probit.

**Hasil Pengamatan:** Kelompok I (kontrol negatif) tidak terdapat nyamuk *Culex quinquefasciatus* yang mati. Kelompok II (minyak atsiri bunga tahi kotok 50%),  $KT_{50}$  pada 192 menit dan  $KT_{90}$  pada 443 menit. Kelompok III (kontrol positif),  $KT_{50}$  pada 40,99 menit dan  $KT_{90}$  pada 77,41 menit.

**Kesimpulan:** Minyak atsiri bunga tahi kotok (*Tagetes erecta* L.) konsentrasi 50% memiliki daya bunuh terhadap nyamuk *Culex quinquefasciatus*, namun daya bunuhnya tidak lebih baik dibandingkan transflutrin 12,38 g/l.

**Kata Kunci:** *Culex quinquefasciatus*, Filariasis, Obat nyamuk elektrik cair, *Tagetes erecta* L., Minyak atsiri.