

ABSTRACT

ANALYSIS OF MALATHION INSECTICIDE RESISTANCE IN *Aedes aegypti* MOSQUITOES USING THE CDC BOTTLE BIOASSAY METHOD IN KEMILING DISTRICT, BANDAR LAMPUNG CITY

By

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Background: *Aedes aegypti* is the primary vector of dengue fever, which is commonly controlled using insecticides such as malathion. However, in recent years, this mosquito has begun to show resistance to malathion in various regions. Kemiling District has recorded the highest number of dengue cases in Bandar Lampung City over the past two years, yet no studies have examined the resistance status of *Aedes aegypti* to malathion in this area using the CDC Bottle Bioassay method.

Methods: This study employed an experimental approach using a Completely Randomized Design (CRD). *Aedes aegypti* samples were collected from 20 houses (4 ovitraps per house) across three subdistricts. Eggs obtained from ovitraps were reared to adulthood and then tested for resistance using the CDC Bottle Bioassay method with 0.8% malathion (50 µg/bottle). A total of 360 mosquitoes were tested, and mortality was recorded after 120 minutes of exposure. Data were analyzed using the Kruskal-Wallis test, followed by the Mann-Whitney post hoc test.

Results: The mortality rates of mosquitoes exposed to malathion were 95% in Sumber Rejo, 96.7% in Beringin Raya, and 96.6% in Sumber Agung. All three areas were categorized as having possible resistance (tolerance).

Conclusion: *Aedes aegypti* mosquitoes in the three subdistricts of Kemiling District showed indications of resistance to malathion. These findings highlight the need for regular resistance monitoring and evaluation of insecticide effectiveness in dengue vector control efforts.

Keywords: *Aedes aegypti*, CDC Bottle Bioassay, malathion, resistance.

ABSTRAK

ANALISIS RESISTANSI INSEKTISIDA MALATHION TERHADAP NYAMUK *Aedes aegypti* MENGGUNAKAN METODE *CDC* *BOTTLE BIOASSAY* DI KECAMATAN KEMILING KOTA BANDAR LAMPUNG

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Latar Belakang: *Aedes aegypti* merupakan vektor utama demam berdarah dengue (DBD) yang umumnya dikendalikan dengan insektisida seperti malathion. Namun beberapa tahun terakhir, nyamuk ini mulai menunjukkan resistansi terhadap malathion di berbagai daerah. Kecamatan Kemiling memiliki kasus DBD tertinggi di Kota Bandar Lampung dalam dua tahun terakhir, tetapi belum ada penelitian tentang resistansi *Aedes aegypti* terhadap malathion di wilayah ini dengan metode *CDC Bottle Bioassay*.

Metode: Penelitian ini menggunakan desain eksperimental dengan Rancangan Acak Lengkap (RAL). Sampel *Aedes aegypti* diperoleh dari 20 rumah warga (4 ovitrap per rumah) di tiga kelurahan. Telur hasil ovitrap dibesarkan hingga dewasa, kemudian diuji resistansinya dengan metode *CDC Bottle Bioassay* menggunakan malathion 0,8% (50 µg/botol). Sebanyak 360 nyamuk diuji, dan angka kematian diamati setelah 120 menit paparan. Data dianalisis menggunakan *Kruskal-Wallis*, dilanjutkan dengan uji *Post Hoc Mann-Whitney*.

Hasil: Persentase kematian nyamuk setelah paparan malathion di Kelurahan Sumber Rejo adalah 95%, Beringin Raya 96,7%, dan Sumber Agung 96,6%. Ketiga wilayah tersebut masuk dalam kategori kemungkinan resistansi (toleran)

Kesimpulan: Nyamuk *Aedes aegypti* di tiga kelurahan di Kecamatan Kemiling menunjukkan indikasi resistansi terhadap insektisida malathion. Hasil ini menunjukkan perlunya pemantauan resistansi secara berkala dan evaluasi terhadap efektivitas penggunaan insektisida dalam pengendalian vektor DBD.

Kata Kunci: *Aedes aegypti*, *CDC Bottle Bioassay*, malathion, resistansi.