

ABSTRAK

Penyakit Demam Berdarah Dengue (DBD) merupakan penyakit yang disebabkan oleh infeksi virus dengue melalui gigitan nyamuk *Aedes* terutama *Aedes aegypti*. Pada tahun 2022, terhitung dari 1 Januari hingga 24 September tercatat 8.894 kasus Demam Berdarah Dengue (DBD) di Jawa Timur dengan jumlah kematian sebanyak 110 orang. Insektisida bendiocarb, yang termasuk dalam golongan karbamat, digunakan sebagai insektisida untuk pengujian resistensi. Penelitian ini bertujuan untuk mendeteksi keberadaan gen *Ace-1* sebagai penanda resistensi terhadap insektisida bendiocarb pada nyamuk *Aedes aegypti* dengan menggunakan real-time PCR. Status resistensi diuji dengan metode *CDC bottle bioassay* di Laboratorium Entomologi Dinas Kesehatan Provinsi Jawa Timur, dan deteksi gen *Ace-1* diuji di Laboratorium Biologi Molekuler Fakultas Teknologi Laboratorium Medik Politeknik Kesehatan Kemenkes Surabaya. Jumlah perlakuan pada penelitian ini terdiri dari empat botol uji dan satu botol kontrol. Hasil akhir yang muncul ketika gen *Ace-1* terdeteksi oleh real-time PCR adalah nilai Ct. Hasil akhir menunjukkan bahwa 4 sampel memperoleh hasil positif gen *Ace-1* dengan nilai yaitu, sampel 1 (C12) memiliki nilai Ct sebesar 16,39, sampel 2 (D12) memiliki nilai Ct sebesar 15,18, sampel 3 (E12) memiliki nilai Ct sebesar 29,88, sampel 4 (F12) memiliki nilai Ct sebesar 29,85 dan sampel kontrol memiliki nilai Ct sebesar 29,53. Dari segi persentase, dapat disimpulkan bahwa gen *Ace-1* terdeteksi pada 100% sampel..

Kata Kunci : Nyamuk *Aedes aegypti*, Gen *Ace-1*, *Real-Time* PCR, Nilai Ct

ABSTRACT

Dengue Hemorrhagic Fever (DHF) is a disease caused by dengue virus infection through the bite of *Aedes* mosquitoes, especially *Aedes aegypti*. In 2022, from January 1 to September 24, 8,894 cases of Dengue Hemorrhagic Fever (DHF) were recorded in East Java with 110 deaths. The insecticide used in the resistance test was bendiocarb insecticide, which belongs to the carbamate group. The aim of this study was to detect the presence or absence of the *Ace-1* gene as a marker of resistance to bendiocarb insecticides in *Aedes aegypti* mosquitoes using the Real-Time PCR method. This research is quantitative descriptive. Resistance status was tested using the CDC Bottle Bioassay method conducted at the Entomology Laboratory of the East Java Provincial Health Office and *Ace-1* gene detection conducted at the Molecular Biology Laboratory, Medical Laboratory Technology Department, Poltekkes Kemenkes Surabaya. The number of treatments in this study consisted of four test bottles and one control bottle. The final result that appears on the detection of the *Ace-1* gene using Real-Time PCR is the value of Ct. The final results show that the 4 samples obtained positive results for the *Ace-1* gene with a value that is sample 1 (C12) has a Ct value of 16.39, sample 2 (D12) has a Ct value of 15.18, sample 3 (E12) has a Ct value of 29.88, in sample 4 (F12) it has a Ct value of 29.85, and in the control sample it has a Ct value of 29.53. In conclusion, the percentage obtained was 100% of the sample, which detected the *Ace-1* gene.

Keywords : *Aedes aegypti* mosquito, *Ace-1* gene, Real-Time PCR, Ct value