

ABSTRAK

Demam Berdarah Dengue (DBD) atau Dengue Hemorrhagic Fever (DHF) menjadi penyakit yang pola kejadiannya tidak mudah dikendalikan. Di antara berbagai jenis metode, penggunaan metode kimiawi masih banyak dipilih masyarakat karena faktor kemudahan. Namun penggunaan yang dilakukan secara terus menerus akan dapat menyebabkan resistensi nyamuk vector DBD terhadap bahan kimia tersebut. Indikator resistensi nyamuk terhadap insektisida organofosfat adalah insensitivitas *acetylcholinesterase* sebagai gen pengkode gen *Ace-1*. Tujuan penelitian ini untuk mendeteksi gen *Ace-1* resisten organofosfat pada nyamuk *Aedes aegypti*. Penelitian ini merupakan deskriptif kuantitatif. Sampel penelitian ini menggunakan nyamuk *Aedes aegypti* betina dewasa dengan umur 2-5 hari dengan daya tahan tubuh yang baik, masih kuat dan produktif. Status resistensi diuji dengan metode CDC bottle bioassay bertempat di Laboratorium Entomologi Dinas Kesehatan Provinsi Jawa Timur pada bulan april 2022 dan deteksi gen *Ace-1* ditegakkan secara molekuler dengan menggunakan Realtime - Polymerase Chain Reaction di Laboratorium Biologi Molekuler Jurusan Teknologi Laboratorium Medis pada bulan april sampai mei 2022. Data penelitian berupa data hasil uji deteksi resisten secara konvensional dengan menggunakan metode CDC bottle assay dan dilanjutkan dengan Realtime - Polymerase chain reaction serta pembacaan hasil pada amplifikasi DNA dengan nilai CT (Cycle Threshold). Hasil penelitian ini menunjukkan dari 4 sampel diperoleh hasil 1 positif diantaranya dengan nilai CT sebesar 1,47 pada sampel 4 (A04) sedangkan 3 lainnya negatif yang ditandai dengan keterangan N/A (Not Available) atau tidak terdapat gen primer pada gen target.

Kata Kunci : *Aedes aegypti*, gen *Ace-1*, RT-PCR, nilai CT (Cycle Treshold)

ABSTRACT

Dengue Hemorrhagic Fever (DHF) or Dengue Hemorrhagic Fever (DHF) is a disease whose pattern of occurrence is not easily controlled. Among the various types of methods, the use of chemical methods is still widely chosen by the community because of the convenience factor. However, continuous use will lead to the resistance of dengue vector mosquitoes to these chemicals. The indicator of mosquito resistance to organophosphate insecticides is the insensitivity of acetylcholinesterase as the gene encoding the *Ace-1* gene. The purpose of this study was to detect the organophosphate resistant *Ace-1* gene in the *Aedes aegypti* mosquito. This research is a quantitative descriptive. The sample of this study used adult female *Aedes aegypti* mosquitoes aged 2-5 days with good immune system, still strong and productive. Resistance status was tested using the CDC bottle bioassay method at the Entomology Laboratory of the East Java Provincial Health Office in April 2022 and detection of the *Ace-1* gene was confirmed molecularly using Realtime - Polymerase Chain Reaction at the Molecular Biology Laboratory, Medical Laboratory Technology, from April to May 2022. The research data is in the form of the results of the conventional resistance detection test using the CDC bottle assay method and followed by Realtime - Polymerase chain reaction and reading the results on DNA amplification with CT (Cycle Threshold) values. The results of this study showed that from 4 samples, 1 positive result was obtained, including a CT value of 1.47 in sample 4 (A04) while the other 3 were negative which was indicated by the statement N/A (Not Available) or there was no primary gene in the target gene.

Keywords: *Aedes aegypti*, *Ace-1* gene, RT-PCR, CT (Cycle Threshold) value