ABSTRAK

KARAKTERISASI BAKTERI YANG BERASOSIASI DENGAN *Elaeidobius kamerunicus* SERTA POTENSINYA SEBAGAI ENTOMOPATOGEN DAN PELARUT FOSFAT

Oleh

Muhammad Naufal Hafidz

Penelitian ini dilakukan berdasarkan pentingnya peran *Elaeidobius kamerunicus* sebagai serangga penyerbuk utama kelapa sawit serta potensinya sebagai bakteri asosiasi yang dapat dimanfaatkan sebagai agens hayati ramah lingkungan. Penelitian bertujuan untuk mengeksplorasi, mengisolasi, dan mengkarakterisasi bakteri yang berasosiasi dengan *E. kamerunicus* serta mengevaluasi potensinya sebagai entomopatogen dan pelarut fosfat. Penelitian dilaksanakan pada Agustus 2025 hingga Januari 2026 di Gedung Pusat Kajian Cassava, Kelapa Sawit, Tebu, Kopi, Lada, dan Kakao, serta Laboratorium Bioteknologi Fakultas Pertanian, Universitas Lampung. Sampel serangga dikoleksi dari Sumatera Barat, Sumatera Utara, Sumatera Selatan, dan Lampung. Bakteri diisolasi pada media YPA dan dikarakterisasi melalui pengamatan morfologi, uji Gram, oksidatif/fermentatif, hipersensitif, soft rot, hipovirulen, serta kemampuan melarutkan fosfat pada media Pikovskaya. Uji patogenisitas dilakukan terhadap larva *Tenebrio molitor*. Hasil penelitian menunjukkan diperolehnya 177 isolat bakteri dengan keragaman morfologi tinggi. Sebagian besar isolat tergolong Gram positif (71,75%) dan bersifat fermentatif (61%). Sebanyak 65,53% isolat mampu melarutkan fosfat, sedangkan hanya 1,69% isolat yang menunjukkan reaksi hipersensitif. Uji soft rot menunjukkan 33% isolat bersifat pektinolitik dan sebagian besar tergolong hipovirulen. Beberapa isolat menunjukkan aktivitas entomopatogenik terhadap larva *T. molitor* dengan mortalitas tertinggi mencapai 26,6%. Secara keseluruhan, bakteri asosiasi *E. kamerunicus* memiliki keragaman karakteristik serta dan berpotensi dikembangkan sebagai sumber agens hayati multifungsi untuk mendukung pengendalian hayati berkelanjutan.

Kata kunci: bakteri asosiasi, biokontrol, *Elaeidobius kamerunicus*, entomopatogen, pelarut fosfat.

ABSTRACT

CHARACTERIZATION OF BACTERIA ASSOCIATED WITH ELAEIDOBIUS KAMERUNICUS AND THEIR POTENTIAL AS ENTOMOPATHOGENS AND PHOSPHATE-SOLUBILIZING BACTER

By:

Muhammad Naufal Hafidz

This study was conducted based on the important role of Elaeidobius kamerunicus as the primary oil palm pollinating insect and the potential of its associated bacteria as environmentally friendly biological agents. The study aimed to explore, isolate, and characterize bacteria associated with E. kamerunicus and to evaluate their potential as entomopathogenic and phosphate-solubilizing bacteria. The research was carried out from August 2025 to January 2026 at the Cassava, Oil Palm, Sugarcane, Coffee, Pepper, and Cocoa Research Center Building and the Biotechnology Laboratory, Faculty of Agriculture, University of Lampung. Insect samples were collected from West Sumatra, North Sumatra, South Sumatra, and Lampung. Bacteria were isolated on YPA medium and characterized through morphological observation, Gram staining, oxidative/fermentative, hypersensitivity, soft rot, hypovirulence, and phosphate-solubilization tests on Pikovskaya medium. Pathogenicity tests were conducted using Tenebrio molitor larvae. The results showed that 177 bacterial isolates with high morphological diversity were obtained. Most isolates were Gram-positive (71.75%) and fermentative (61%). A total of 65.53% of the isolates were capable of solubilizing phosphate, while only 1.69% exhibited a positive hypersensitivity reaction. The soft rot test indicated that 33% of the isolates were pectinolytic, and most were classified as hypovirulent. Several isolates exhibited entomopathogenic activity against T. molitor larvae, with the highest mortality reaching 26.6%. Overall, bacteria associated with E. kamerunicus exhibited diverse characteristics and have the potential to be developed as multifunctional biological control agents to support sustainable biological pest management.

Keywords: Elaeidobius kamerunicus, associated bacteria, entomopathogen, phosphate-solubilizing bacteria, biological control.