

Identifikasi Morfologi dan Molekuler *Cimex* sp. (Hemiptera: Cimicidae) di Yogyakarta dan Jawa Tengah

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INTISARI

Cimex sp. (Hemiptera: Cimicidae) dikenal sebagai kutu busuk atau kutu kasur. yang menginvasi kelelawar, unggas, mamalia kecil, dan manusia. Efek infestasi kutu kasur pada hospes dapat menimbulkan: perubahan fisik, infeksi sekunder, kerugian psikologis, ekonomi, dan merupakan vektor penyakit. Spesies *Cimex* sp. yang menyerang manusia yaitu *Cimex lectularius* (kutu kasur biasa) dan *Cimex hemipterus* (kutu kasur tropis). Perbedaan keduanya terletak di anterior pronotum yang lebih cekung dan rasio $>2,5$ pada *Ci. lectularius*. Penelitian ini bertujuan untuk mengetahui keragaman spesies *Cimex* sp. di Yogyakarta dan Jawa Tengah berdasarkan karakter morfologi dan runutan nukleotida *Cytochrome Oxidase subunit I*, 16S rRNA, dan *Internal transcribed spacer 2* (ITS 2). Pengambilan sampel dilakukan di wilayah Yogyakarta dan Jawa Tengah, Indonesia. Meliputi rumah tinggal, asrama, pesantren, *restaurant*, dan *guesthouse*. Identifikasi spesies dilakukan secara morfologi berdasarkan pengamatan mikroskop, morfometri, dan ultrastruktur dengan *Scanning Electron Microscope*. Gen COX I, 16S rRNA, ITS2 diamplifikasi dengan teknik *Polymerase Chain Reaction* (PCR) menggunakan primer CIMCOXI, CIM16S, CIMITS2. Produk PCR disekuensing dan dianalisis variasi genetik serta hubungan filogenetik menggunakan software MEGA X. Analisis morfologi dan morfometri menunjukkan bahwa kutu kasur di Bantul, Kotamadya Yogyakarta, Solo, dan Pati adalah *Cimex hemipterus* dengan ciri: stylet memanjang hingga protoraks, pronotum sedikit cekung dengan rasio 2,1-2,4, paragenital sinus di sisi kanan segmen kelima, dan hemelytra membulat. Panjang tubuh 1-7 mm tergantung umur dan fase hidup. Hasil amplifikasi gen COX I, 16S rRNA, dan ITS2 diperoleh masing-masing 402, 399, 950 nukleotida. Hasil sekuensing DNA dibandingkan dengan *Cimex* sp. di Genbank menggunakan program *ClustalW* untuk melihat keberagaman antar wilayah. Sampel *Cimex* yang diperoleh di empat lokasi penelitian tidak memiliki perbedaan nukleotida dengan *Cimex hemipterus*. Kutu kasur asal Bantul, Kotamadya Yogyakarta, Solo, dan Pati adalah *Cimex hemipterus*.

Kata kunci : Kutu kasur, *Cimex hemipterus*, COX I, 16S rRNA, ITS2

Morphology and Molecular Identification of *Cimex* sp. (Hemiptera: Cimicidae) in Yogyakarta and Central Java

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Abstract

Cimex sp. (Hemiptera: Cimicidae) are acknowledged as stink bug or bed bugs. *Cimex* sp. invades bats, poultry, small mammals and humans. The effects of bed bugs infestation is caused physical changes, secondary infections, disease vectors, psychological, and economic loss. The most well-known *Cimex* sp. invade humans are *Cimex lectularius* (common bed bug) and *Cimex hemipterus* (tropical bed bug). The different between the two lies on the anterior margins that deeply excavated with ratio $>2,5$ in *Ci. lectularius*. This study aims to determine the diversity of species of *Cimex* sp. found in Yogyakarta and Central Java, based on morphological characters and nucleotide sequences of the Cytochrome Oxidase Subunit I, 16S rRNA, and Internal Transcribed Spacer 2 (ITS 2). Sampling was carried out at Yogyakarta and Central Java regions, Indonesia. Includes residences, dormitories, boarding schools, restaurants, and guesthouses. Species identification is carried out morphologically based on microscopic and ultrastructural observations with a Scanning Electron Microscope. The COX I, 16S rRNA, ITS2 gene amplified by Polymerase Chain Reaction (PCR) method using primers CIMCOXI, CIM16S, and CIMITS2. PCR products sequenced and genetically analyzed using MEGA software version X for any variation and phylogenetic relationship. Morphological analysis by identification character and morphometry shows that the bed bugs obtained at Bantul, Yogyakarta, Solo, and Pati locations were *Cimex hemipterus*. The morphology are stylet elongated to prothorax, pronotum moderately excavated with 2,1-2,4 ratio, paragenital sinus on the right part of fifth segmen, and rounded hemelytra. No morphological variation was distinguished, the total body length is 1-7 mm depend on its life stage. DNA sequence analyzed with MEGA X software obtained 406, 399, and 950 nucleotides. The sequence is aligned with *Cimex* sp. at Genbank using ClustalW program to distinguish any diversity among regions. Bed bugs sample from 4 area did not show any intraspecific differences to *Cimex hemipterus*. *Cimex* originated from Bantul, Kotamadya Yogyakarta, Solo, and Pati is *Cimex hemipterus*.

Keywords: Bed bugs, *Cimex hemipterus*, COX I, 16S rRNA, ITS2.