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BD03

DNA Barcodes of Black Flies (Diptera: Simuliidae) in Indonesia

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Abstract

Introduction: The accurate species identification of black flies is critical for effective control and management of these medically important arthropods. However, identification of black flies is challenging due to their small size and high structural homogeneity. Recently, DNA barcoding has been employed as a powerful approach in complementing the traditional taxonomic techniques for the Simuliidae family. **Methods:** Black flies from Indonesia were DNA barcoded using the mitochondrial cytochrome *c* oxidase subunit 1 (COI) sequences. The evolutionary relationships between Indonesian black fly species were examined through phylogenetic analyses. **Results:** A total of 87 mitochondrial COI sequences were generated in this study, representing 30 black fly species of three subgenera under the *Simulium* genus. BLAST search results showed that 44 sequences of 15 species were novel sequences. The novel sequences can serve as reference sequences to aid in accurate species identification of Indonesian black flies. **Conclusion:** DNA barcoding is a promising tool in the molecular study of black flies in Indonesia. (159 words)

Keywords: *Simulium*, DNA barcoding, COI, phylogeny, Indonesia

BD04

DNA Barcoding of Black Flies (Diptera: *Simuliidae*) in Vietnam

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Abstract

Introduction: Rapid and accurate species identification is required for Vietnamese black flies considering their potential as vectors in transmitting diseases to humans and animals. Morphotaxonomy is often impeded by black flies' structural homogeneity, whereas cytotaxonomy is only applicable to black fly larvae. This prompts the use of DNA barcoding, which has been proven to be an effective molecular tool in species delimitation of black flies. **Methods:** Mitochondrial COI gene was used as the genetic marker in delineating Vietnamese black flies species. COI sequences obtained were blasted against the NCBI GenBank database. **Results:** A total of 137 COI sequences were obtained from 46 species in three subgenera (*Simulium* s. str., *Gomphostilbia* and *Nevermannia*) of the genus *Simulium* in Vietnam. Of these sequences, 71 from 26 species were reported for the first time. **Conclusion:** The sequences generated from this study could serve as the DNA barcode reference sequences in assisting local simuliologists to accurately identify Vietnamese black fly species, and thus aiding in the control of the black flies. (167 words)

Keywords: DNA barcode, COI gene, black flies, *Simulium*, Vietnam