

Molecular evidence for the presence of malaria vector species a of the *Anopheles annularis* complex in Sri Lanka

Surendran, S.N.^a , Gajapathy, K.^a , Kumaran, V.^a , Tharmatha, T.^a , Jude, P.J.^a and Ramasamy, R.^b

^a Department of Zoology, Faculty of Science, University of Jaffna, Sri Lanka

^b PAPSRB Institute of Health Sciences, Universiti Brunei Darussalam, Gadong BE 1410, Brunei Darussalam

Abstract

Background: *Anopheles annularis* s.l. is a wide spread malaria vector in South and Southeast Asia, including Sri Lanka. The taxon *An. annularis* is a complex of two sibling species viz. A and B, that are differentiated by chromosome banding patterns and ribosomal gene sequences in India. Only species A is reported to be a malaria vector in India while the occurrence of sibling species in Sri Lanka has not been documented previously. Findings. Anopheline larvae were collected at a site in the Jaffna district, which lies within the dry zone of Sri Lanka, and reared in the laboratory. Emerged adults were identified using standard keys. DNA sequences of the D3 domain of 28S ribosomal DNA (rDNA) and the internal transcribed spacer-2 (ITS-2) of the morphologically identified *An. annularis* were determined. BLASTn searches against corresponding *An. annularis* sequences in GenBank and construction of phylogenetic trees from D3 and ITS-2 rDNA sequences showed that the Sri Lankan specimens, and *An. annularis* s.l. specimens from several Southeast Asian countries were closely related to species A of the Indian *An. annularis* complex. Conclusions: The results show the presence of the malaria vector *An. annularis* species A in Sri Lanka and Southeast Asia. Because *An. annularis* vectors have been long associated with malaria transmission in irrigated agricultural areas in the Sri Lankan dry zone, continued monitoring of *An. annularis* populations, and their sibling species status, in these areas need to be integral to malaria control and eradication efforts in the island.

Author keywords

Anopheles annularis; malaria vector; ribosomal genes; sibling species; Southeast Asia; Sri Lanka

Indexed keywords

EMTREE drug terms: internal transcribed spacer 2; ribosome DNA

EMTREE medical terms: *Anopheles*; *anopheles annularis*; article; DNA sequence; larva; malaria; nonhuman; nucleotide sequence; parasite identification; parasite vector; phylogenetic tree; Sri Lanka; animal; classification; disease carrier; disease transmission; genetics; growth, development and aging; molecular genetics; phylogeny

Species Index: *Anopheles annularis*

MeSH: Animals; *Anopheles*; Insect Vectors; Larva; Malaria; Molecular Sequence Data; Phylogeny; Sri Lanka
Medline is the source for the MeSH terms of this document.