Anopheline Species Complexes and Malaria Control in Sri Lanka

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Morphologically more or less similar and reproductively isolated species within a taxon known as cryptic species or sibling species or isomorphic species and the taxon as species complex. Conventional taxonomic keys could not be used to identify members of species complex. There are major vectors, poor vectors and non vectors in a species complex and these sibling species exhibit distinct differences with reference to distribution, seasonality, host preference, susceptibility to parasites, susceptibility to insecticides, resting habits, breeding habits etc. Meaningful epidemiological studies and effective vector control programmes depend on efficient methods for differentiating major vectors, poor vectors and non vectors of anopheline species complexes.

Anopheles culicifacies is the major vector of malaria in the Indian subcontinent and Sri Lanka. It is known to exist as a complex of five sibling species designated provisionally as A, B, C, D and E. All five species are found in India. Species A, C, D and E are considered as major vectors, while species B is a non vector in India. However, only species B and E are present in Sri Lanka. Species E and B are considered as major vector and poor vector of malaria respectively in the island. Species E appears to be predominant in most parts of the country while species B is less common but sympatric with species E in some localities. *An. subpictus* and *An. annularis*, secondary/potential vectors of malaria in Sri Lanka are known to be species complexes. However, vector incrimination status of the members of these two complexes is unknown.

Various methods and techniques have been used for identifying sibling species ranging from crossing experiments, cytogenetics, isoenzymes, hydrocarbon profiles, DNA probes, rDNA-PCR, mtDNA-PCR and RAPD-PCR. In our studies, cytogenetics and DNA based methods viz. DNA probes, RAPD-PCR, rDNA-PCR, mtDNA-PCR were used to differentiate species B and E of *An. culicifacies* and species A, B, C and D of *An. subpictus* in Sri Lanka.

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