

Characterization of leishmaniasis vectors in selected areas in Sri Lanka

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Introduction

Leishmaniasis, caused by parasites that belong to the genus *Leishmania* and transmitted by vector sandflies, is a major health concern in Sri Lanka. Majority of the cases detected at present are cutaneous leishmaniasis (CL) though a few cases of visceral leishmaniasis (VL) are also reported. Though there are several species of sandflies reported in Sri Lanka, the sandflies that belong to *Phlebotomus argentipes* complex is presumed as the probable vector of Sri Lankan CL, through preliminary studies on distribution of sandflies in the country.

Objectives

The main objective of this study was to characterize the vectors of leishmaniasis in selected areas in Sri Lanka. The identification of species distribution of sandflies in selected disease-endemic areas, identification of the aggregation behavior within animal-baited traps and study of host preference through blood meal analysis were carried out.

Methods

The adult sandflies were collected from selected sites with known local transmission of CL in the Matara, Kurunegala and Hambantota districts using cattle-baited net traps and light traps. Hourly collection of the sandflies attracted to the cattle traps were carried out for a period of 12 hours (overnight) to detect the peak aggregation period. Manual collection of sandflies using mouth aspirators was carried out from resting places (latrines, abandoned buildings, temporarily shelters made for the collection of firewood).

Results

Morphological identification of both male and female sandflies revealed the dominance of *Phlebotomus glaucus* (a subspecies that belong to *P. argentipes* species complex) (n=6766; 74%) in most of the selected sites (08/09). The only other sandfly species found in study areas was a non-human vector that belonged to genus *Sergentomyia* (*S. zeylanica*). Male sandflies outnumbered the female sandflies in a ratio of 8:1 within the cattle-baited net traps. Overnight hourly collections of sandflies showed the peak aggregation around 2000 hours and 2300 hours with highest number appearing within the cattle traps between 2100 hours to 2200 hours. A total of 106 blood-fed sandflies (*P. glaucus* 44, *S. zeylanica* 62) were analyzed using PCR. Blood meals of *P. glaucus* revealed the presence of blood from cattle (n=28), buffalo (n=6) and human (n=10). Majority of blood meals from *S. zeylanica* (46/62) were positive for human blood and rest were negative for mammalian blood.

Conclusions

The sandflies belong to *P.argentipes* complex is the most commonly distributed species in selected districts of Sri Lanka. The probable vector of CL in Sri Lanka (*P.argentipes*) demonstrates zoophilic behavior. *S.zeylanica*, though a non-vector species is likely to play an important role as biting nuisance due to their anthrophilic nature. Further studies are underway to confirm the findings using a bigger sample.

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