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Entomological study on transmission of leishmaniasis in Sri Lanka

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Leishmaniasis is an emerging disease in Sri Lanka caused by a protozoa belonging to the genus *Leishmania* transmitted by the bite of the *Phlebotomus* sandfly. The objective of this study was to examine entomological risk factors affecting transmission of leishmaniasis with regard to the recent confirmed leishmaniasis cases reported (n = 14) and fixed monitoring (n = 2) stations. Adult sand flies were collected using Cattle-Baited Net Traps (CBNT) on 2 consecutive days at both types of stations. Monthly collection of adult sand flies were made at two fixed monitoring stations for 8 months. A rapid molecular-based method for detection of *L. donovani* in vector species was established and field-caught sand flies were tested by a PCR-based assay. Ethical permission for this study was obtained from the Ethical Review Committee of the Faculty of Medicine, University of Kelaniya. The results indicated a high prevalence of *P. argentipes* from both recent leishmaniasis case-reported and fixed monitoring stations. Further, this study clearly demonstrated that distribution of confirmed leishmaniasis cases coincided with the distribution of *P. argentipes* [78% (11/14)]. More than 10 flies/per night/per trap was recorded in more than 50% (7/14) of case-reported stations. Monthly relative density indices of *P. argentipes* showed that this species had high prevalence in two fixed monitoring stations throughout the study period. A PCR-based assay established could detect a minimum of 10 µg/ml of the parasite's DNA. A total number of pools of 965 *P. argentipes* and 150 *Sergentomyia* female adult sand flies were collected from 14 recent leishmaniasis-case reported stations and 2 fixed monitoring stations. When these field-caught flies were tested by PCR-based assay it was revealed that none of the field-caught *P. argentipes* sand fly samples was infected with *L. donovani* parasite. This may be due to the low density of infected vector and / or escaping / death of infected sand flies from selected stations. Prevalence and density of vector species are important risk factors for transmission of leishmaniasis in an area. High prevalence of *P. argentipes* from study areas indicates the possibility of it being the major vector of leishmaniasis in Sri Lanka. Information obtained from this study would be useful for a better understanding of the transmission of leishmaniasis.

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