Title: Molecular identification of sand flies collected from an endemic focus of cutaneous leishmaniasis in Northern India

Suman Lata, Gaurav Kumar, Ramesh C Dhiman

Affiliations: ICMR-National Institute of Malaria Research, New Delhi, India

Authors Email id: suman2jan@gmail.com

**Abstract**

***Background****:* Himachal Pradeshstatein Northern India is the most endemic region for cutaneous leishmaniasis transmission in India. The present study was carried out with an aim to distinguish and identify the sand fly species found in the endemic focus of CL in HP. ***Methods:*** Collections of sand flies were made from endemic villages of cutaneous leishmaniasis in Shimla, Kullu and Kinnaur districts of HP India during 2017-2019. The sand flies were identified morphologically. In addition, genus specific identification was carried by Polymerase Chain Reaction (PCR) of fifty-two sand flies. The PCR amplified products were sequenced for confirmation of sand-fly species. The sequences obtained were submitted to NCBI GenBank under accession no**.** MT126505 to MT126510andcompared for similarities to the NCBI database. ***Results:*** The morphological identification revealed Phlebotomus *(adlerius) longiductus* (Parrot).The sequences obtained were compared for similarities to NCBI database and showed 99-100% similarity with *Phlebotomus longiductus* (Parrot). The phylogenetic tree analysis showed that, the isolates were geographically closest to the sand flies from Bhutan and China. **Conclusion*:*** The study revealed that the *P. longuductus* (Parrot)is the predominant species found in the CL endemic area in HP. The study confirms the identity of *P. longiductus* (Parrot)through molecular tools as well as morphologically. As, P. *longiductus* (Parrot)has been reported to transmit *L. donovani*, therefore, it is important to distinguish these cryptic species as India is in elimination phase of leishmaniasis. **Keywords:** Sand-fly, Himachal Pradesh, Cutaneous leishmaniasis, *P. longiductus.*

**References:**

Lata S, Kumar G, Ojha VP, Dhiman RC. Detection of Leishmania donovani in wild-caught phlebotomine sand flies in endemic focus of leishmaniasis in Himachal Pradesh, India. J Med Entomol. 2022 Mar 16;59(2):719-24. doi: [10.1093/jme/tjab202](https://doi.org/10.1093/jme/tjab202), PMID [34865089](http://www.ncbi.nlm.nih.gov/pubmed/34865089), PMCID [PMC8924965](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8924965).