

Oral presentation: 132

Breeding sites of Phlebotomine sand flies in cutaneous leishmaniasis disease endemic areas of the Kurunegala District in Sri Lanka

T. Wijerathna¹, N. Gunathilaka^{1*}, K. Gunawardena¹ and W. Rodrigo²

¹Department of Parasitology, Faculty of Medicine, University of Kelaniya, Sri Lanka

²Biotechnology Unit, Industrial Technology Institute, Colombo 07, Sri Lanka

*n.gunathilaka@kln.ac.lk

Leishmaniasis is a disease transmitted by the bite of infected female sand flies. Disease control largely depends on the knowledge on natural breeding sites of sand flies. In Sri Lanka, only limited information is available on microhabitats of immature sand flies. Therefore, the present study was conducted to identify natural breeding habitats of sand flies in three cutaneous leishmaniasis endemic areas, namely; Galgamuwa, Polpithigama and Maho in the Kurunegala District of Sri Lanka. Study areas were selected based on the number of patients reported to respective Medical Officer of Health (MOH) during the year 2013 - 2016. A preliminary survey was conducted in April 2017 and possible breeding sites were identified for the survey based on field investigations and previous literature. A breeding habitat checklist was prepared for main habitat categories. Field investigations for immature stages were conducted on a monthly basis from May 2017 - June 2018. Three soil samples were collected randomly from each potential breeding habitat and transported to the laboratory. The soil samples were divided into equal portions, and immature stages of sand flies in one portion were screened by direct microscopic examination and sugar flotation method. The rest of the soil samples were incubated at 26°C and 75-80% Relative Humidity (RH) under confined laboratory conditions for adult emergence. Adult sand flies were identified using morphological identification keys. A total of 433 potential breeding sites were surveyed under 21 habitat categories. Of them, soil mounds were predominant (n=51) followed by leaf litter (n=46), termite hills (n=42) and tank/river margins (n=36). However, only four habitat types were positive for immature stages of *Phlebotomus argentipes*, namely; paddy fields (n=5/10), moist soil in dried tanks (n=2/12), soil beneath decaying organic matter (n=2/7) and cattle huts (n=1/23). All positive sites were enriched with organic matter containing moderate moisture levels. However, further studies are required to understand the physiochemical parameters of breeding sites and by that minimize the sand fly population through management of habitat conditions.

Keywords: Breeding sites, leishmaniasis, *Phlebotomus argentipes*, Sri Lanka, sand flies

Acknowledgement: This work was supported by the National Research Council, Sri Lanka under the research grant NRC 16-142