

Effect of The Domestic Characteristic on Colonization of Phlebotomine Sand Flies: A Case Study in Anuradhapura District, Sri Lanka.

N. M. N. G Nayakarathna^{1*}, G. A. S. M. Ganehiarachchi¹, R.P.V.J Rajapakse², S. R. Jayanetti³

Cutaneous Leishmaniasis (CL) is an endemic vector-borne disease in Sri Lanka. It is caused by protozoan parasite *Leishmania* species and transmitted via infective bite of female Phlebotomine sand flies (Diptera: Psychodidae). The public health importance of this disease is positively increasing due to inadequate knowledge of vector biology. The current study is an attempt to uncover the vector biological aspects, focusing on the successful vector control interventions.

This study was carried out in Anuradhapura district, Sri Lanka; a district with high disease prevalence of CL. Three sampling localities were selected; Thalawa, Padawiya and Wijayapura. A questioner and field studies were carried out in the sampling areas among CL patients to assess the effect of domestic environment characteristics on colonization of phlebotomine sand flies. Presence of decaying garbage, termite hills, manna grass (*Glyceria* sp.), water streams, unclear areas, wet soil areas, scrub jungles and gardening areas are the concerned characteristics for the present study. Field studies were conducted every month for seven months continuously. In every visit, Phlebotomine sand fly samples were collected from the study sites mentioned above using yellow sticky trap method.

Increment of the mean number of sand fly population along with the increment of the number of domestic characteristics was tested with the regression analysis. With the increment of supportive environmental characteristics, sand fly populations were increased linearly ($P = 0.000$) in each site. This relationship revealed that the maximum sand fly populations were recorded in the places with all the tested characteristics stated above. Accordingly, the surrounding characteristics of the domestic environment have a significant effect on the colonization of sand fly populations. Domestic characteristics such as decaying organic matter, wet soil, unclear areas and water streams around the living environment show higher contribution to the colonization of sand flies.

In conclusion, characteristics of the domestic environments have effect on the colonization of sand flies. Increment of the supportive domestic characters intensifies the colonization of sand flies.

Keywords: *Cutaneous Leishmaniasis, Phlebotomine sand fly, Anuradhapura, Environment characteristics, sticky traps*

¹ University of Kelaniya, Sri Lanka

² University of Peradeniya, Sri Lanka

³ Anti Malaria Campaign, Regional office, Anuradhapura district, Sri Lanka *nmgaya3@gmail.com
