

Entomological Assessment of the Risk of Lymphatic Filariasis Transmission in Endemic and Non-Endemic Areas in Galle District

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Five rounds of Mass Drug Administration (MDA) with Diethylcarbamazine plus Albendazole were distributed by the Anti Filariasis Campaign (AFC) nearly to ten million people in eight districts of Sri Lanka between 2002 and 2006. The risk of lymphatic filariasis (LF) to humans is rapidly changing due to unplanned urbanization, increased movement of people, environmental changes, and biological challenges such as vectors resistant to insecticides and evolving strains of pathogens. This study was aimed to assess the entomological risk factors of LF transmission in endemic and non-endemic areas in the District of Galle, Sri Lanka. According to the night blood films records and mosquito Xenomonitoring records, Balapitiya, Ambalangoda, and Hikkaduwa Medical Officers of Health (MOH) areas were selected as the main endemic MOH areas and Baddegama and Gonapinuwala were selected as the non-endemic MOH areas in Galle district. Entomological surveillances were conducted on a monthly basis for a period of 05 months from October 2021 to February 2022 in endemic and non-endemic areas using two standard field collection techniques named Human Landing Catches (HLC) and Gravid Traps (GT). Collected mosquitoes were morphologically identified using stranded taxonomic keys. The DNA was extracted from detected nematodes and PCR was conducted for all positive samples. A total of 4057 mosquitoes were during the study period. *Culex quinquefasciatus* (80.7%) was the prominent mosquito species followed by *Armigerus subalbatus* (9.9%), *Mansonia uniformis* (3.3%) *Mansonia annulifera* (1.9%) and other 7 mosquito species (4.2%) were detected. *Mansonia uniformis*, *Mansonia Annulifera*, *Armigerus sabalbatus*, and *Culex quinquefasciatus* were positive for microfilaria in very low persistency at 0.156%, 0.026%, 0.0074%, and 0.00092% respectively, while other mosquito species were negative for any microfilariae. *Brugia malayi* was the prominent LF nematode identified from mosquitoes while *Wuchereria bancrofti* and *Dirofilaria repens* were identified from mosquitoes. *Wuchereria bancrofti* were identified from *Cx. quinquefasciatus* and *Brugia malayi* microfilaria were detected from *Mansonia uniformis* and *Mansonia Annulifera*. In addition, *Dirofilaria repens* microfilariae were detected from *Armigerus Subalbatus*. The current findings facilitate decision-making in the national filariasis vector control programmes. Knowledge of the distribution and risk areas of filariasis vector mosquitoes will be important for controlling filariasis transmission in the risk areas of the country.

Keywords: *B. malayi*, *D. repens*, *Filariasis vectors*, *Galle district*, *Sri Lanka*
W. bancrofti,