

## Research Article

# Assessing the Filariasis Causing Parasites in Adult Mosquitoes and the Vector Mosquito Larval Breeding in Selected Medical Officer of Health Areas in Gampaha District, Sri Lanka

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The present study was conducted to determine the prevalence of filariasis causing parasites in adult mosquitoes and vector mosquito larval breeding in four Medical Officer of Health (MOH) areas in Gampaha district, Sri Lanka. Adult female mosquitoes at their resting places were collected using a prokopack aspirator operated twice a day from 7.00 am to 8.00 am and 8.00 pm to 9 pm in predetermined dates. Microfilarial worms in dissected mosquitoes were morphologically identified. Nine species of mosquitoes, namely, *Culex quinquefasciatus*, *Cx. pipiens*, *Cx. fuscocephala*, *Cx. gelidus*, *Armigeres subalbatus*, *Mansonia uniformis*, *Ma. annulifera*, *Aedes aegypti*, and *Ae. Albopictus*, were captured. A total of 1194 mosquito larvae were collected that belonged into three genera, namely, *Culex* (62.73%), *Armigeres* (25.62%), and *Mansonia* (11.64%), from blocked drains, polluted drains, blocked canals, large polluted water bodies, stagnant water bodies, marsh lands, rice field mudflats, and concrete pits. Large polluted water bodies (Shannon-Wiener diversity index/ $H'$  = 1.5591) were the most diversified habitat type. In breeding water, average pH mainly lied in between 6 and 8 and average dissolved oxygen ranged from 3 to 7 mg/L. *Cx. quinquefasciatus* and *Armigeres subalbatus* adult female mosquitoes captured from Kelaniya MOH area were positive for microfilariae and were identified as *Wuchereria bancrofti* and *Dirofilaria repens*, respectively. This study concludes possible lymphatic filariasis situation is in extremely very low level persistent (0.06%) where transmission cannot be sustained and is restricted only to isolated pockets in the study area. The zoonotic strains of filariasis causing subcutaneous dirofilariasis in humans by *Dirofilaria repens* is continuing to survive due to the presence of stray dogs that serve as reservoir hosts.

## 1. Introduction

Lymphatic filariasis (LF) is a mosquito-borne disease of humans and a major cause of disability worldwide [1, 2]. The most common clinical symptoms of LF are hydrocele, lymphedema, and adenolymphangitis [2, 3]. Elephantiasis is the advanced stage of lymphedema that results sociopsychological problems to patients and their families [4, 5]. Causative agents of LF are several species of nematode parasites of the order Spirurida and family Onchocercidae, namely, *Wuchereria bancrofti*, *Brugia malayi*, and *B. timori* [6]. According to the WHO, *W. bancrofti* is responsible for 90% of all human LF infections [7]. LF is transmitted by

different types of mosquitoes, for example, by the *Culex* mosquito, widespread across urban and semiurban areas, *Anopheles*, mainly found in rural areas, and *Aedes*, mainly in endemic islands in the Pacific [7]. When infected mosquitoes bite people, mature parasite larvae are deposited on the skin from where they can enter the body [7].

In Sri Lanka, the LF has been endemic for hundreds of years in eight districts, namely, Colombo, Kalutara, Gampaha, Galle, Matara, Hambantota, Kurunegala, and Puttalam, bordering to western coast, the area well known as the “filariasis belt” [8]. In this country, LF is caused by *Wuchereria bancrofti* and *Brugia malayi*. More than 90 percent of cases of LF known as urban bancroftian filariasis