

Aedes albopictus the “underrated” Asian Tiger

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ABSTRACT

Introduction

The mosquito *Aedes aegypti* was thought to be the main vector responsible for virtually all dengue epidemics; while *Aedes albopictus* was considered a vector in which the virus is maintained but does not cause epidemics.

Objective

The study was conducted covering three endemic districts in Sri Lanka to determine the role of genus *Aedes* during dengue transmission.

Methods and Material

Mosquitoes were collected within a 350m radius from the location of the positive patients. Heads and abdomens of 63 pools were tested for DENV RNA with and RT-PCR-LH-(P32) assays

Results Discussion

Ae. albopictus was present in majority of the locations in all districts surveyed. *Ae. albopictus* was found in 13/17 (76.47%), 24/25 (96%) and 19/22 (86.36%) sites in Colombo, Gampaha and Kurunegala respectively. The RT-PCR-LH-(P32) assays indicated that 5/25 (20%) sites in Gampaha, 2/17 (11.76%) in Colombo and 6/22 (27.27%) in Kurunegala were positive for DENV. In Gampaha and Colombo there were 3 and 1 of DEN-2 positive pools respectively, while there were 2 and 1 of DEN-3 positive pools respectively. A higher number of positive pools (4/1 or 21.05%) for DEN-1 and 1/1 (5.26%) for DEN-4 were found in Kurunegala. In Kurunegala one pool was positive for both DEN-2 and DEN-4 indicating the circulation of multiple serotypes within close proximity. Moreover one of the three DEN-2 positive pools in Gampaha consisting of only male *Ae. albopictus* mosquitoes is supportive of the belief of vertical transmission of DENV. In a DEN-4 positive location in Kurunegala HI was found to be 10%, BI= 1 and CI= 5.88% while another DEN-2 positive site in Wattala showed HI of 5.55% and a BI of 5.55 suggesting active transmission. The abundance of *Ae. albopictus* in all districts and the findings indicating that 100% of the positive pools were made of *Ae. albopictus* in this study highlights the importance of *Ae. albopictus* in the transmission dynamics dengue. The ability of *Ae. albopictus* to be infected with low viremia and the degree to which it permits replication within the mosquito itself could have an impact on the transmission and the severity of the disease. Co-circulation of two or more serotypes in a single pool or in different pools of mosquitoes within the same district is suggestive of hyper endemic transmission dengue in the three districts. The greater susceptibility of *Ae. albopictus* to infection by DENV is said to lead to greater virus adaptation. Sri Lanka as a whole would be at serious risks for multiple outbreaks in future. Our results indicate that *Ae. albopictus* is more efficient in dengue transmission than previously thought. The results shed light on the

efficiency of *Ae. albopictus* as a vector in transmitting DENV in the absence or low abundance of *Ae. aegypti* in Sri Lanka. The present study suggests that *Ae. albopictus* sp is underrated in terms of transmission potential during peak transmission periods of dengue in Sri Lanka.

Key words: RT-PCR-LH-(P32) RT-PCR-Liquid Hybridization with P32 radio isotope, HI-House hold Index, BI- Breteau Index, CI-Container Index,DENV-Dengue Virus

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