

Detection of Dengue Viral Migration to Sri Lanka

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Dengue is one of the most important mosquito-borne viral infections in Sri Lanka. The causative agent is Dengue Viruses (DENV) and the primary vector of the virus is *Aedes aegypti* (Linnaeus) while *Ae. albopictus* (Skuse) is the subsidiary vector. The current research was focused on the detection of DENV serotypes and genotypes circulating in mosquitoes during the dengue epidemic in June and July, 2017 in the Eriyawetiya Grama Niladhari division, where one of the dengue high-risk area in Kelaniya Medical Officer of Health (MOH) area in the District of Gampaha, Sri Lanka. *Aedes* mosquitoes were collected following WHO guidelines and the field-caught mosquitoes were transported to the laboratory for species identification and subsequent analysis. Head and thorax of each mosquito was removed and mosquito samples were pooled separately. Total RNA was extracted from mosquito samples and semi-nested Polymerase Chain Reaction (PCR) was performed to identify DENV serotypes present in the mosquito samples. The results of the PCR indicated the presence of DENV2 in both *Ae. aegypti* (1/5) and *Ae. albopictus* (1/27) mosquitoes. Then complete Envelope (E) gene was amplified with DENV2 specific primers for genotyping of the virus which is required to identify the molecular evolution of the DENV2. Prior to sequencing the PCR products were purified and sequencing results were analyzed using LaserGene software. The generated sequences were aligned with retrieved DENV2 sequences available at NCBI database and the phylogenetic trees were developed using MEGA7 software with General Time Reversible (GTR) substitution model with gamma distributed rates. The robustness of clades was determined by using bootstrap analysis of 500 replicates. The result of the phylogenetic analysis illustrates that the E gene sequences of DENV2 obtained from two DENV positive mosquito pools belong to DENV2 Cosmopolitan Clade Ib, which has been the dominant strain in South-East Asia, specially Singapore, Indonesia, Malaysia, and China since August, 2015. The evidence suggests recent introduction of this DENV strain into Sri Lanka.

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