

Abstract

Dengue is a vector borne viral infection which poses a serious threat to public health in most of the tropical and subtropical countries around the world, including Pakistan. About four antigenically varying DENV serotypes are reported for dengue infection. In current study, wild *Aedes aegypti* larvae (n=1125) were pooled as 75 mosquito homogenates (15 mosquitoes/ pool) collected during July 2013 to January 2014 from different areas (Mughal Pura, Begum Pura, GCU and Lawrence Garden) of Lahore. These mosquito homogenates were screened for the presence of dengue viruses using NS1 AG strip assay. Out of 75 mosquito homogenates only one pool (1.33%) was positive confirming vertical transmission of these viruses by *Ae. aegypti* dengue vector. In addition 100 dengue infected human sera were collected during the above mentioned period for screening of DENV serotypes using dengue NS1 AG specific ELISA kit. DENV +ve samples (n=40) were used for molecular detection of dengue viruses serotypes by reverse transcriptase PCR (RT-PCR) using universal and type specific primers for dengue viruses nucleotide sequencing targeting the C-prM gene junction. Among forty dengue NSI AG ELISA positive samples, 12 sera (30%) were found +ve with type specific nested PCR. Out of 12 PCR +ve samples, five samples (41.6%) were positive for each DEN-2 and DEN-3. Whereas, two samples (16.6%) revealed the simultaneous presence of DEN-2 and DEN-3 serotypes. In conclusion, this current study documented the first natural evidence of vertical transmission of the dengue viruses in *Ae. aegypti* population collected from Lahore, Pakistan. This confers the epidemiological significance with respect to the maintenance of these viruses in nature during inter-epidemic periods. Based upon the detection of dengue viruses serotypes in human sera, it is concluded that DEN-2 and DEN-3 were the prevailing serotypes of dengue viruses during the study period in Lahore, Pakistan.