An In-house Assay for Zika Virus Detection: Utility of an IgM Assay in Screening for Zika Virus (ZIKV) Infection by Using Serum Samples

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Zika virus (ZIKV) is a mosquito transmitted Flavivirus, in the family Flaviviridae, which is related to clinically important arboviral pathogens. Considering that these flaviviral diseases display characteristic symptoms similar to ZIKV, and that almost 80% of the ZIKV infections are asymptomatic and many individuals seek medical care beyond the detectable period of RNA, serological laboratory testing is paramount. In this study, we used an ELISA assay that has been modified to detect ZIKV IgM antibodies. A total of 640 febrile serum samples were used. Samples from 18 ZIKV (Moi at al. 2017) were first used to test IgM assay. All of the samples that were positive for ZIKV by PRNT were also positive by IgM ELISA (100% sensitivity). Thus, the anti-ZIKV IgM ELISA assay was used for the screening of 622 samples obtained from acute febrile patients. Of the 622 samples from patients with acute fever, 171 (27.5%) were positive for anti-ZIKV IgM antibody. Among 158 ZIKV positive samples, 35 (20.5%) were also positive for DENV IgM antibodies. While the IgM ELISA is a useful tool for the detection of recent ZIKV infection, virus RNA detection assays and neutralization test are needed for diagnosis confirmation. ZIKV IgM ELISA is a useful test that can be used in screening patients.

Keywords: Zika virus, Anti-zika virus IgM antibodies, ELISA, Seroprevalence