Summary of Rapid Detection of Zika Virus in Urine Samples and Infected Mosquitos by Reverse Transcription-Loop-Mediated Isothermal Amplification

The Zika virus is an infection that can be transmitted through Aedes aegypti and/or sexually. The infection can lead to congenital neurologic disorder (e.g microcephaly) and miscarriage which produce a wide concern amongst pregnant women. The diagnosis of ZIKV infection is noted to be challenging, if not asymptomatic – which usually 60-80% of adult patients – there is an overlapping of symptoms to other arboviruses. Also, there is no current vaccine for ZIKV.

The standard for detection of ZIKV is through Quantitative reverse transcription PCR (qRT-PCR) which required purification and isolation of RNA, while the test of ZIKV provided by this study aims to allow cheaper and faster testing within 30 minutes using urine sample without compromising the quality of the result. The test is known as Reverse Transcription Loop-Mediated Isothermal Amplification (RT-LAMP) and the quality control was secured through designing the reaction of RT-LAMP specific to 18 S rRNA of human. The data showed that the sample of urine gave a stronger signal from RT-LAMP than in serum samples, however, the test is not quantitative which leads the false positives on a higher rate but it is noted that non was experienced in the study. The urine sample used was in midstream with immediately added preservatives before storing at room temperature, while samples with no preservatives are centrifuge for 10 minutes and stored at -80°C before the analysis. The RT-LAMP reactions used has a 25 µL total volume and incubated for 30 minutes at 61 °C, then later inactivated for 10 minutes at 80 °C. The uracil-DNA glycosylase (UDG) was used to reduce any contamination that may acquire from the previous reaction.

The significance of the study demonstrates the rapid ZIKV detection using urine as samples in RT-LAMP. This is point-of-care testing that can be done by personnel without special training which allows better accessibility of testing and a new strategy for diagnosis of Zika Virus and other types of mosquito-borne viruses.

Lamb L.E, Bartolone S.N, Tree M.O. (2018, Feb 28). Rapid Detection of Zika Virus in Urine Samples and Infected Mosquitos by Reverse Transcription-Loop-Mediated Isothermal Amplification. National Center for Biotechnology Information. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5830622/