Colorimetric Detection of Dengue by Single Tube Reverse-Transcription-Loop-Mediated Isothermal Amplification

amplification (LAMP) is potentially ideal to be used especially in resource limited environments. Major credit goes to Prof Sazaly Abu Bakar who kindly provided the serum samples which were collected from healthy donors and patients diagnosed with dengue infection. RNA extracted from the serum samples were tested by reverse-transcription-LAMP assay developed based on 30-NCR gene sequences for DENV 1-4.

Results were interpreted by a turbidity meter in real time or visually at the end of the assay. Sensitivity and specificity of RT-LAMP results were calculated and compared to qRT-PCR and ELISA. RT-LAMP is highly sensitive with the detection limit of 10 RNA copies for all serotypes. Dengue virus RNA was detected in all positive samples using RT-LAMP and none in the negative samples within 30-45 minutes. Based on the results obtained in this study, the RT-LAMP assays represents a potential alternative for the molecular diagnosis and routine screening of dengue virus infections, especially in dengue endemic countries. It could also be useful in monitoring the efficacy of dengue control and eradication programs.

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