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The development of semi-quantitative loop-mediated isothermal amplification (LAMP) assay using multi-well chip

Satoru Michiyuki, Takaaki Ueda and Yasuyoshi Mori
Eiken Chemical Co., Japan

Nucleic acid amplification tests (NAATs) have become common tools for detecting pathogens in clinical samples. Among NAATs, loop-mediated isothermal amplification (LAMP) assay, which enables DNA amplification and detection at constant temperature, has the advantages of reaction simplicity, amplification efficiency and also inexpensiveness compared to PCR-based technologies. Quantitative analysis in NAATs have been performed by kinetic analysis of amplification reactions as in so-called “real-time PCR method” and this approach has found to be applicable to LAMP assay as well. However, these assays require sophisticated instruments and well-trained laboratory staffs to obtain accurate and reproducible results. This limitation has been a main obstacle to expand this type of quantitative LAMP assay to point of care tests in resource limiting facilities. In this study, we developed simple and rapid semi-quantitative LAMP assay based on multi-well dispensing method (multi-well qLAMP). In the presentation, we will demonstrate that our novel technology is sufficient to distinguish some criterion of DNA levels with high reproducibility and highly correlative to conventional quantitative LAMP assay. We expect that this technology can be applicable as point of care tests to help determination of treatment eligibility, especially in infectious diseases whose amount of pathogenic DNA is a crucial criterion of defining treatment strategy.

Biography

Satoru Michiyuki has completed his Master's degree from Kyushu University. He has worked as a Researcher focusing on the development of genetic clinical diagnosis in Eiken Chemical Co., since 2011.

Satoru_Michiyuki@eiken.co.jp

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