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Development and evaluation of an improved quantitative loop-mediated isothermal amplification method for rapid detection of
Morganella morganii

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ABSTRACT

A point-of-care diagnostic kit was developed for detection of *Morganella morganii* using optimized loop-mediated isothermal amplification (LAMP) technique within less than an hour. In that regard, dimethyl sulfoxide (DMSO) was utilized together with betaine and all variables were optimized to improve the efficiency of the method. Moreover, surface presentation of antigens protein was targeted and six unique primers were designed. Endpoint turbidity analysis was performed at 550 nm to measure the tetravalent anion (pyrophosphate) released during the reaction. The specificity of the method was evaluated using nine closely related bacterial species as well as its sensitivity. It was shown that the improved LAMP assay could significantly distinguish *M. morganii* from other bacteria while the sensitivity was determined to be 0.2 CFU mL⁻¹.

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