

Loop-mediated isothermal amplification (LAMP): comparative advances over conventional PCR and other molecular techniques

ABSTRACT

Gene amplification technology is essential in the fields of diagnostic medicine. The polymerase chain reaction (PCR) is central in the molecular studies and provides ways for diagnostic advancement in the areas. However, the requirement for thermal cycler in a dedicated facility for amplification of target genes in the PCR technique has been a bottleneck to many researchers. The limitations associated with PCR include cost implication, strict expertise necessity and relatively higher turn-around time. The emergence of loop-mediated isothermal amplification (LAMP) in the last two decades assists in bridging the undesirable gaps. This review aims to highlight the natural advantages of the LAMP technique over the existing conventional PCR and other isothermal molecular techniques. Available published articles on LAMP techniques reviewed, listed many outstanding advances of the method in comparison to traditional PCR technique. The mentioned advantages include simplicity, affordability, naked-eye result detection and many more. That made LAMP becomes a rapidly accepted method in the field of molecular diagnosis. Other essential features of LAMP in comparison with other emerging nucleic acid amplification techniques were adequately explained and presented in tabular form for research and quick reference purposes. Though LAMP has some few limitations, its advantages outweigh its flaws by filling the gap in the field of molecular biology diagnostics.

Keyword: Advantages; Gaps LAMP; Nucleic acid; PCR