

Evaluation of diagnostic accuracy of loop-mediated isothermal amplification method (LAMP) compared with polymerase chain reaction (PCR) for *Leptospira* spp. in clinical samples: a systematic review and meta-analysis

ABSTRACT

Loop-mediated isothermal amplification (LAMP) test is widely used in molecular diagnostics as a point-of-care technique alternative to traditional PCR especially in resource-limited countries. LAMP has been recently used to diagnose leptospirosis. Therefore, we undertook a systematic review and meta-analysis to compare the accuracy of LAMP with PCR in the diagnosis of leptospirosis. Sixty-one studies were extracted from three international databases and analyzed throughout using the PRISMA guideline. The pooled sensitivity of LAMP and PCR technique was 0.80 (95% CI: 0.58–0.90) and 0.54 (95% CI: 0.35–0.67) respectively indicating that LAMP is more sensitive than PCR. The Q^* value of LAMP and PCR-based technique is 274.61 and 397.95, respectively. Among the analyzed studies, significant heterogeneity was observed where I^2 is 90.90% for LAMP-based and 86.18% for PCR-based. Our study suggests that LAMP has better diagnostic accuracy than PCR. However, future work should be carried out to reduce heterogeneity as well as to improve and develop effective intervention strategies.

Keyword: LAMP; PCR; Leptospirosis; Specificity; Sensitivity; Diagnosis