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Loop-mediated isothermal amplification assay for detection of four immunosuppressive viruses in chicken

Running title: LAMP for detection of avian immunosuppressive viruses

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Major: Diagnosis of Avian Diseases

Highlights

- Four immunosuppressive viruses in chicken can be detected with LAMP
- The results of detection can be observed visually by a change in color
- The detection methods show high specificity and sensitivity

Abstract

Loop-mediated isothermal amplification (LAMP) methods to detect chicken infectious anemia virus (CIAV), reticuloendotheliosis virus (REV), and Marek's disease virus (MDV), and a reverse transcription (RT)-LAMP assay to detect infectious bursal disease virus (IBDV), were developed. The CIAV-LAMP, REV-LAMP, MDV-LAMP, and IBDV-RT-LAMP methods were performed using four sets of six primers targeting the VP1 gene of CIAV, the gp90 gene of REV, the Meq gene of MDV, and the VP2 gene of IBDV. The results (a change in color) were observed visually. The methods showed high specificity and sensitivity. The detection limits were 50 genomic copies of CIAV, 16 genomic copies of REV, 20 genomic copies of MDV, and 250 genomic copies of IBDV. When used to test clinical samples, the results of the LAMP assays were in 100% agreement with a previously described PCR. Therefore, the LAMP assays are simple, rapid, highly sensitive, and specific methods for detecting four immune-suppressive viruses.

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