Diagnosis of Foot-and-Mouth Disease Virus by Real Time Reverse Transcription Polymerase Chain Reaction Assay in Iran

A Ahmadi-Vasmehjani , SD Mousavi-Nasab, R Baharlou, F Jeirani, M Shayestehpour, S Yaghoubi, H Fazel, H Mahravani

Abstract: (1300 Views)

Background and Aims: Accurate and rapid diagnosis is necessary for effective control and prevention of foot-and-mouth disease (FMD). In present study, was evaluated real time reverse transcription-polymerase chain reaction (rRT-PCR) assay along with diagnostic routine methods for the detection of all seven serotypes of FMD virus (FMDV), namely O, C, A, SAT1, 2, 3 and Asia 1 in biological samples at the reference laboratory for FMD, Iran. Materials and Methods: Two different RT-PCR assays targeting two different regions 5´ untranslated region (5´-UTR) and RNA polymerase (3D) of the FMDV genome were used to confirm the presence of FMDV in epithelial suspensions. Results: In the two methods the viral RNA in all tested archival serotypes of FMDV were detected. Specificity of this reaction was confirmed by the use of swine vesicular disease virus and blue-tongue. The amount of cycle threshold (CT) value of all seven serotypes was different and the lowest and highest of CT value achieved for SAT3, A, O types and SAT2, C types, respectively. Conclusion: The results showed that RT-PCR was more sensitive and effective than routine diagnostic methods. Furthermore, RT-PCR as a strong and valuable tool concomitant with diagnostic routine methods facilitate monitoring the fields FMDV strains and suggested that the use of the multiple diagnostic targets could enhance the sensitivity of the molecular methods for the detection of FMDV.

Keywords: Foot-and-Mouth Disease Virus, ELISA, real-time PCR, conventional RT-PCR