

Display of the VP1 epitope of foot-and-mouth disease virus on bacteriophage T7 and its application in diagnosis

ABSTRACT

Foot-and-mouth disease (FMD) is a highly contagious epidemic disease threatening the cattle industry since the sixteenth century. In recent years, the development of diagnostic assays for FMD has benefited considerably from the advances of recombinant DNA technology. In this study, the immunodominant region of the capsid protein VP1 of the foot-and-mouth disease virus (FMDV) was fused to the T7 bacteriophage and expressed on the surface of the bacteriophage capsid protein. The recombinant protein of about 42 kDa was detected by the anti-T7 tag monoclonal antibody in Western blot analysis. Phage ELISA showed that both the vaccinated and positive infected bovine sera reacted significantly with the recombinant T7 particle. This study demonstrated the potential of the T7 phage displaying the VP1 epitope as a diagnostic reagent.

Keyword: Foot-and-mouth disease; Phage display; VP1 epitope; Antibodies; Phage ELISA