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# Development and Evaluation of Novel Diagnostic Methods for Infectious Rhinotracheitis of Cattle

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**Abstract :** Bovine herpesvirus 1, a member of the genus Variellovirus of the subfamily Alphaherpesvirinae, has caused severe economic cost to the bovine industry. In this study, BoHV-1 glycerol protein gD was expressed in insect cells, and the purified gD was immunized in the Balb/C mice to generate monoclonal antibodies. Based on hybridoma cell fusion techniques, 20 monoclonal antibodies against Bovine herpesvirus 1 have been obtained. Further, mAb 3F8 with neutralizing activity and gD were applied to develop a blocking enzyme-linked immunosorbent assay (Elisa) for detecting neutralizing antibodies against BoHV-1, which shows a significant correlation between the blocking Elisa and VNT. The sensitivity and specificity of the test were estimated to be 94.59% and 93.42%, respectively. Furthermore, antibody pairing tests revealed that mAb 1B6 conjugated to fluorescence microspheres was used as the capture antibody, and mAb 3F9 was used as the detectable antibody to establish the immunochromatographic assay (ICS). The ICS was conducted to detect BoHV-1 in bovine samples with high sensitivity, specificity, and good stability. Clinical sample testing revealed that the results of ICS and real-time PCR have a coincidence rate of 95.42%. Our research confirmed that the ICS is a rapid and reliable method for the diagnosis of BoHV-1. In conclusion, our results lay a solid foundation for the prevention and control of BoHV-1 infection.

**Keywords :** bovine disease, BoHV-1, ELISA, ICS assay
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