



ISWAVLD 2023

International Symposium of the World
Association of Veterinary Laboratory
Diagnostics

29 JUNE-1 JULY
2023
Congress Centre
Lyon

*Towards
the veterinary
diagnostics
of the
future*

Main topic : Surveillance and control of emerging diseases

An example of how a recombinant protein technology can improve BoHV-1 diagnostic methods

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Bovine herpesvirus type 1 (BoHV-1) is a significant problem for cattle farmers worldwide, and effective diagnostics are essential for monitoring and controlling the infection process in cow herds. Traditional biphasic indirect ELISA tests have been used in low-prevalence areas to detect antibodies against BoHV-1 in bulk milk, but their specificity is not always satisfactory. To overcome these limitations, a new monophasic bulk milk ELISA was developed using a recombinant protein that mimics a specific BoHV-1 antigen.

Recombinant proteins are produced through genetic engineering techniques, in which a specific gene encoding for the desired protein is inserted into a host organism. The host organism synthesizes and produces the protein, which is then purified and used in ELISA assays. Recombinant proteins offer several advantages over traditional antigen preparations for use in ELISA tests. They are typically more consistent in production, purity, and specificity and can be produced in larger quantities with greater efficiency. Additionally, the use of recombinant proteins can reduce the risk of contamination or variability due to batch-to-batch variation or animal-to-animal differences.

The improved specificity of the new monophasic ELISA was already evident during test development when testing a sample set consisting of selected "difficult" bovine milk samples and plasma samples diluted in negative milk (n=336), of which a significant proportion previously gave false positive results in BoHV-1 antibody diagnostics. While 155/336 of these samples again gave positive results in a biphasic ELISA, only 19/336 of the samples were positive in the monophasic ELISA. In addition, cross-reactions that can occur due to BoHV-2 infection are significantly rarer with the new monophasic ELISA than with conventional biphasic ELISA tests.

The new monophasic ELISA test using a recombinant protein provides solid specificity and ease of use with no elution step, ready-to-use reagents, and conjugate incubation at room temperature. The new test contributes to more efficient BoHV-1 diagnostics and has been confirmed in the field. The use of a recombinant protein in the development of this new ELISA test for detecting BoHV-1 antibodies in bulk milk is a significant achievement in the field of veterinary diagnostics that offers several advantages over traditional antigen preparations.