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Towards
the veterinary
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Main topic : Surveillance and control of emerging diseases

A new highly performant competitive ELISA for the detection of *Besnoitia besnoiti* antibodies in cattle

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Introduction:

Besnoitiosis is a vector-borne disease due to an apicomplexan parasite, *Besnoitia besnoiti* (Bb), causing economic losses and increasing mortality. Besnoitiosis was classified as an emerging disease in Europe. As identification of seropositive animals is a key to control the disease, serological tools such as ELISA, western blot (WB) or IFAT play a crucial role for Bb diagnosis. Most of the commercially available ELISA kits are based on an indirect method. To improve Bb serological diagnosis, Innovative Diagnostics has generated several monoclonal antibodies and the most promising one was used to develop a new blocking ELISA (cELISA).

Materials and methods:

ELISA testing was performed as described in the kit insert. Diagnostic specificity was evaluated on 500 cattle sera samples from bovine besnoitiosis-free herds without history of besnoitiosis and/or with regular negative serological results.

Diagnostic sensitivity was evaluated on 200 cattle sera samples from France, which positive status had been determined by WB.

To check the absence of cross-reactions with other apicomplexan protozoa, 10 and 5 cattle sera (France) having a seropositive status confirmed by the ID Screen® *Neospora caninum* Indirect ELISA and the ID Screen® Toxoplasmosis Indirect ELISA, respectively, were tested with the ID Screen® *Besnoitia* Competition.

Repeatability, stability, robustness and interlaboratory reproducibility were also evaluated.

Results :

Measured specificity was 100.0 % (CI95%: 99.2 % - 100.0 %). Measured sensitivity was 100.0 % (CI95%: 98.1 % - 100.0 %). The percentage of correlation with the WB was 100%, indicating a perfect agreement.

All *Neospora caninum* or *Toxoplasma gondii* seropositive samples were found negative with the cELISA, indicating good exclusivity. Repeatability, stability and robustness were validated. The inter-laboratory reproducibility was good, as the coefficients of variation were inferior to 15%.

Conclusion :

The ID Screen® *Besnoitia* Competition ELISA efficiently detects positive animals, demonstrates excellent specificity and excellent correlation with the WB. Furthermore, the kit performances comply with the requirements of the French Expert Laboratory for Besnoitiosis (ANSES).

The new ID Screen® Bb cELISA is a reliable tool for the detection of cattle antibodies directed against *Besnoitia besnoiti*. This new kit will reinforce IDvet's unique expertise in Besnoitiosis diagnostics, offering the most complete range, with kits for bulk tank milk surveillance, milk or serum testing.