



# ISWAVLD 2023

International Symposium of the World  
Association of Veterinary Laboratory  
Diagnosticians

29 JUNE-1 JULY  
2023  
Congress Centre  
Lyon

Towards  
the veterinary  
diagnostics  
of the  
future

Main topic : Animal Health

## Porcine brucellosis serology: false positives and solutions

AKDESIRE.1, KITTL S. 1, OVERESCH G. 1

<sup>1</sup> Institute of Veterinary Bacteriology, Vetsuisse Bern, Bern, Switzerland

**Introduction:** Porcine brucellosis caused mainly by *B. suis*, has been eradicated in domestic swine in many European countries and is monitored by national surveillance programs. Serology is a key strategy for surveillance of the swine population. However, cross-reacting antibodies caused by other gram-negative bacteria, especially *Yersinia enterocolitica* O:9, interfere with serological diagnostics, as they can lead to false positive serological results (FPSR). Methods using antigenic components other than the smooth lipopolysaccharide (sLPS) of *Brucella* sp. have given promising result in confirmation of FPSR.

**Methods:** In this study, the performance of different serological tests was analyzed on porcine sera obtained from pigs with different brucellosis status; 1) Random sera from boars from an artificial insemination station that are seronegative for and free from brucellosis (n=65), 2) Sera from brucellosis-free herds showing FPSR (n=53), 3) Sera from a past outbreak of porcine brucellosis in Switzerland (n=25). Sera were tested with Rose Bengal Test (RBT), complement fixation test (CFT), with a commercial sLPS based *Brucella*-multispecies-i-ELISA (BruMS i-ELISA) and with a commercial differentiating *B. suis* i-ELISA based on not only sLPS but also rough LPS (rLPS). Additionally, to understand the possible source of FPSR, sera were tested with a commercial i-ELISA for pathogenic *Yersinia* species.

**Results:** The 1st group was negative in all tests for brucellosis. In the 2nd group RBT, CFT and BruMS i-ELISA revealed positivity in 45 (84%), 15 (28%) and 24 (45%) samples, respectively. In 51 (96%) of these, FPSR has been confirmed by *B. suis* i-ELISA which showed negative results on the rLPS. In the 3rd group, none were negative in CFT and BruMS i-ELISA, one in RBT and six in *B. suis* i-ELISA. In *Yersinia* i-ELISA, 26 (40%), 37 (70%) and 19 (76%) sera in 1st, 2nd and 3rd group respectively tested positive.

**Conclusion:** Considering the high specificity (96%) found in our study, the *B. suis* i-ELISA based on both sLPS and rLPS is found to be helpful in confirming the FPSR in sLPS based tests in porcine brucellosis serology. However, the low sensitivity (76%) makes it unsuitable for disease diagnosis. On one hand, the high positivity of *Yersinia* i-ELISA in the 2nd group confirms that the presence of cross-reactive antibodies against pathogenic *Yersinia* species is an important source for FPSR. On the other hand, the results of the 3rd group show that *B. suis*-specific antibodies also exhibit high cross-reactivity in the *Yersinia* i-ELISA.