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Comparison of two commercial ELISAs for detection of antibodies against porcine respiratory and reproductive syndrome virus in pig serum

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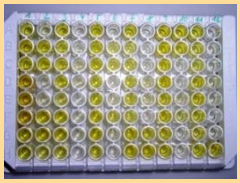
Introduction and Objectives

The porcine reproductive and respiratory syndrome is a disease that causes high economic losses. For monitoring of unsuspected herds, tests with a high specificity are required. The tests should have a high sensitivity as well, since positive animals, on the other hand, may not be overlooked. Different commercial ELISAs are available for detection of PRRSV antibodies (Ab) in serum. Aim of the study was to validate the Ingezim PRRS 2.0 (Ingenasa) in comparison to the until now as Gold standard used HerdCheck PRRS X3 (IDEXX) ELISA for detection of PRRSV Ab in serum of pigs.

Material und Methods

1) 3 pigs from a PRRSV negative farm, vaccinated with attenuated live vaccine (Ingelvac PRRS MLV, Boehringer Ingelheim, Germany)
   - blood samples taken from each pig at day 5, 9, 12, 18, 21 and 26 post vaccination.
2) 245 pigs from PRRSV positive farms of different origins in Europe and Asia
3) 309 samples of PRRSV-negative sows and boars from Austria and Germany
4) 92 residual blood samples of Austrian wild boars

- ELISA a: IDEXX PRRS X3 Ab ELISA (IDEXX, Ludwigsburg, Germany) – cut-off 0.4
- ELISA b: Ingezim PRRS 2.0 (Ingenasa Madrid, Spain) – cut-off 0.4



Results

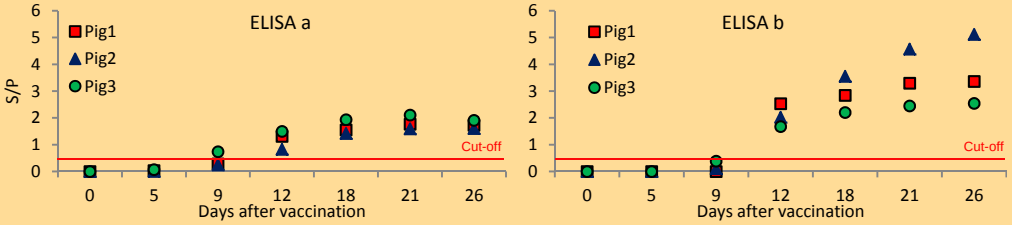


Fig 1: Seroconversion of 3 PRRSV vaccinated pigs, measured with two commercial ELISAs.

Results of group 1) are shown in fig. 1. All pigs showed PRRSV antibodies from day 12 onwards. In ELISA a, one pig was already positive at day 9, in ELISA b the S/P value was slightly elevated (0.38) but beneath the cut-off.

2) Results of PRRSV positive pigs are seen in table 1. In 220 samples (90%) the result was the same in both ELISAs. This means a kappa of 0.7 (good agreement). Not concordant results were mostly elevated but still beneath the cut-off in one ELISA, while the other ELISA was (weak) positive.

3) Serum samples of the PRRSV negative pigs:
   - all 309 tested negative in **ELISA a, (specificity 100%)**
   - 306 tested negative in **ELISA b (specificity 99%)**.

Tab. 1: PRRSV antibodies in pigs from PRRSV-positive farms

		ELISA a		
		negative	positive	total
ELISA b	negative	41	7	48
	positive	18	**179**	197
	total	59	186	245

4) Wild boars: - Out of the 92 wild boars, 2 were found PRRSV Ab positive with ELISA a and 3 with ELISA b.
   - One sample was corresponding in both ELISAs.

Conclusion

Antibodies developed by with PRRSV (NA type) vaccinated pigs were detected by both ELISAs similarly well. There were some slight differences in detection of antibodies in samples of PRRSV positive farms. All positive farms, however, could be reliably detected with both ELISAs. In PRRSV negative farms, a high specificity could be found in the Ingezim PRRS 2.0, although it is not as high as in the HerdCheck PRRS X3. Positive antibody results in unsuspected herds measured with the Ingezim PRRS 2.0 should be confirmed with an alternative test.

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