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COMPARISON OF TWO ELISA TESTS FOR THE DETECTION OF ANTIBODIES AGAINST PRRS: INGEZIM DR AND IDEXX X3

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Introduction

Early diagnosis of porcine reproductive and respiratory syndrome virus (PRRSV) is a crucial element of control of this infection. At present, the earliest way to detect a positive animal is by means of RT-PCR using blood samples. If detection of antibodies was feasible and suitable at very early times post-infection, costs of early diagnosis could be substantially lowered. The present report deals with the evaluation and comparison of the two newest commercially available ELISAs to detect PRRSV antibodies: Ingezim PRRS DR and Idexx X3.

Materials and methods

ELISAs. Sera were examined by Ingezim PRRS DR (11.PRS.K0) (Ingenasa) and by Idexx PRRS X3 Ab Test (Idexx Laboratories). Both tests were used as recommended by the manufacturer. Results were expressed as a ratio of the optical density (OD) of a given sample over the OD of the positive control provided by the test (S/P ratio). According to manufacturers, S/P higher than 0.175 for Ingezim PRRS DR and 0.4 for Idexx PRRS X3 were considered as a positive result.

Sera from experimental infections. Sera (n=35) were obtained from five experimental infections of 4-week-old piglets -days 0 to 49 post-inoculation (PI)- with different PRRSV genotype I strains (S1-S6). Selected strains shared from 90.6 to 96% of similarity in protein N. In all cases except one (S3), animals were intranasally inoculated with ≥$1x10^{5.0}TCID_{50}$/ml. Pigs in S4 were infected with a macerated of lung from an infected pig. *Longitudinal profiling of endemic farms.* A longitudinal serological profile was comparatively performed in two PRRSV endemic farms (n=45 pigs/farm) (4, 6, 8, 10, 12, 15, 17 and 20 weeks of age).

Results

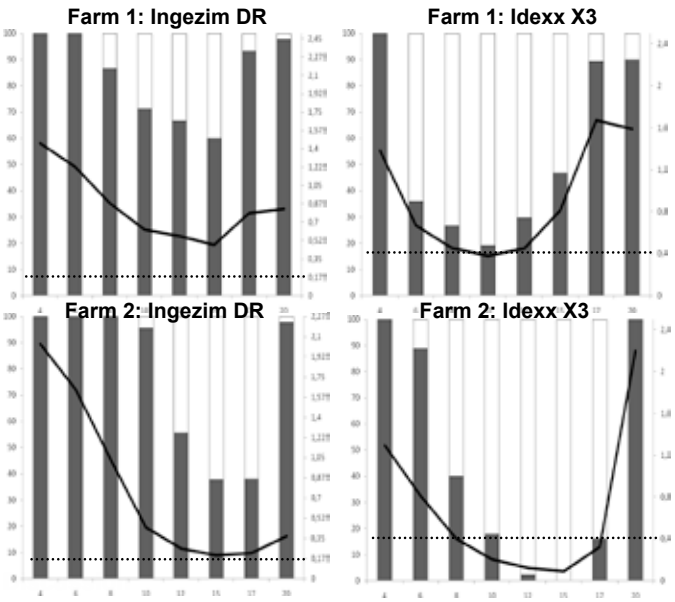
Experimental infections. Table 1 summarizes the percentage of positive pigs in experimental infections until 21 days PI using Ingezim DR or Idexx X3 for each PRRSV strain. Major sensitivity differences were observed at 7 and 14 days PI. All pigs were positive in both tests from day 21 onwards.

Table 1. Proportion of positive sera in each ELISA (N.A. No evaluated).

	Ingezim DR				*Idexx X3*			
Days PI	0	7	14	21	0	7	14	21
Strain 1 (n=5)	0	100	100	100	0	60	100	100
Strain 2 (n=5)	0	60	100	100	0	40	100	100
Strain 3 (n=5)	0	33	84	NA	0	0	67	NA
Strain 4 (n=6)	0	100	100	100	0	17	83	100
Strain 5 (n=7)	0	0	100	100	0	0	100	100
Strain 6 (n=7)	0	100	100	100	0	14	100	100
Total (n=35)	0	69	97	100	0	19	92	100

Longitudinal profiling. Results obtained from farms1 and 2 are summarized in figure 1.

Figure 1. Percentage of positive (grey bars) and negative (white bars) pigs from 4 to 20 weeks of age. Black line expresses the mean of S/P ratio (secondary axis). Black dot line represents the cut-off in both ELISAs.



The examination of experimentally infected animals using the Ingezim DR showed an increased sensitivity in terms of early detection compared to the Idexx X3, probably attributable to the enhanced ability of DR for the detection of IgM (1). When applied under field conditions and because of its enhanced analytical sensitivity, the Ingezim DR recognized as positive piglets with maternally derived antibodies for longer than the Idexx X3 but this also caused some overlapping between the detection of maternally-derived antibodies and antibodies raised after infection of piglets.

References

1. Venteo et al. (submitted) J. Virol. Methods.