EXPERIMENTAL AND FIELD EVALUATION OF THE PERFORMANCE OF TWO ELISA METHODS TO DETECT SEROCONVERSION AGAINST SWINE ERYSIPELAS IN PIGS

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INTRODUCTION

Prevention of swine erysipelas (SE) is based on vaccination, which relies on the protective role of the specific antibodies against *Erysipelothrix rhusiopathiae*. Despite the proven efficacy of existing vaccines, inadequate vaccination protocols may lead to the emergence of SE outbreaks, as recently reported in Japan and Australia[1,2]. Therefore, serological monitoring of SE is essential in disease control.

The aim of this study was to compare two commercial ELISA kits in terms of their competence to assess immunization of SE vaccinated and naturally infected pigs.

MATERIALS AND METHODS

A panel of 458 sera of known SE status was tested in duplicate for anti-SE antibodies by the indirect ELISA 1 (Civtest Suis SE/MR, Hipra) and 2 (Ingezim Mal Rojo 1.1.MR.K1, Ingenasa), as per manufacturers' instructions. Samples were divided into three groups: G1 with 111 SE-negative sera (certified in origin), G2 with 122 SE-positive sera after infection (87 samples from vaccination-challenge studies and 35 from natural infection), and G3A-G3E with 225 SE-positive sera collected at timed intervals after vaccination under experimental conditions (5 commercial SE inactivated vaccines). Performance characterization of the assays, *kappa* statistic[3] and correlation[4] were performed using MedCalc and SPSS software.

RESULTS

The results of G1 and G2 were similar in both ELISAs, which in turn showed high sensitivities and specificities, although ELISA 1 performed marginally better than ELISA 2 (Table 1).

Table 1: Performance characterization of ELISA 1 and 2.

Assay	Sensitivity	Specificity	PPV 1	NPV 2
ELISA 1	100%	100%	1	1
ELISA 2	97.54%	98.73%	0.99	0.96

[1] Positive predictive value; [2] Negative predictive value.

An almost complete agreement (*kappa*=0.96), and a strong positive correlation (Rho=0.86; p<0.01) were found between both tests using samples in G1 and G2 (Figure 1).

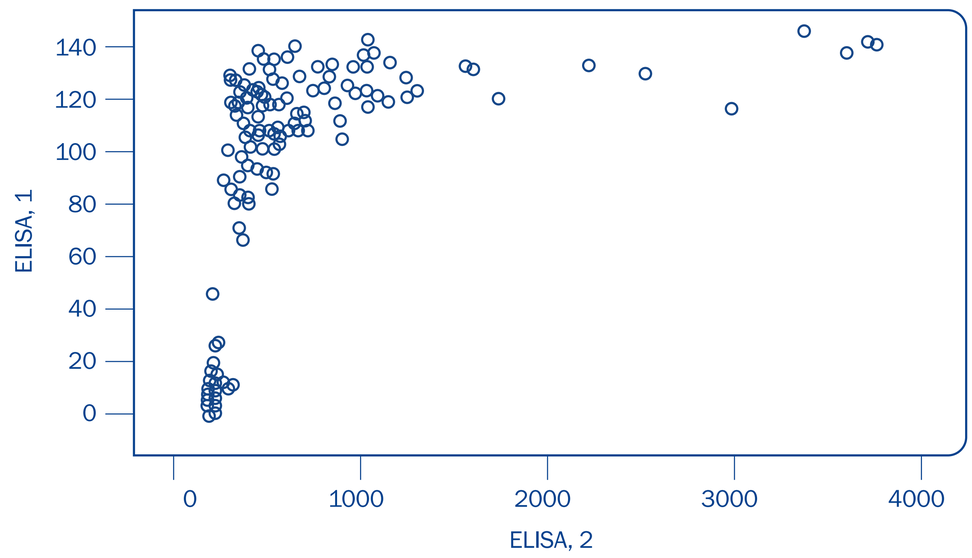

Fig 1. Scatterplot of the ELISA 1 results (Y axis) versus ELISA 2 results (X axis) using samples in G1 and G2.

Comparison of the results obtained with the two kits using samples in G3 (Figure 2), showed a substantial agreement (*kappa*=0.73) and a strong positive correlation (Rho=0.86; p<0.01).

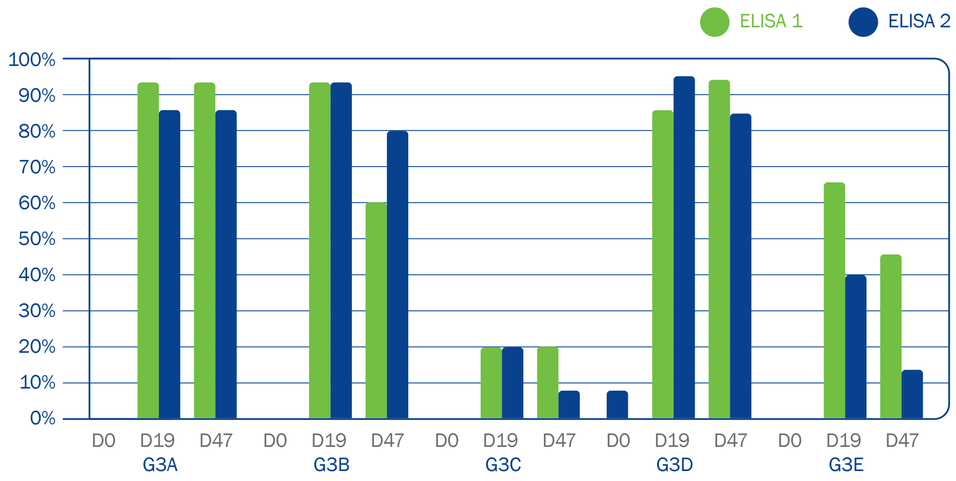

Fig 2. Percentage of anti-SE positive samples detected by two ELISA assays at different days (D) after vaccination.

DISCUSSION AND CONCLUSIONS

These results demonstrate that both ELISAs 1 and 2 are suitable for the evaluation of antibody response in SE infected and/or vaccinated pigs, with good performance characteristics. The detection of antibody response in G3C, and to some extent in G3E was unexpectedly low in both assays. Whether this was due to the vaccine composition or to the kinetics of the antibody response in the pig, is a matter for further investigation.

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