INTERPRETATION OF PCV2 ELISA RESULTS, A NEW APPROACH

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Introduction

PCV2 is endemic in almost all swine herds in the world and therefore antibodies against PCV2 can easily be found in animals. Serology is commonly used to establish herd profiles to evaluate the PCV2 dynamics. Since there are no DIVA vaccines for PCV2 on the market, one cannot easily discriminate between field infected or vaccinated animals. This paper describes an approach to discriminate between vaccinated and field infected animals.

Materials and methods

Sera and ELISA

Sera from natural (field) infected animals and from vaccinated animals where evaluated with the BioChek Porcine Circovirus 2 (PCV2) Antibody Test Kit. Sera were obtained from different herds, different breeds and different ages. For vaccination different commercial vaccines were used.

Calculation

S/P ratios were recalculated in titres using the formula:
Log10 Titre = 1.1 * Log (SP) + 3.361
Antilog = Titre
From one herd or group of animals a mean titre and standard deviation was calculated using Microsoft Excel. Percentage of coefficient variance was calculated using the formula:
(Standard deviation/mean titre)*100= %cv

Results

In Table 1, a summary of the results is given, showing mean titre, % cv and number of positives.

Table 1. Summary of results in field infected and vaccinated animals.

Group	Mean Titre	CV%	Number Positive	Number Negative
vaccinated*	3000 - 6000	<30%	>95%	<5%
non vaccinated	0 - 7000	>30%	varies	varies

*Different vaccines and vaccination programs can give different mean titres.

Discussion

Endemic infections are a challenge in diagnostics to obtain meaningful results. For PCV2 it will not be a question of whether the animals become positive, but *when* they become positive. It is more important to establish immunity at the right time. Since the introduction of vaccines, it is not only the detection of antibodies evoked by natural infection that is important but also the detection of antibodies after vaccination.

In trade, proof of vaccination is often required, but since there are no DIVA vaccines for PCV2 on the market, how can one discriminate between field infected animals and vaccinated animals? The key to this interpretation lies in the mean titre and percentage of coefficient variance (%cv). From the results it is clearly evident that although the mean titre can be the same in field infected and vaccinated animals, the % cv is different. In figures 1 and 2, an example of these differences is demonstrated in fatteners aged 10 – 17 weeks. The vaccinated animals are showing a lower %cv indicating a more uniform immunity.

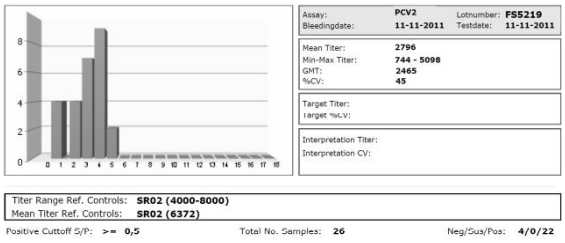

Figure 1. Non vaccinated fatteners (10 – 17 weeks)

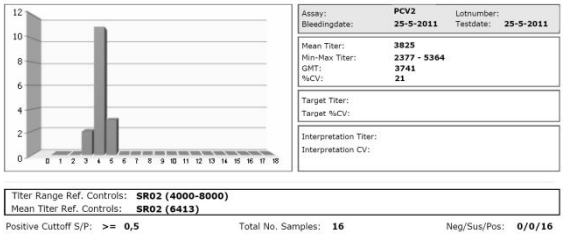

Figure 2. Vaccinated fatteners (10 – 17 weeks)

The differences between field infected and vaccinated animals were consistent for almost all commercial vaccines, proving that the approach for interpretation is meaningful. Establishing more specific baselines for different vaccines and vaccination protocols is on-going.

Conclusion

When using mean titre and %cv it is possible to discriminate between PCV2 field infected animals and PCV2 vaccinated animals. Baselines for this are essential for interpretation.