Comparison of specimens for monitoring PRRSV in boar studs: What works best?

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Introduction

Boar studs routinely use RT-PCR testing of serum, blood-swabs, and/or semen to detect PRRSV infection. With few exceptions, testing is based on sampling boars at the time of semen collection. This study served to determine onset and probability of PRRSV detection in mature boars using serum, blood-swabs, oral fluids, frothy saliva, and semen following the inoculation of PRRSV naïve boars with a lowly virulent, attenuated PRRSV. Our objective was to evaluate the feasibility and comparative analytical sensitivity of using oral fluids or frothy saliva as an alternative to using blood-swabs, serum, or semen for detecting PRRSV in boar-studs.

Materials and methods

A total of 15 boars were trained to a dummy, acclimated to a boar-stall, familiarized with donating oral fluids, confirmed as PRRSV-naïve, vaccinated with Ingelvac® PRRS-MLV vaccine to induce a subclinical PRRSV viremia, and had blood-swabs, oral fluids, frothy saliva, serum, and semen collected out to 14-days post vaccination (DPV) to determine the onset and probability of PRRSV detection in these various sample types. Oral fluid samples were collected from all boars daily from day post vaccination (DPV) 0 to 14. Blood, blood-swabs, frothy saliva, and semen samples were collected from a subset of 5 boars on a 3-day rotation (a group of 5 boars was collected every day). Oral fluids were collected from individual animals using 100% cotton rope. Serum, blood-swabs, and the frothy saliva samples were attained during semen collection. Whole semen samples were separated into a supernatant and cellular fraction for testing. All samples were tested by quantitative PRRSV RT-PCR. Results were analyzed using a linear mixed model with repeated measures.

Results

Table 1 shows the PRRSV RT-PCR results for DPV 0 to 7 reported as percent (%) positive. The rate of PRRSV detection in frothy saliva, semen supernatant, and semen cell fraction samples was lower (worse, $P < 0.05$) than serum. The rate of detection in the blood-swabs and oral fluids was numerically lower (worse), but not statistically different than serum.

Conclusions and recommendations

Serum samples provided the earliest and most sensitive detection of PRRSV infection. Additionally, these findings suggest that oral-fluids can be used as a functional and effective diagnostic specimen to complement PRRSV monitoring programs in boar studs.

Table 1: PRRSV RT-PCR results for DPV 0 to 7 are reported below as percent (%) positive

DPV	Serum	Blood-swab	Oral fluid	Frothy-saliva	Semen supernatant	Semen cell fraction
0	0%	0%	0%	0%	0%	0%
1	40%	0%	0%	0%	0%	0%
2	80%	20%	20%	0%	0%	0%
3	100%	20%	60%	0%	0%	20%
4	100%	40%	80%	40%	0%	20%
5	100%	40%	100%	20%	0%	40%
6	100%	100%	100%	60%	20%	40%
7	100%	100%	100%	60%	0%	0%