NO INDICATION OF PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME VIRUS (PRRSV) INFECTION IN BRAZILIAN SWINE HERDS

JR Ciacci-Zanella[1], D Gava[1], R Schaefer[1], CS Klein[1], VS Silva[1], L Caron[1]
[1]*Embrapa Swine and Poultry Research Center, Animal Health Laboratory, Concordia -SC, Brazil;* janice.zanella@embrapa.br

Introduction

Porcine reproductive and respiratory syndrome virus (PRRSV) is a globally important pathogen of economic and veterinary concern. Recent studies estimate a cost of US$664m yearly to United States swine industry [3]. PRRS is present throughout the world, with the exception of Australia, New Zealand, Finland, Norway, Sweden and Switzerland [5]. Although Brazilian swine production is expressive (fourth pork producer and exporter), there has been no evidence of PRRSV infection in those herds [1]. Most of the analysis used serology by commercial ELISA tests in breeding herds to perform prevalence surveys. The objective of this work was to detect PRRSV in samples of sera, plasma or oral fluids (OF) from swine herds, quarantined imported boars and feral pigs from 2008 – 2012.

Material and Methods

A total of 113 commercial pigs herds with a history of respiratory problems from 8 Brazilian states (SC, RS, PR, MG, SP, MS, MT and GO) were included. Farms were divided in 51 farrow to finish farms (1000 plasma and 257 OF samples) collected between 2008-2009; 62 commercial nursery farms (1860 sera and 232 OF paired samples from 8-12 week old pigs) collected between 2009-2012. Moreover, quarantined imported pigs (471 sera and 52 OF paired samples) collected in 2011 and 148 feral pigs serum samples collected from captured pigs in 5 farms in the sub-regions of Nhecolândia and Abobral, in the Pantanal of MS. This serum sample collection was done in two periods, from August to September 2009 and from January to August 2010. Thus, a total of 2479 serum samples, 1000 plasma samples and 541 OF samples were collected from 2008 to 2012 and were sent to Embrapa Swine and Poultry for processing. All samples were tested using IDEXX HerdChek* PRRS Antibody Test Kit. Positive samples were processed for viral RNA extraction by MagMAX® 1836-5 (Applied Biosystems). Real-time RT-PCR reactions were performed using specific primers targeting the ORF7 gene sequences of North-American PRRSV as described [4]. Positive control RNA was *in vitro* transcribed using RiboMAX™ (Promega), provided by NADC/ARS/USDA (Ames, USA) [2].

Results

4020 samples (serum, plasma and OF) from domestic or feral pigs from eight Brazilian states and quarantined imported boars were tested by IDEXX HerdChek* PRRS Antibody Test Kit. All OF samples resulted negative, 1/1000 plasma samples and 3/2479 sera samples resulted positives. Both sera and plasma samples were submitted to real-time RT-PCR and resulted negative as well. Real-time RT-PCR was able to detect $2.6x10^3$ molecules/uL of PRRSV positive control [2].

Discussion and Conclusion

Herein are presented different categories of sampling aiming to detect PRRSV infection in Brazilian pig herds. Although this does not characterize a surveillance study, it demonstrates the absence of PRRSV antibodies or RNA at analyzed samples. The main route in which PRRSV has been introduced into previously free countries is undoubtedly via pig movements [6]. Semen imports have also played a part, in some cases [6]. Thus, no evidence of PRRSV infection in those pigs was observed, indicating the importance to implement diagnostic tools and a monitory program to prevent the entry and further distribution of PRRSV in Brazil.

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References

1. Ciacci-Zanella JR et al.:2004, Ciência Rural 34:449.
2. Ellingson JS et al.: 2010, Vaccine 28:2679.
3. Lundeen, T. 2011: Feedstuffs (USA).
4. Nicholson TL et al. 2011,JClin Microb 49:4.
5. OIE. http://www.oie.int
6. Zimmerman JJ et al. 2012, Disease of Swine, 10th ed.