

# Monitoring of PRRSV and IAV infection in a conventional fattening farm by detection of virus antibodies in pen-based oral fluid specimens

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## INTRODUCTION

Analysis of pen-based oral fluid samples by PCR testing has proven to be an easy and efficient method for monitoring and surveillance of various infectious diseases in swine populations based on the detection of the infectious agents, e.g. porcine reproductive and respiratory syndrome virus (PRRSV). Another established method to prove an infection by detection of antibodies against some agents is ELISA, and commercial ELISA for serum has been adapted to analyze oral fluids, as well. It was shown that monitoring of an influenza A virus (IAV) infection is feasible by detecting virus antibodies in pen-based oral fluid specimens.

## MATERIAL AND METHODS

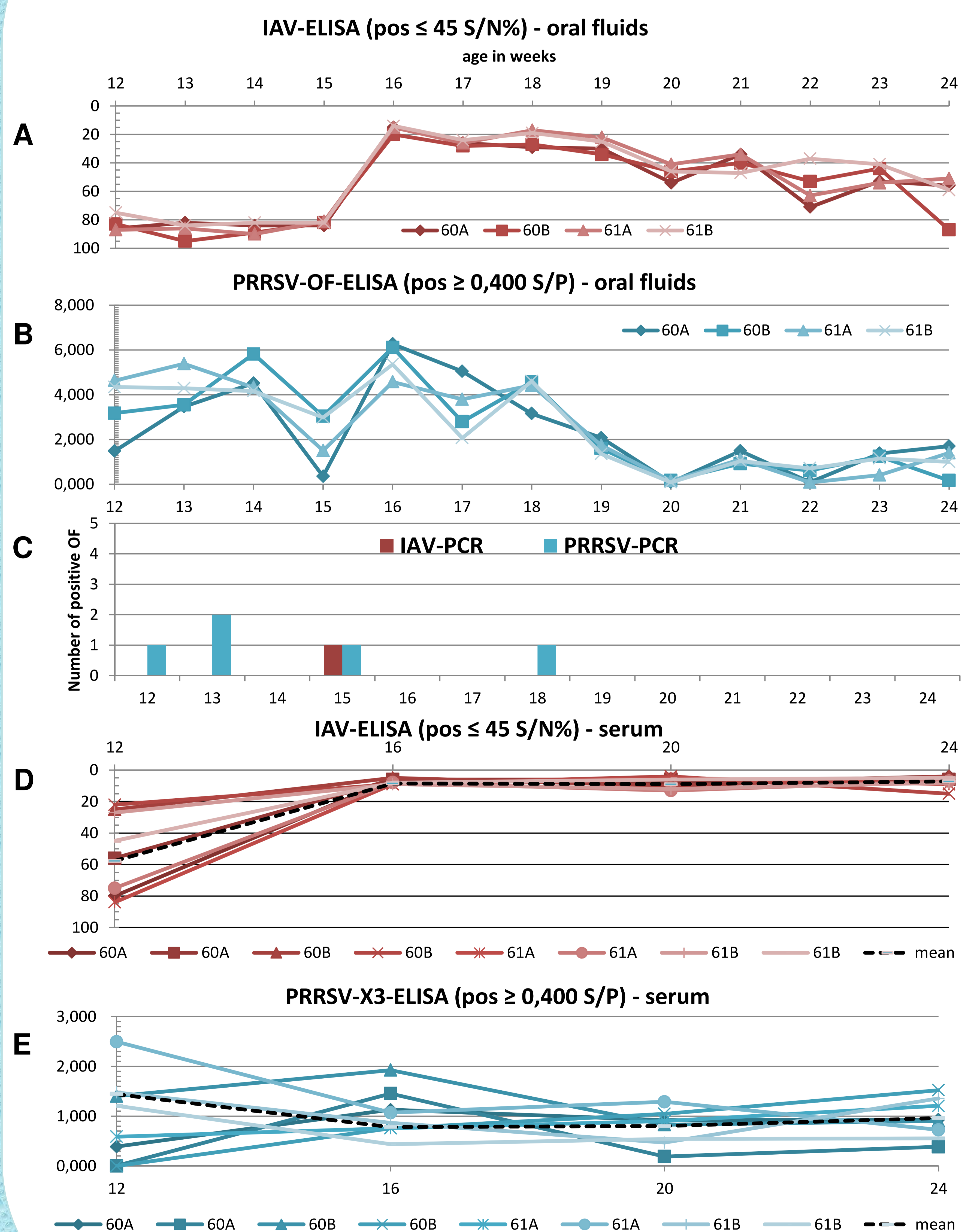
Oral fluids were collected weekly on a conventional fattening farm in Germany from two consecutive batches of approximately 25 pigs in four pens, from 12 to 24 or 22 weeks of age. For comparison, serum samples were also collected monthly from two randomly selected pigs of each pen starting at the age of 12 weeks. Oral fluid and serum samples were tested for antibodies against PRRSV and IAV by commercial ELISA test kits. A competitive IAV-ELISA was adapted to oral fluids (Strutzberg-Minder et al. 2015). Oral fluids were also tested for viruses by PCR. The herd had a history of circulating PRRSV and IAV.

## RESULTS

One week after initial detection of IAV in oral fluid samples by RT-PCR (Fig. 1 C), antibodies against the virus were detected both in oral fluids and in serum samples (Fig. 1 A and D). Oral fluids continued to test positive for antibodies four to seven weeks after initial detection of virus, but with a decreasing trend, and all samples in batch one tested negative after nine weeks (Fig. 1 A), whereas all serum samples continuously tested positive (Fig. 1 D). (Strutzberg-Minder et al. 2015)

Because PRRSV was circulating in the herd, as was detected by PCR (Fig. 1 C), almost all samples, both oral fluids and serum, tested positive for PRRSV antibodies (Fig. 1 B and E); however, antibody profiles based on oral fluids reflected the infection dynamics in a much more differentiated way than profiles based on serum samples. Waves of PRRSV infection occurrences within the herd were mirrored by the corresponding changes in the profiles of antibodies detected in pen-based oral fluids but not in serum.

**Figure 1: Results of pen-based oral fluid and serum samples of batch 1 tested for IAV and PRRSV by PCR and antibodies against viruses by ELISA**



REFERENCE: Strutzberg-Minder et al. 2015 accepted by JSHAP

## CONCLUSION

Profiles of antibody content in oral fluids reflected the dynamics of PRRSV and IAV infection in a more differentiated way than antibody profiling using serum samples. Furthermore, longitudinal studies confirmed the usefulness of monitoring PRRSV and IAV infection by detection of virus antibodies in pen-based oral fluid specimens.