Suitability of saliva for herd monitoring and generating preharvest data in pig farms

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Key words
Oral fluid, herd monitoring, ELISA, PCR, pig herd

Aim of the study
The aim of this study was to test saliva samples for herd monitoring and generating preharvest data in pig farms to measure antibodies against *salmonella sp., Toxoplasma (T.) gondii* and Hepatitis E virus (HEV) and to detect *Yersinia (Y.) enterocolitica*, and *methicillin resistant Staphylococcus aureus (MRSA*).

Material and methods
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The study was conducted in 33 Swiss fattening farms and oral fluid, fecal, serum samples and nasal swabs were taken at the beginning and the end of the fattening period. In sum 135 oral fluids, 135 fecal, 1427 blood samples and 815 nasal swabs samples were tested. Oral fluids were tested and compared with the conventionally taken sample (nasals swab, feces and blood). Oral fluids were tested for MRSA, *Y. enterocolitica* by culture and IgG were measured for Salmonella spp. (pigtype® Salmonella Ab, QIAGEN Leipzig, Leipzig, Germany), *T. gondii* (PrioCHECK® Prionics, Schlieren, Switzerland) and HEV (Ab porcine, Prionics, Schlieren, Switzerland).

Results and significance
In this study HEV specific antibodies, MRSA and *Y. enterocolitica* were detected in both oral fluid and conventionally taken sample. Salmonella spp. and *T. gondii* specific antibodies were detected in blood samples from individual pigs but not in pen based oral fluid samples. The detection of HEV specific antibodies in both specimens and both sampling times were in agreement (74.4% / 55.1%). Similar results were obtained for MRSA (92.7% / 95.7%) and *Y. enterocolitica* (60.2% / 72.6%).

Regarding MRSA, there it is very good agreement of 92.7% at the beginning and 95.7% at the end of the fattening period between blood serum and saliva samples. The agreement of *Y. enterocolitica* is lower at both sampling times, because this pathogen is excreted through feces.
Detection of antibody in saliva needs further research because the antibodies in the saliva is significantly lower than in blood serum and all used tests were validated for serum. Both the incubation time, incubation temperature as well approximation of pH in saliva on the serum, have not significantly contributed to improving the consistency of serum and saliva. The next step is intended to be able to measure the gradient of antibodies in the serum and saliva with infection attempts and individual serum and saliva samples.

These results indicate that oral fluid has the potential to be used as a screening tool for the detection of different swine pathogens but further studies are needed to realize the full potential of oral fluid testing.

Publications, posters and presentations

Project *1.13.10*

Project duration *April 2013 - March.2015*