RESEARCH ABSTRACT

SWINE HEALTH

Title: Monitoring of a bacterial infection (*Erysipelothrix rhusiopathiae*) via oral fluid testing – **NPB #11-040**

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Scientific Abstract

Swine erysipelas, when uncontrolled, is an economically important disease caused by *Erysipelothrix rhusiopathiae*. Pen-based collection of oral fluids has recently been successfully utilized for monitoring infection dynamics of major swine pathogens. Detection of *E. rhusiopathiae* DNA and anti-*E. rhusiopathiae* antibodies in oral fluids over time was conducted to determine the effectiveness of using oral fluids to monitor for erysipelas outbreaks. The diagnostic performance of bacterial isolation, real-time PCR, and antibody detection by enzyme-linked immunosorbent assay (ELISA) and fluorescent microbead-based immunoassay (FMIA) methods were evaluated on pen-based oral fluid samples from pigs experimentally infected with *E. rhusiopathiae* (n=112) and from negative controls (n=32). Real-time PCR was a sensitive method particularly early after inoculation with an overall detection rate of 100% (7/7) of the infected pens on day 1 post inoculation; however, *E. rhusiopathiae* was isolated by culture in only 28.6% (2/7) of the infected pens. *Erysipelothrix* anti-IgG in pen-based oral fluids was detected at 6.1 [5.2; 7.1] dpi by FMIA and at 8.7 [6.7; 10.8] dpi by ELISA. The number of infected animals per pen and the timing of antimicrobial treatment administration (prior or after clinical disease onset) impacted bacterial isolation and ELISA. On 146 field samples with unknown exposure, *E. rhusiopathiae* DNA was detected in 23.3 % of the samples, anti- *E. rhusiopathiae* IgG was detected in 60.3% of the samples, and 33.6% of the samples were negative for both, *E. rhusiopathiae* DNA and IgG antibody. Of note, only 6.2% of the samples that were *E. rhusiopathiae* DNA positive were *E. rhusiopathiae* IgG antibody negative. In this study we found that oral fluids are a suitable sample for demonstration of recent infection or previous exposure to *E. rhusiopathiae* and overall detection rates on serum samples and pen-based oral fluids obtained from experimentally infected pigs were comparable.