RESEARCH ABSTRACT
SWINE HEALTH

Title: Development of a simple on-site diagnostic test to detect PRRSV acute infection in boar studs – **NPB #06-154**

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Scientific Abstract

Porcine reproductive and respiratory syndrome virus (PRRSV) is an important pathogen of swine. The objective of this study was to investigate the feasibility of using reverse transcriptase loop-mediated isothermal amplification (RT-LAMP) for the detection of PRRSV. RT-LAMP is a recently described DNA amplification technique reported to be simple, inexpensive, fast and accurate. The RT-LAMP reaction was setup using two sets of primers that were designed to detect North American and European strains of PRRSV and performed successfully in a simple heat block. The specificity of the amplified product was demonstrated by restriction analysis. The RT-LAMP was able to detect seven different PRRSV isolates. However, the limit of detection ranged between 10^2 and 10^4 $TCID_{50}$/ml. Further evaluation included validation of the RT-LAMP using samples from animals of known infection status. The ability of RT-LAMP to detect PRRSV in serum from acutely infected animals was evaluated with 114 serum samples from 18 experimentally inoculated boars. Forty-nine of these samples tested positive by RT-LAMP, while 94 were positive by RT-PCR. The diagnostic specificity, evaluated with 100 known negative serum samples, was estimated as 99%. The feasibility of RT-LAMP to detect PRRSV was demonstrated in this study. The RT-LAMP reaction could be performed in just 1 hour with a simple and inexpensive heat block. However, the sensitivity of this technique was significantly lower than that of RT-PCR.