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IMPROVING EDEMA DISEASE DIAGNOSIS IN PIGS BY DETECTING THE *VT2E* TOXIN GEN IN ORAL FLUID BY QPCR

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Introduction

The current confirmatory diagnosis of the edema disease caused by verotoxigenic strains of Escherichia coli (VTEC), is based on bacterial culture of rectal swabs or intestinal contents. This method is time consuming, invasive, and requires additional work to ensure that the isolate has the potential to produce the toxin. The aim of this study is to validate an alternative to bacteriology, and improve in terms of sampling and representativeness.

Material and Methods

A qPCR assay targeting the verocytotoxin variant 2e (VT2e gene) was standardized. A panel of 35 swine bacterial and viral pathogens, and several 10-fold dilution series of a VTEC reference strain were used to determine the analytical performance of the assay. Then, the method was adapted to pig oral fluid (OF) as clinical sample to run two studies: The first one was aimed to detect VTEC in 99 diagnostic OF, received in Diagnos for screening of respiratory disease. Samples came from 18 commercial farms located in 7 European countries. The second study focused on a selected VTEC-affected fattening unit. Sixteen pens were sampled; environmental samples, individual rectal swabs, and pen OF were collected, and the detectability of VT2e in the different samples was compared.

Results

The qPCR detected VTEC exclusively, with a limit of detection <1.5 ng of target DNA/µl, and 93.3% efficiency. VT2e was present in 17.2% of the diagnostic OF, distributed in 44.5% of the farms. When analyzing environmental, individual rectal swabs and OF samples in pens of a VTEC-affected farm, 7/16 (43.5%), 12/16 (75%) and 16/16 (100%) were positive to VT2e, respectively.

Discussion and Conclusions

Results from this study demonstrate that oral fluid can be a useful tool for monitoring VTEC in pig herds, reducing labor, increasing the amount of animals sampled, and reducing the waiting time to get results.