Development of a rapid on-site diagnostic test for Porcine Epidemic Diarrhea Virus (PEDv)

▸ David Alton, Aquila Diagnostic Systems

This study resulted in the development of a molecular diagnostic tool for the detection of PEDv.

Why was this study done?

PEDv-related disease has been a challenge for North American pig production over the last few years and has caused significant losses for producers. One way to control the spread of PEDv is to quickly determine if pigs are infected prior to transporting them.

This project was initiated by Swine Innovation Porc in order to address the industry's need for a rapid, accurate on-farm test for PEDv.

What was done and what was the outcome?

The first phase focused on the test design, optimization, and determination of its sensitivity and specificity. A step-by-step laboratory analysis was performed to develop a PED test that is highly sensitive and capable of detecting the presence of synthetic viral RNA (ribonucleic acid) on both instruments found in clinical labs as well as on a portable instrument that can be used in the field.

The test itself is a RT-qPCR (reverse-transcriptase quantitative polymerase chain reaction) assay commonly used to detect RNA viruses, combined with hydrogel technology previously developed to adapt molecular tests for use in the field. The test is performed by adding a sample to a tube containing RT-qPCR hydrogel and running the reaction on a quantitative qPCR instrument. This takes approximately two hours to perform.

These results describe the first steps in creating a highly sensitive test for PED that can be implemented at swine production facilities. The next short-term phase would be to conduct a proof of concept demonstration in a challenge facility.

Collaborator

Volker Gerdts	VIDO-InterVac

The Accutas™ on-farm testing instrument is about the size of a regular household toaster. Source: Aquila Diagnostic Systems.