

Portable assay could deliver faster PEDv detection

Submitted by the Alberta Livestock and Meat Agency



Front, from left: Mr. Mathew Fisher, Drs. Stacy Radics and Aruna Ambagala.

Back, front left: Doctors Jessica Law, Chris Misutka and Kuldeep Chatta.

Porcine Epidemic Diarrhea virus (PEDv) is a highly contagious swine disease that causes devastating losses. When the outbreak in the United States occurred a few years ago, the Canadian industry came together to develop better mitigation strategies. While PEDv cases did arise in Eastern Canada, the effort paid off, as the spread eventually slowed down. However, improvements to PEDv detection and prevention methods are vital to continuing these efforts.

One of the known challenges is the lack of reliable on-farm detection methods. Currently, PEDv samples are sent to a lab for testing. This adds significant wait time to confirm the presence of on-farm PEDv.

In partnership with the Alberta Livestock and Meat Agency (ALMA), a research team led by Dr. Aruna Ambagala developed a rapid pen-side assay that can be performed on a user-friendly and field-deployable instrument to test fecal swabs, truck washes and environmental samples.

“In preventing outbreaks, timing is of the essence,” said Dr. Ambagala, a Research Scientist at the Canadian Food Inspection Agency and an Adjunct Assistant Professor at the Faculty of Veterinary Medicine, University of Calgary. “Getting the necessary results in a shorter time frame can significantly prevent the spread of this disease and increase animal health on swine farms.”

Based on the results of this initiative, the new assay has an approximate run time of one hour, which allows infected farms to implement biosecurity controls more efficiently. The team also found that it is less expensive than sending the samples to the lab.

“The cost of each test was a very important factor in creating this assay. It has to be affordable or else industry may hesitate to adopt the technology,” said Dr. Ambagala.

The assay’s combined benefits of reduced costs, high sensitivity and specificity, with a smaller and portable design allows the tool to be used across the supply chain and anywhere in Alberta. By having the device at locations like border stations and slaughter houses, industry could monitor the disease closer than ever.

The team also considered other swine enteric viruses in their research including porcine deltacoronavirus (PDCoV) and transmissible gastroenteritis virus (TGEV). These viruses present similar clinical signs as PEDv and need to be distinguished from each other. Like PEDv, PDCoV and TGEV are currently detected and differentiated through laboratory diagnosis. By creating a rapid on-site assay for PDCoV and TGEV, this research also ensures that the right disease is diagnosed and the right measures are taken.

“The less time it takes to diagnose the presence of PEDv, the more likely that an outbreak can be avoided,” said Dr. Susan Novak, ALMA’s Executive Director, Strategic Initiatives. “Disease outbreaks can have a devastating impact on animal health, farm profitability and operator stress. If we can avoid these challenges, then there is less risk to the province’s hog industry.” ■

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