Tracheal sampling for M. hyo may hold new benefits

The following article was written and published by Pig Health Today and features Suidae veterinarian Dr. Brandi Burton

Tracheal sampling is a good way to determine if *Mycoplasma hyopneumoniae (M. hyo)* is present in a herd, but it's an invasive procedure that can be difficult to accomplish. The procedure, however, may offer a valuable benefit, said Brandi Burton, DVM, swine veterinarian with Suidae Health and Production. The fluid from the tracheal sampling could become an alternative to the lung homogenate that has typically been used for animal inoculation in *M. hyo* control, she told *Pig Health Today.*

Burton's idea was to look at the tracheal fluid collected during diagnostic testing and use it in a solution to inoculate pigs. In theory, she didn't see any reason why it couldn't be used, but that theory needed to be proved.

"Right now, the gold standard is to use lung homogenate [as an inoculate] for *M. hyo*," Burton said, but that can be costly from an animal-welfare and genetics standpoint. She was looking for an alternative method.

"I've had quite a bit of experience with tracheal sampling, so we basically diluted [the trachea fluid] and created an inoculum," she said. "We intratracheally administered 8 mls of the solution to 30 gilts and tested them 16 days later."

The gilts were 100% positive for *M. hyo*, using a polymerase chain reaction (PCR) test.

Testing the spread

Twenty-six days after the initial inoculation, Burton tested the theory a step further. The way the barn was set up, researchers tested contact and non-contact animals. They inoculated half the gilts in four pens and left the other half non-inoculated. These were the direct-contact animals. Two additional pens had fence-to-fence contact with the inoculated animals, and animals across the aisle were considered non-contact sentinels.

Results of the trial showed:

- 100% of the direct-contact animals in the pens with the inoculatedgilts were positive.
- 80% of the animals with fence-to-fence contact were positive.
- 100% of the animals across the aisle from the inoculated gilts were positive.

"We feel relatively successful in that we took those 30 gilts and essentially had 100% positivity within 26 days in a group of 158," Burton said.

Next steps

Burton said the next step is to determine the infectious dose needed to effectively inoculate the animals. Also, since many veterinarians like to use fogging as an exposure technique, Burton would like to try that protocol. Additionally, she will look at the seeder ratio. Having 30 gilts inoculate 158 animals is "abnormal," she said.

"That's about a 4:1 ratio, and so it's atypical of *M. hyo,*" Burton said. "We want to look further into nailing down the seeder ratio."

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Dr. Brandi Burton

Our Philosophy

To provide our clients with the highest professional service. To achieve this we invest in our employees and instill in each of them a strong sense of customer service and commitment. We believe this personal relationship allows us to work with our clients to the best of our abilities, and is the foundation of Suidae Health and Production.

Going forward, Burton hopes to add ELISA and serum testing to the PCR tests for a fuller understanding of the *M. hyo* inoculant in the herd. Burton encouraged veterinarians to keep an open mind in thinking about exposure processes for *M. hyo*.

"It's definitely a benefit if we don't have to euthanize animals to collect that lung homogenate," she said. "Plus, a lot of farms are already doing tracheal samplings…to diagnose the farm. You can just take that sample and…use it again as an inoculum, potentially."

Best practices

Producers need to understand their production flows when thinking about *M. hyo* control, Burton said. The financial consequences of *M. hyo* are seen primarily in grow-finish animals, so it's important to understand the status of those pigs downstream.

"We know *M. hyo* doesn't generally transmit laterally, so it's almost always coming from the sow farm," Burton said. She suggested monitoring for the disease with cross-sectional studies.

"Look at five to six different age groups on 1 day and do tracheal sampling along with serum and oral-fluid collections," Burton said. "You can get a good timeline and see multiple age groups at the same time to…determine their status. Doing that at least twice a year is a good way to keep surveillance [current] and modify protocols as needed."

Timing is important too. Burton suggested producers and veterinarians find medications that can control clinical signs early on and determine through the flow when those medications should be administered.

"You don't want to be too far behind the ball, but you also don't want to be too far in front of it," she said. "You want to be right on top of it before it can become a bigger issue than it needs to be."

The farm on which the original study was done is considering an elimination program for *M. hyo*, Burton said. She wants to employ the tracheal inoculation program with herd closure to see if time-to-negative-production can be shortened and to determine the minimum dosage needed as well as the dilution ratio.

Although there is a negative stigma associated with tracheal sampling because of its invasive nature, the ability to use the fluid in a way that may have long-term benefits could make the effort that much more indispensable.

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Office News: Pork Burgers or Bust!

Ever wonder how you can incorporate ground pork into different lunch or dinner options? In July, some of the Suidae vet team and interns decided to investigate this very idea and decided pork burgers were the way to go! In true scientist fashion, Dr. Kelly came up with a mini experiment:

Objectives:

1. To determine the quality of 4 pork patty recipes
2. To have fun!

Treatment A:
Brat Patties (.1 lbs Brat patty seasoning + 2 lbs ground pork)

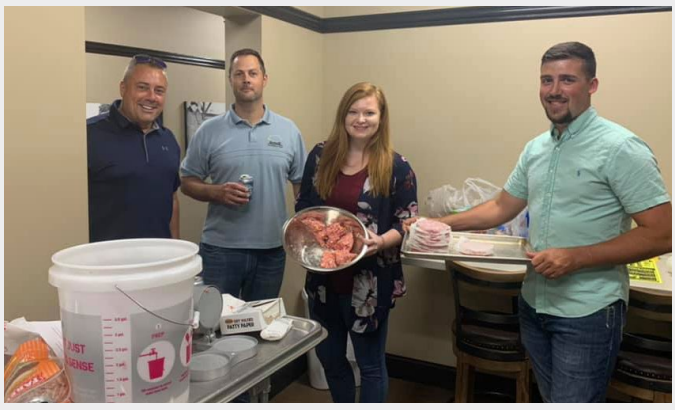
Treatment B:
Pork and bacon patties (.25 lbs bacon +2 lbs ground pork)

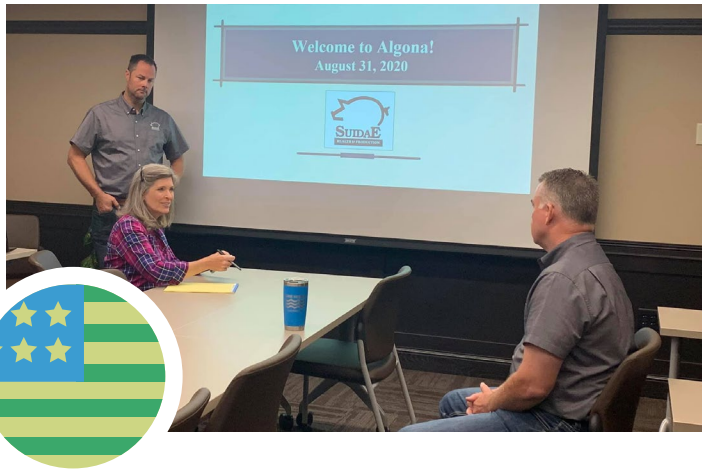
Treatment C:
Pork, bacon, and cheese patties (.25 lbs bacon+.25 lbs high temp cheddar cheese cubes+ 2 lbs ground pork)

Treatment D:
Control – Fareway 1/3 lb Pork and Bacon patties

Treatments A-C were made at Suidae and all treatments were grilled on the same grill at the same time. The participants, Dr. Kelly, Dr. Anderson, Dr. Distad, Dr. Burton, Amanda Anderson, Wes Reever, Anthony Holowka, and Jeff Reyes, were split on their favorite burger. The top two were treatment A and treatment C pretty easily across the board, though. If you understand the judging world – we placed this class A - C – B – D with splits of 1-5-2.

The next day, the vet team grilled burgers and smoked pulled pork for the Algona staff to enjoy for lunch. Our next burger experiment will include pizza burger, jalapeno popper burger, and more fun options! ***Stay tuned!***





US Senator Joni Ernst visits Suidae

Suidae hosted US Senator Joni Ernst in our Algona location August 31st. The visit was part of the Senators 'Homegrown Week' kicking off the final stretch of her 99 county tour hearing about challenges and successes of Iowa's farmers and producers. Drs. Jason Kelly and Matt Anderson led the conversation by telling Senator Ernst about Suidae and our clients and sharing the important issues facing our swine industry today. It was a great meeting and an honor to serve as a voice for our the many swine farmers to whom we owe our success.

Stricker participates in Webinar

Dr. Stricker shared her experience with coccidiosis during a co-sponsored Swine Health Information Center and American Association of Swine Veterinarians' webinar "Coccidiosis: Relearning Old Lessons." The webinar covered clinical signs, diagnosis and treatment experiences as well as a Q&A session by the participants. Over 200 live participants were in attendance. Other contributors included Dr. Kent Schwartz with the Iowa State University Veterinary Diagnostic Lab, Dr. Jeremy Pittman, staff veterinarian for Smithfield and Dr. Robert Friendship from the University of Guelph, Ontario Veterinary College. The webinar can be viewed in its entirety at www.swinehealth.org.

My name is Rebecca Merica.

I am the newest addition to Suidae Health and Production arriving a little over a year ago.

My job at Suidae is managing the microbiology laboratory. I am also involved in the research and development of new products hoping to help solve some of the swine industry's most vexing problems with infectious disease.

I have Ph.D. in microbiology from the University of Minnesota where I did research in immunology. Prior to Suidae, I taught at the university level for several years in Minnesota, New Mexico, and Nevada. While I miss helping students with their research projects, I am excited to be back in the lab full time working on some of my own.

What I enjoy most about working at Suidae is that it is a company that encourages its employees to be innovative when it comes to problem solving. This attitude coupled with great group of supportive coworkers has made my transition to Suidae and Iowa truly enjoyable.

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Summer Intern Research Update-Fecal Microbiota Transplants

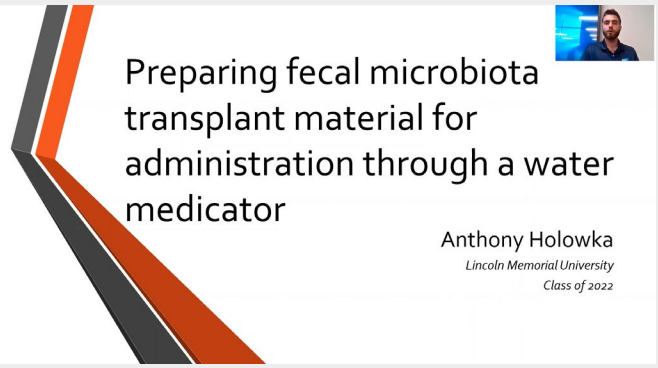
Suidae's summer intern, Anthony Holowka, was chosen as a finalist for the Morrison Swine Innovator Prize and presented his project during the virtual Leman Conference in September. Anthony's presentation was titled "Preparing fecal microbiota transplant material for administration through a water medicator."

Anthony summer project was based off a research study done at Kansas State University by Dr. Megan Niederwerder looking at fecal microbiota transplants (FMT) in pigs. Before getting into the details of a full-scale research project, Anthony had to investigate whether we would be able to take Dr. Niederwerder's FMT protocol and implement it in a commercial barn.

Anthony collected fecal matter from sows that were deemed to be "high performing sows" based off criteria from Dr. Niederwerder's study. The fecal matter was stored in a freezer until the FMT homogenate was made. To make the FMT, the first thing Anthony did was take 50g of fecal matter and dilute it with 250 mL of water (mixed with 10% glycerol). Then he used medium and fine cheese cloth to strain the solution to remove any larger materials that could later cause problems. After this step, all the FMT solution was mixed in a large bucket to create a true homogenate. The FMT homogenate was bottled in 1 L bottle and refrigerated until its use in the barn.

Next, Anthony had to evaluate if the FMT homogenate would run through a water medicator and if the pigs would drink it. He put 6L of homogenate (about 5 mL/pig) in a bucket with an air pump to keep the solution homogenized and in suspension. He did this for 7 consecutive days.

Anthony found that not only did the FMT homogenate go through a water medicator without flaws but also that the pigs would consume FMT! Because of this study, we now know we can further evaluate the effects of FMT on pigs in a c ommercial setting.



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