

Early weaning affects intestinal gene expression in pigs

University of Guelph study could give farmers a new set of tools to fight illness in young pigs and help researchers find ways to limit weaning stress

Weaner pigs may be getting a health boost through research at the University of Guelph.

A study recently concluded there has found that early weaning affects intestinal gene expression in

BY
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pigs, which has lasting health effects. Early weaning can cause illness, stress, and added vulnerability for the first two weeks after weaning and impacts feed efficiency for the duration of the animal's life.

"I'm excited about this because it gives a new way

of looking at weaning and pig nutrition," says Prof. Ming Fan, leader of the research project.

Fan has been studying swine nutrition and physiology for approximately 20 years, and began this specific study five years ago.

Yorkshire pigs were used in the study, though results are indicative of all pig breeds. Because the study was conducted on barrows and gilts before puberty, the sex of the animals is not an issue.

Throughout the trial, samples were taken from the intestines of weaner and suckling pigs, and compared from age 10 to 22 days old.

The results showed a decrease in intestinal alkaline phosphatase (IAP) gene expression in the proteins produced by the pigs who were weaned early. This led to a decrease in feed efficiency and lowered the ability of the proteins to bind and remove toxins secreted by pathogenic bacteria by 22 to 26 per cent. The results help to explain why young pigs have increased vulnerability to enteric diseases, diarrhea and slow growth during the weaning period.

Currently, this vulnerability to sickness is treated by adding antibiotics to feed. There are growing concerns with this practice, however, since it may lead to anti-microbial resistance. Consumer demand for reduced antibiotics in feed is also increasing.

The findings of this study could give farmers a new set of tools to fight illness in young pigs and could help researchers find a number of solutions to limit weaning stress.

Fan hopes to see this research lead to a number of new studies. He sees it providing many potential uses, including developing new breeding programs to feature genetic traits for increasing feed efficiency and lowering stress to give stronger and healthier pigs.

Another potential study which could be developed from the research could find a novel supplement or new feed combination which will help pigs enhance this gene expression during weaning. Research done by medical scientists on rats has focused on IAP, and those results showed it also helps with intestinal detoxification.

"At this point, I'm hoping, through the feed industry and farmers, to give better knowledge of how to help animals fight disease," says Fan.

Fan stresses the importance of sanitation in barns to help pigs during weaning phases. Good sanitation is currently the best defence against illness and will slow the amount of pathogen breeding.

Due to the fundamental nature of this study, the next step will be to share the results with the research community. Once the results have been published, Fan hopes to see more studies researching the gene in question and methods to increase animal health during weaning. **Q**

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