

Antibiotic alternative scores well in second round of swine trials

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Travelling can be stressful experience—whether it be to a vacation spot or business destination. The stress of travel also extends to piglets, such as when they're weaned from their mothers and transported to nursery

barns.

Now, instead of using dietary antibiotics to help the [piglets](#) cope and avoid illness, scientists with the Agricultural Research Service (ARS) are investigating a naturally occurring amino acid known as L-glutamine.

Initial laboratory studies in 2017 showed glutamine-fed piglets gained just as much weight as antibiotic-treated ones, among other health benefits. But the researchers, led by ARS animal scientist Jay Johnson, wanted to try and replicate those results on a larger scale that more closely mimicked commercial production scenarios.

The effort, which was supported by the National Pork Board, arose from a need to provide livestock producers with alternatives to using dietary antibiotics as a growth-promoting agent in swine. A federal rule in 2017 restricted the practice amid concerns that microbial resistance to medically important antibiotics could jeopardize their effectiveness in fighting human infection, notes Johnson, with the ARS Livestock Behavior Research Unit in West Lafayette, Indiana.

In the larger-scale trials, groups of piglets were transported to a nursery barn located 12 hours from where they were weaned to simulate the kinds of stress they'd experience commercially, which can diminish the young animals' immune system function, appetite and [weight gain](#)—something [antibiotics](#) helped them recover from.

For the nursery phase of the study, one group of piglets was fed a diet containing the antibiotic chlortetracycline, another glutamine and a third group—used as experimental controls—nothing but feed ingredients.

Among the findings, published in the May 29 issue of the *Journal of Animal Science*:

- Glutamine-fed piglets gained weight as well as the antibiotic group but showed fewer signs of intestinal damage from pathogens.
- Glutamine group members were also somewhat less aggressive in pens with mixed litters than those given the antibiotic.
- Compared to the control group, glutamine- and antibiotic-treated piglets showed lower blood plasma levels of tumornecrosisfactoralpha, a biochemical marker of inflammation and immune system activity that can use energy and divert it from the animals' growth needs.
- The meat quality of market-ready pigs from the glutamine group was no different than that of the antibiotic or control [group](#).

Johnson says further research will focus on learning how glutamine works to promote growth and wellbeing in piglets after weaning and transport.

More information: Alan W Duttlinger et al. Replacing dietary antibiotics with 0.20% L-glutamine in swine nursery diets: Impact on health and productivity of pigs following weaning and transport, *Journal of Animal Science* (2019). [DOI: 10.1093/jas/skz098](https://doi.org/10.1093/jas/skz098)

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