

Title: Evaluating effects of mitigation strategies on pig welfare and future productivity after transport during different seasons – **NPB #16-065**

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Scientific Abstract:

Antibiotic use has been limited in United States swine production. Therefore, the objective was to determine whether supplementing L-glutamine at cost-effective levels can replace dietary antibiotics to improve piglet welfare and productivity following weaning and transport during different seasons. Based on previous research, we hypothesized that withholding dietary antibiotics would negatively affect pigs while diet supplementation with 0.20% L-glutamine (GLN) would have similar effects on pig performance and health as antibiotics. Mixed sex piglets [N=480; 5.6±0.1kg BW] were weaned (18.4±0.2d of age), and transported for 12 h during summer 2016 and spring 2017. Pigs were blocked by BW and allotted to 1 of 3 dietary treatments [n=10 pens/dietary treatment/season (8 pigs/pen)]; antibiotics [A; chlortetracycline (441ppm) + tiamulin (38.6ppm)], no antibiotics (NA), or GLN fed for 14 d. On d15-34, pigs were provided a common antibiotic free diet. Data were analyzed as a 2×3 factorial of season and diets using PROC MIXED in SAS 9.4. Day 14 BW and d0-14 ADG was greater ($P=0.01$) for A (5.6 and 18.5%, respectively) and GLN pigs (3.8 and 11.4%, respectively) compared to NA pigs, with no differences between A and GLN pigs. Day 0-14 ADFI increased for A ($P<0.04$; 9.3%) compared to NA pigs; however, no differences were detected when comparing GLN to A and NA pigs. Once dietary treatments ceased, no differences ($P>0.05$) in productivity between dietary treatments were detected. Aggressive behavior tended to be reduced overall ($P = 0.09$; 26.4%) in GLN compared to A pigs, but no differences were observed between A and GLN versus NA pigs. Huddling, active, and eating/drinking behaviors were increased overall ($P < 0.02$; 179, 37, and 29%, respectively) in the spring compared to the summer season. When HCW was used as a covariate, loin depth and lean percentage was increased ($P = 0.01$; 4.0% and 1.1%, respectively) during the spring compared to the summer. In conclusion, GLN supplementation improved pig performance and health after weaning and transport similarly to A across seasons; however, the positive effects of A and GLN were diminished when dietary treatments ceased.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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