



This research presents evidence that feeding oat to sows during gestation and lactation can promote health in piglets after weaning.

## Improving Immunity, Intestinal Health and Growth Performance of Weaned Pigs with Synbiotics

### Who cares and why?

The swine industry often weans pigs at an early age to maximize the number of births per year. However, at the age the piglets are weaned, their immune systems are immature. This factor, coupled with the stress of weaning and its associated change in diet, makes piglets susceptible to post-weaning diarrhea (PWD). Post-weaning diarrhea is a condition that is associated with impaired growth rate and imbalance of gut microflora, which has economic consequences on the swine industry.



To avoid post-weaning diarrhea, antibiotic growth promoters (AGP) have been used in piglet diets. Because of public pressure to discontinue the practice of including antibiotics in animal feed, pork producers in the United States are seeking natural, research-proven and affordable solutions for managing growth, preventing disease and enhancing the overall health of pigs, particularly during the time surrounding weaning.

The aim of this research is to evaluate the effects of probiotics, prebiotics and synbiotics on intestinal health, protection against post-weaning diarrhea, and growth and performance in piglets weaned at 18-to-21 days. Specifically, researchers at North Carolina Agricultural and Technical State University evaluated the effects of yeast culture (a probiotic) and oat (a prebiotic) fed to sows during gestation and lactation, or directly to the offspring.

### What has the project done so far?

In experiments with sows and piglets, researchers compared industry-standard diets with the experimental diets that were supplemented with oat, yeast culture or a combination of oat and yeast cultures. The diets were fed to gestational and lactating sows. The following effects of these diets on piglets weaned at 18-to-21 days post partum were then evaluated: feed intake and growth performance; gut bacteria colonization, and mucosal

immunity. Researchers also compared and evaluated the beneficial probiotic and immunoglobulin levels in milk collected from sows. The next year, experimental diets were fed to nursing piglets, and researchers compared and evaluated the same performance and health traits mentioned above.

The study showed that piglets born of sows that consumed oat, but not yeast culture during gestation and lactation, weighed more at birth, lost less weight during the two weeks post weaning and had insignificant differences in feed intake. Further, although researchers detected no significant changes in the beneficial and



pathogenic bacteria levels between diets, the findings demonstrate that piglets born of sows that consumed oat had decreased incidences of diarrhea, suggesting that oat feed to sows may positively influence intestinal health in piglets. The study also indicated that milk samples from sows on the oat supplemented diet had significantly higher levels of bifidobacteria, a probiotic microbe, but not lactobacillus species. However, the supplemented diets had no significant effect on the immunoglobulin levels in the milk/colostrum.

In summary, this study finds that the use of oat in sows' diets can inhibit the incidence of diarrhea and mitigate the weight loss in piglets during the post-weaning period through enhancement of milk components. From these samples, researchers identified the presence of pathogenic bacteria and cockroach allergens in residential homes and day-care centers. The results indicate that German cockroaches that were collected from different homes and day-care centers have differential tolerances to commonly used insecticidal bait products.

Each strain had a different profile of tolerance, indicating that each strain had a unique treatment history. In general, dinotefuran was the most toxic insecticide to all strains and avermectin was least toxic.

## Impact Statement

This study finds that the use of oat in sows' diets can inhibit the incidence of diarrhea and mitigate the weight loss in piglets during the post-weaning period through enhancement of milk components.

### What research is needed?

The study also notes that oat and yeast fed to sows together did not appear to produce a synergy. In fact, there seemed to be a discord. This is something that may be further explored in the future.

### Want to know more?

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