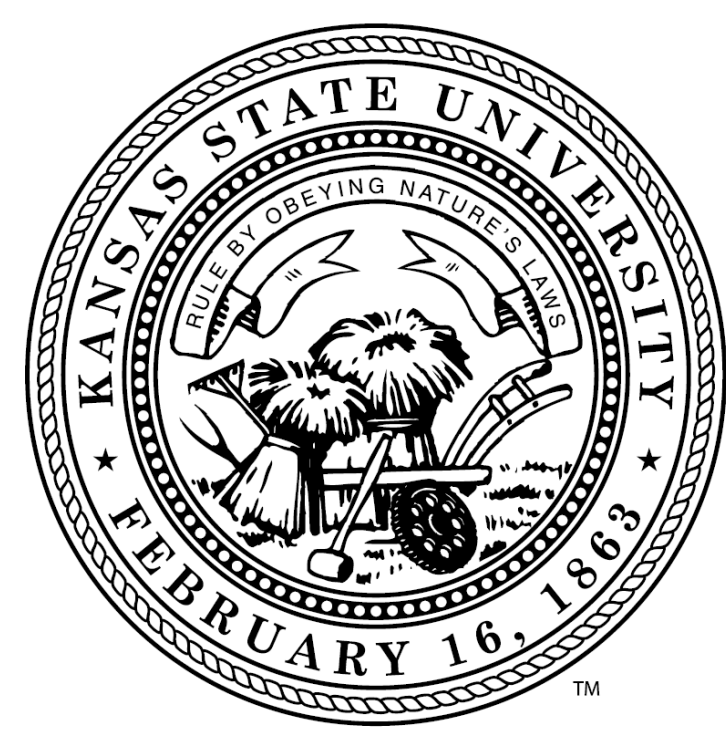


Effects of medium chain fatty acids relative to antibiotics and zinc oxide in nursery pig diets

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Introduction

- With increasing regulation and consumer pressure to remove feed-grade antimicrobials from swine diets, the swine industry is constantly seeking alternatives that might provide similar nursery performance.
- Further, ZnO is commonly included due to its ability to improve growth performance and provide an antimicrobial response.
- However, both ZnO and antimicrobials have been shown to contribute to antibiotic resistance, and ZnO also poses an environmental concern.
- One potential alternative is medium chain fatty acids (MCFA), which may have antiviral, bactericidal, and bacteriostatic properties based on some exploratory research.
- However, literature is lacking direct comparisons of MCFA to ZnO and carbadox

Objective

The objective of the study was to evaluate alternatives to antibiotics and zinc oxide in nursery pig diets.

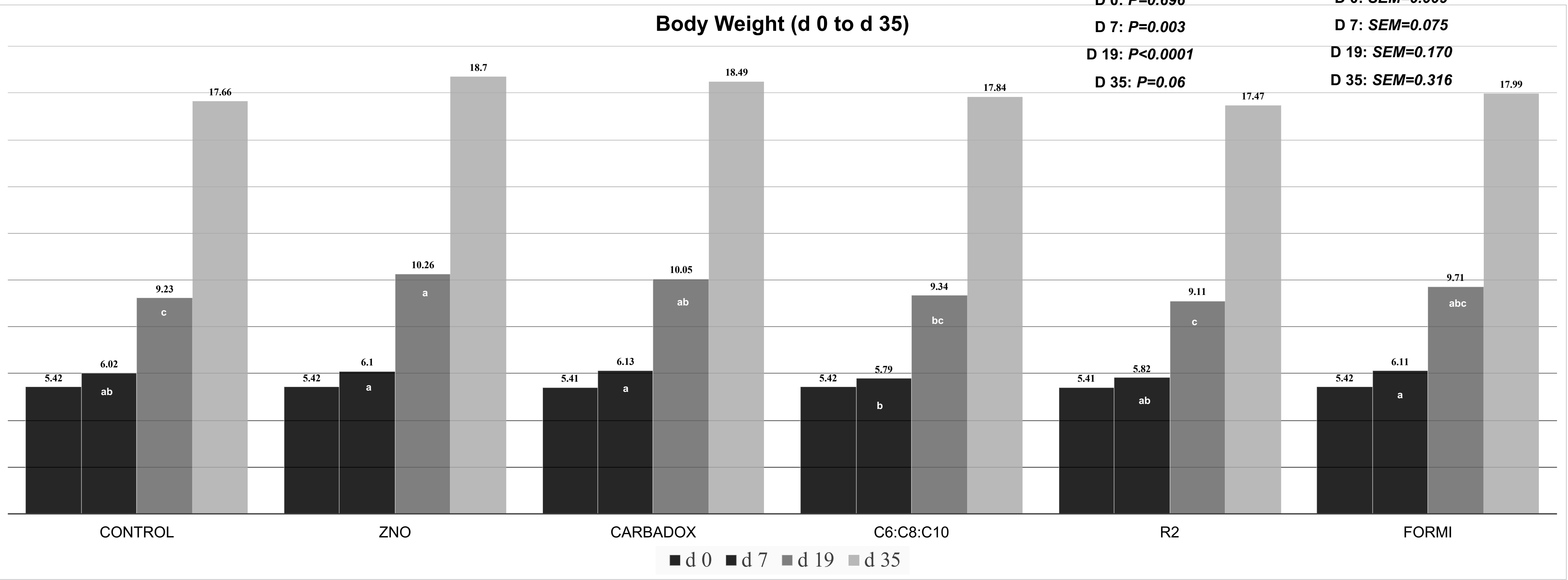
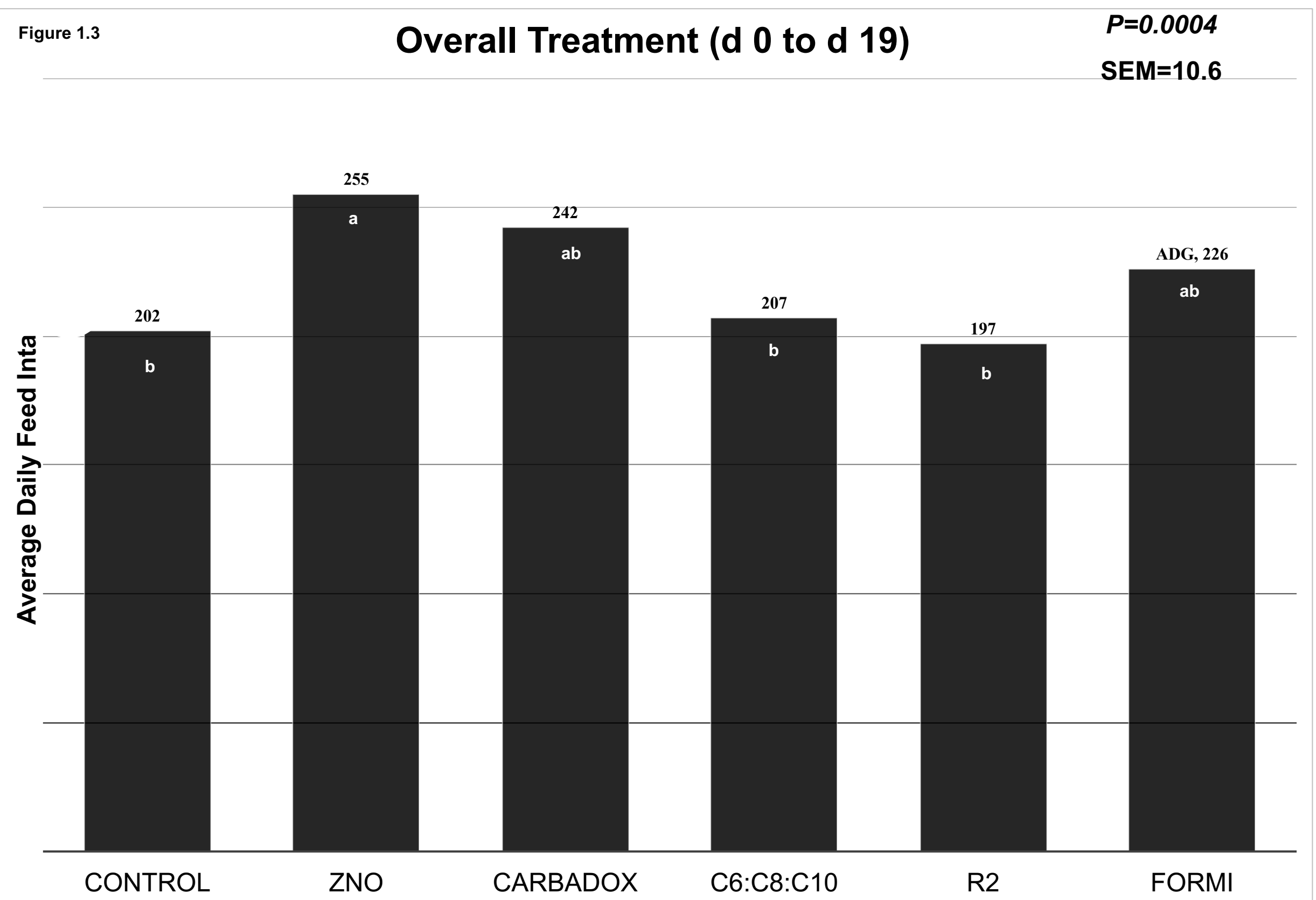
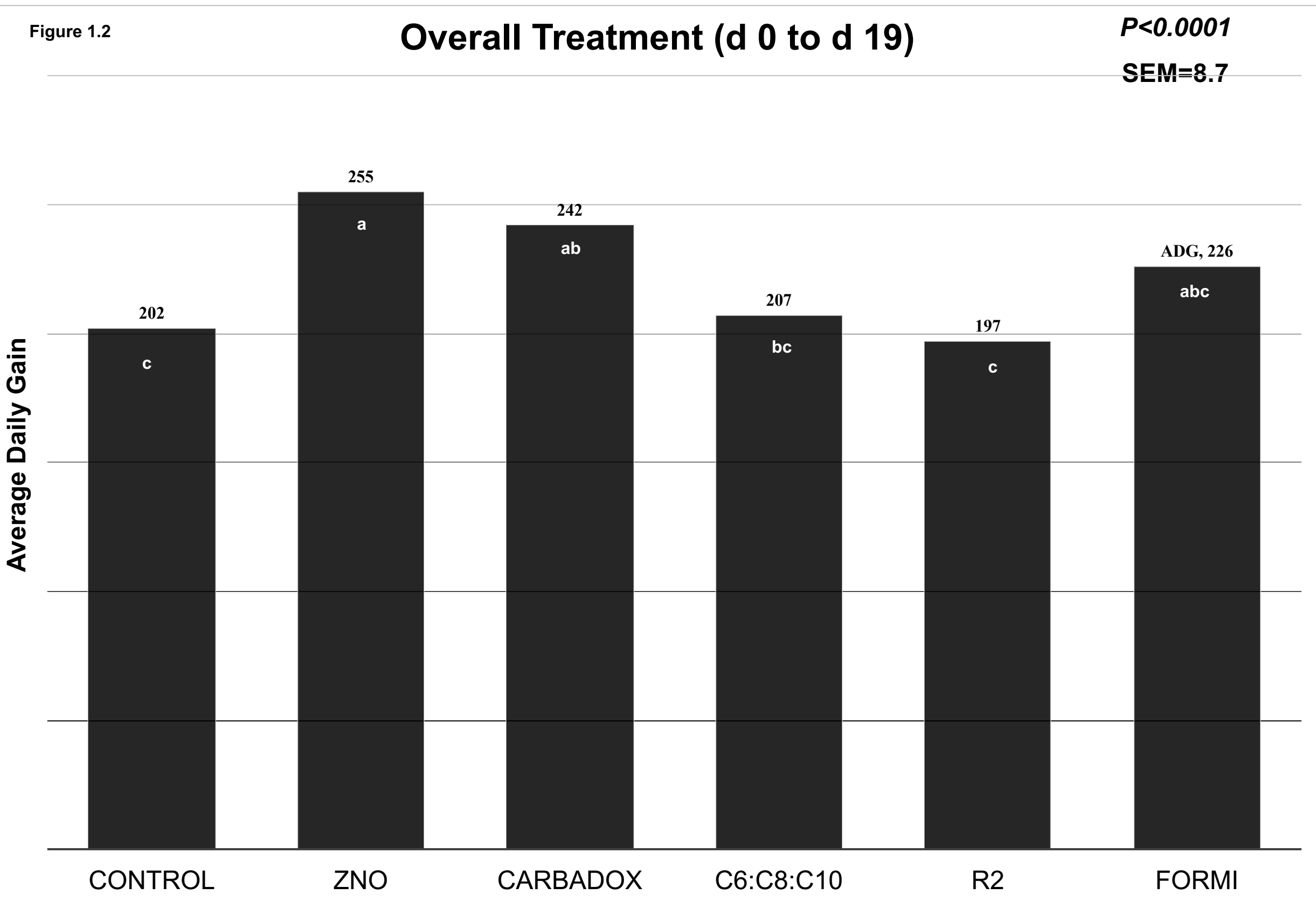
Materials and Methods

- This experiment was conducted at the Kansas State University Swine Teaching and Research Center in Manhattan, Kansas.
- There were 360 weanling pigs (DNA 200 x 400, BW 5.4±0.07 kg BW) fed for the 35-d trial.
- With 6 dietary treatments, there were 5-6 pigs/pen and 10 pens/treatment.
- Pigs were allotted to pens in a completely randomized design.
- Pens and feeders were weighed weekly in order to calculate ADG, ADFI, and G:F.
- Treatments consisted of the following:
 1. Control
 2. ZnO (300 ppm in phase 1 and 1500 ppm in phase 2)
 3. Carbadox (50 g/ton)
 4. 1% Blend C6:C8:C10
 5. 1% Feed Energy R2 (Feed Energy Corp, Des Moines, IA)
 6. 1% FORMI GML (ADDCON, Bitterfeld-Wolfen, Germany)
- Treatments were fed in phases: phase 1 (d 0 to d 7); phase 2 (d 8 to d 19); common phase (d 20 to d 35)
- Data were considered significant if $P < 0.05$. It was analyzed using the GLIMMIX procedure of SAS (SAS Institute, Inc., Cary, NC)

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Results



Conclusion

- For overall treatment results (d 0 to 19), pigs fed ZnO were more efficient in ADG and ADFI ($P<0.05$), compared to the control and R2 diet, with other results being intermediate (Figure 1.2)
- For the entire trial, ADG was highest when fed ZnO compared to R2, with all other diets being intermediate.
- For ADFI, ZnO and carbadox were significantly higher ($P<0.05$) than R2 and all diets being intermediate. (Figure 1.3)
- There were no significant differences overall for G:F ($P=0.32$).
- In conclusion, ZnO and carbadox showed a greater impact on ADG and ADFI; however, C6:C8:C10 diets and FORMI, may achieve similar results.
- Additional research should be collected to further demonstrate the value of MCFA compared to dietary antibiotics.