Evaluating alternatives to zinc oxide or carbadox in nursery pig diets

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Introduction

- Antibiotics are commonly included in nursery pig diets to improve overall health
- ZnO and carbadox are therapeutically utilized in pig diets
- MCFA may serve as an alternative to antibiotics, however there is minimal data
- Increasing regulatory pressure from consumers to find an alternative to antibiotics
- Limited research done on the impacts of antibiotics in nursery pig diets further research is needed.

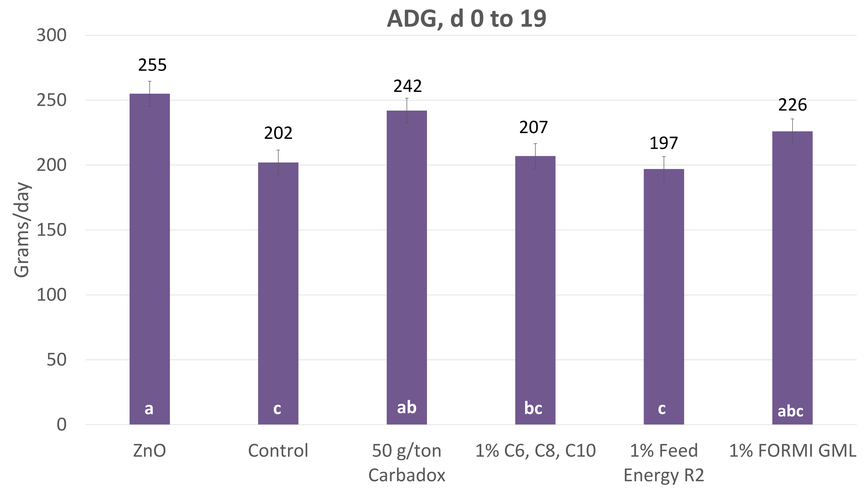
Objective

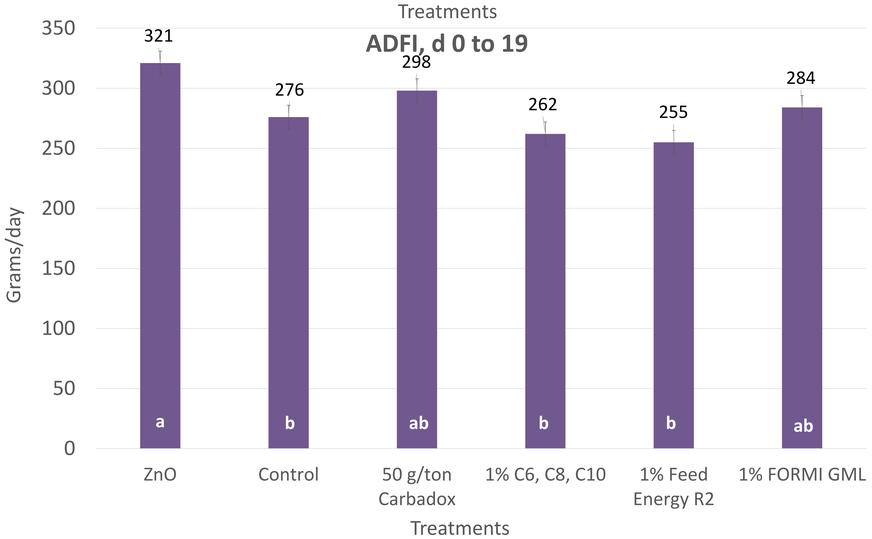
The objective of this experiment was to evaluate alternatives to zinc oxide or carbadox in nursery pig diets.

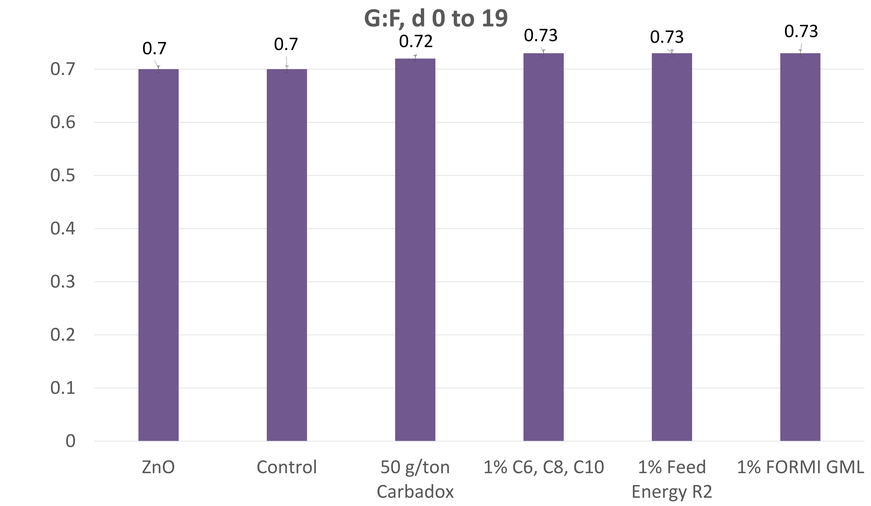
Experimental Procedures

- 360 nursery pigs (DNA 200x400, 5.4±0.06 kg BW, 21d of age)
- Completely randomized experimental design
- Experimental Unit: Pen (6 pigs/pen and 10 pens per treatment).
- Treatments consisted of:
  1) ZnO
     a) Phase 1: 3,000ppm ZnO
     b) Phase 2: 1,500ppm ZnO
  2) Control (no ZnO or carbadox)
  3) 50g/ton carbadox
  4) 1% blend of C6:C8:C10 (MCFA)
  5) 1% Feed Energy R2
  6) 1% FORMI GML by ADDCON
- Treatments were fed in 3 phases
  - Phase 1: treatment diets (d 0 to 7)
  - Phase 2: treatment diets (d 8 to 19)
  - Phase 3: common diet (d 20 to 35)
- Pigs and feeders were weighed weekly.
- Response criteria: ADG, ADGI , and G:F
- Data was analyzed using Statistical Analysis System (SAS GLIMMIX PROC) with 0.05 as the alpha value

Experimental Period Results







Overall Treatment (d 0 to 19)

Table 2. Impact of dietary treatment on nursery pig growth performance[1].

	3,000 ppm P1 1,500 ppm P2 ZnO	Control	50 g/ton Carbadox	1% C6, C8, C10	1% Feed Energy R2	1% FORMI GML	SEM	P =
Overall Treatment (d 0 to 19)								
ADG, g/d	255[a]	202[c]	242[ab]	207[bc]	197[c]	226[abc]	8.7	< 0.0001
ADFI, g/d	321[a]	276[b]	298[ab]	262[b]	255[b]	284[ab]	10.6	0.0004
G:F	0.79	0.73	0.81	0.79	0.77	0.80	0.018	0.078

Overall Treatment (d 0 to 35)

Table 2. Impact of dietary treatment on nursery pig growth performance[1].

	3,000 ppm P1 1,500 ppm P2 ZnO	Control	50 g/ton Carbadox	1% C6, C8, C10	1% Feed Energy R2	1% FORMI GML	SEM	P =
Overall (d 0 to 35)								
ADG, g/d	377[a]	344[ab]	374[ab]	355[ab]	339[b]	359[ab]	8.5	0.012
ADFI, g/d	536[a]	492[ab]	517[a]	488[ab]	463[b]	494[ab]	11.5	0.001
G:F	0.70	0.70	0.72	0.73	0.73	0.73	0.012	0.32

Conclusions

- MCFA-based additives have limited impact on pig feed efficiency when fed any of the six treatment diets.
- However, pigs fed ZnO had an increase in ADG and ADFI than those fed other dietary treatments.

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