



Evaluation of Medium Chain Fatty Acids as a Dietary Additive in Nursery Pig Diets

K.A. Thomson, J.T. Gebhardt, A.B. Clark, J.C. Woodworth, M.D. Tokach, J.M. DeRouchey, R.D. Goodband, and S.S. Dritz



Department of Animal Sciences and Industry, Swine Nutrition Group, Kansas State University, Manhattan

Introduction

- Medium chain fatty acids (MCFA) are those fatty acids consisting of 6 to 12 carbon atoms.
- MCFA's have previously been evaluated in swine diets as antibacterial and antiviral compounds, as well as for their growth promoting properties.
- However, it is unclear which of these MCFA's or combinations thereof, are beneficial and at what inclusion level.

Objective

To determine the effects of medium chain fatty acids as a dietary additive on nursery pig growth performance

Experimental Procedures

- A total of 360 nursery pigs (200 x 400; DNA, Columbus, NE; initially 15 lb BW) were used in this 35 d study.
- Pigs, weaned at 21 d of age, were randomly allotted to 1 of 8 dietary treatments, based on initial weight, with 5 pigs/pen and 9 pens/treatment.
- Pigs were fed a commercial starter diet for 6 d prior to the start of the experiment then phase 1 diets were fed from d 0 to 14, and phase 2 diets were fed from d 14 to 35.
- Pen weights were collected on d 0, 7, 14, 21, 28, and 35.
- Feed and water were provided ad libitum.

Dietary Treatments:

Diet 1: Control diet without MCFA

Diets 2 to 5: Control diet containing 1:1:1 blend of C6, C8, and C10 at 0.25, 0.50, 1.0, or 1.5% total MCFA, respectively.

Diets 6 to 8: Control diet containing 0.50% C6, C8, or C10, respectively.

Basal Diets (As-Fed)^{1,2}

Ingredient %	Phase 1	Phase 2
Corn	54.92	62.55
Soybean meal	26.38	31.60
Whey powder	10.00	---
Soybean oil	1.50	1.50
Calcium carbonate	.95	1.00
Monocalcium phosphate	1.30	1.15
Salt	0.60	0.60
L-Lys HCl	0.50	0.51
DL-Met	0.24	0.23
L-Thr	0.21	0.21
L-Trp	0.05	0.06
L-Val	0.15	0.14
Trace mineral	0.15	0.15
Vitamin	0.25	0.25
Phytase	0.07	0.07
Zinc oxide	0.25	---
HP 300	2.50	---
C6 (Hexanoic acid)	+/-	+/-
C8 (Octanoic acid)	+/-	+/-
C10 (Decanoic acid)	+/-	+/-

Summary & Conclusions

- The addition of a MCFA blend in nursery pig diets linearly improved ($P < 0.05$) ADG, ADFI, and G:F.
- Final weight also improved linearly with MCFA blend inclusion (47.5, 48.5, 50.1, 50.4, and 51.2 lb, for control, 0.25%, 0.50%, 1.0% or 1.5% MCFA blend, respectively; SEM=0.76).
- Pigs fed C6 or C8 alone had increased ($P < 0.05$) ADG and final BW compared to pigs fed the control diet.
- G:F improved ($P < 0.05$) when pigs were fed 0.5% C6, 0.5% C8, or 0.5% C10 compared to the control.
- There was no evidence ($P > 0.05$) for difference between feeding the MCFA alone at 0.50% compared to pigs fed the 0.50% 1:1:1 blend diet.
- The use of MCFA in nursery diets improved pig performance and should be tested as a potential antibiotic alternative.

Results

