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K Hongtrakul

I H. Kim

J A. Loughmiller

See next page for additional authors

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Effects of added choline on performance of weanling pigs

Authors

K Hongtrakul, I H. Kim, J A. Loughmiller, J W. Smith, H Cao, Robert D. Goodband, Michael D. Tokach, and Jim L. Nelssen

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EFFECTS OF ADDED CHOLINE ON PERFORMANCE OF WEANLING PIGS

*K. Hongtrakul, R. D. Goodband, I. H. Kim,
J. A. Loughmiller, J. W. Smith, M. D. Tokach,
J. L. Nelssen, and H. Cao*

Summary

A 28-d growth assay was conducted to determine the effects of added choline on weanling pig performance. Pigs were fed a control diet without added choline or diets containing 150 g/ton of added choline. No differences in pig growth performance were observed. These results suggest that added choline can be removed from weanling pig diets.

(Key Words: Weanling Pigs, Choline.)

Introduction

Choline is an expensive vitamin that until recently, has been added routinely to all swine diets. However, recent research with finishing pigs suggested no improvements in performance from added choline. Perhaps the choline in natural ingredients such as grain and soybean meal, although not totally available to the pig, is enough to meet their requirement. Eliminating the added choline can save approximately \$.50 to \$.60/ton of complete feed. Therefore, the objective of this study was to determine if added choline is necessary for maximum growth performance of weanling pigs.

Procedures

Seventy two weanling pigs (initially 11 ± 2 lb and 21 d of age) were used. Pigs were blocked by initial weight to one of two dietary treatments, with six pigs per pen and six replications (pens) per treatment. Treatments (with or without 150 g/ton of added choline) were arranged in a randomized complete blocked design.

The trial was divided into two phases (Table 1). From d 0 to 7 after weaning, diets contained 20% dried whey and 5% spray-dried animal plasma and were formulated to 1.5% lysine with all other amino acids above suggested estimates. During d 7 to 28 after weaning, pigs were fed a less complex diet containing 10% dried whey and 2.5% spray-dried blood meal. Diets fed from d 0 to 7 were pelleted, and diets fed from d 7 to 28 were in a meal form.

During the experiment, pigs were housed in raised-deck pens in an environmentally controlled room and allowed ad libitum access to water and feed. Temperature was maintained at 95°F for the first week and then gradually reduced each week thereafter for pig comfort. The pigs were weighed and feed disappearance were determined weekly to calculate ADG, ADFI, and F/G.

Results and Discussion

In this study, growth performance was not affected ($P > .32$) at any time by the addition of 150 g/ton of added choline (Table 2). Therefore, these results suggest that with diets similar in composition to the ones used herein, added choline is not necessary for weanling pigs. Furthermore, these data and those previously obtained with growing-finishing pigs suggest that added choline can be eliminated from vitamin premixes used in grain-soybean meal diets. However, we emphasize that added choline is still needed in diets for gestating and lactating sows.

Table 1. Compositions of Experimental Diets

Ingredient, %	Day 0 to 7 ^a	Day 7 to 28 ^b
Corn	45.66	52.82
Dried whey	20.00	10.00
Soy bean meal	15.99	26.77
Spray-dried animal plasma	5.00	
Soybean oil	5.00	3.00
Fish meal	2.50	-----
Spray-dried blood meal	1.75	2.50
Monocalcium phosphate	1.27	1.88
Limestone	0.79	1.00
Zinc oxide	0.38	0.25
Vitamin premix ^c	0.13	0.13
L-Lysine-HCL	0.15	0.15
DL-Methionine	0.13	0.10
Trace mineral premix	0.15	0.15
Salt	0.10	0.25
Antibiotic ^d	1.00	1.00
Choline chloride, 60% ^e	-----	-----
Total	100.00	100.00

^aDiets were pelleted and formulated to contain 1.50% lysine, .42% methionine, .90% Ca and .80% P.

^bDiets were fed in a meal form and formulated to contain 1.35% lysine, .38% methionine, .90% Ca, and .80% P.

^cPremix provide the KSU suggested vitamin concentrations with the exception of no added choline.

^dProvided 50 g/ton carbadox.

^eProvided 150 g/ton of added choline added in place of corn.

Table 2. Effects of Added Choline on Weanling Pig Performance^a

Item	Control	Added Choline, 150 g/ton	P Value (P<)	CV
d 0 to 7				
ADG, lb	0.73	0.77	0.32	8.3
ADFI, lb	0.61	0.64	0.46	9.7
F/G	.84	.83	0.83	9.0
d 7 to 14				
ADG, lb	0.62	0.63	0.88	19.7
ADFI, lb	1.12	1.05	0.48	13.8
F/G	1.82	1.67	0.33	14.4
d 14 to 21				
ADG, lb	1.16	1.21	0.34	7.3
ADFI, lb	1.67	1.74	0.52	10.3
F/G	1.43	1.43	0.99	6.8
d 21 to 28				
ADG, lb	1.17	1.20	0.61	7.8
ADFI, lb	1.97	2.05	0.36	7.4
F/G	1.67	1.69	0.79	9.0
d 0 to 28				
ADG, lb	0.93	0.96	0.47	7.7
ADFI, lb	1.37	1.40	0.69	9.1
F/G	1.47	1.45	0.59	5.0

^aA total of 72 weanling pigs (initially 11 ± 2 lb, and 21 d of age) were used with 6 pigs/pen with 6 replicate pens/treatment.