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ACIDOMATRIX™ LowLac for reduced lactose nursery pig diets

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Introduction

The importance of lactose as an energy source for nursery pigs has been demonstrated in numerous studies. Lactose also likely plays an important role in modulating the gastrointestinal tract microflora via fermentation to lactic acid. However, during the past year dramatic differences in lactose price and availability have occurred. The present trial was conducted to determine if dietary lactose can be reduced in nursery pig diets with the addition of ACIDOMATRIX™ LowLac (LL).

Materials and Methods

A total of 504 TR4 X C22 pigs (6.21±0.09 kg bodyweight) were weaned at approximately 20 day of age and randomly assigned to one of four treatments to provide 6 pens/treatment (21 pigs/pen). The treatments were fed from 0 to 24 days postweaning in two phases (0 to 7 and 8 to 24 days postweaning). Treatments were 1) Pos (20 and 10% lactose) 2) Neg (20 and 2.5% lactose) 3) LL824 (Neg + LL from 8 to 24 days), 4) LL024 (Neg + LL from 0 to 24 days). Lactose was supplied from whey permeate (DairyLac 80). All diets contained Mecadox (55 ppm) and CuSO₄ (250 ppm Cu). Spray dried porcine plasma (3%) and ZnO (2500 ppm) was included from 0 to 7 days postweaning. The inclusion of LL was 0.69% and is a blend of organic acids, MOS, esters of butyrate, and ethoxyquin.

From 7 to 24 days postweaning, pigs experienced an outbreak of hemolytic *E. coli* and all pigs received neomycin water treatment.

Results and Discussion

No differences in bodyweights were detected at day 7 (7.33±0.13 kg) or 24 (12.64±0.23 kg) of study ($P > 0.19$). No differences in performance were detected between treatments from 0 to 7 days postweaning ($P > 0.05$). From 8 to 24 days

postweaning, no differences in ADG were detected between treatments ($P > 0.05$).

Table 1. Effect of reduced lactose content and ACIDOMATRIX™ LowLac on nursery pig performance.

Item	Pos	Neg	LL824	LL024
0 to 7 days				
ADG, g/d	160	152	149	163
ADFI, g/d	167	158	165	170
GF	0.967	0.967	0.904	0.954
8 to 24 days				
ADG, g/d	291	278	294	309
ADFI, g/d	416 ^a	389 ^{ab}	382 ^b	404 ^{ab}
GF	0.693 ^b	0.706 ^{ab}	0.766 ^a	0.763 ^a
0 to 24 days				
ADG, g/d	250	239	250	264
ADFI, g/d	338	316	317	332
GF	0.736 ^b	0.751 ^{ab}	0.789 ^a	0.794 ^a
Mortality, %	6.4	13.5	7.2	8.0
Morbidity, %	7.9	6.4	4.8	6.4

^{ab}Means with different superscripts are significantly different ($P < .05$).

Pigs fed LL824 had lower ADFI compared to Pos fed pigs from 8 to 24 days postweaning ($P < 0.05$). Pigs fed LL, regardless of duration, had 10% higher GF compared to Pos fed pigs from 8 to 24 days postweaning ($P < 0.05$). Overall from 0 to 24 days postweaning, ADG and ADFI were similar between treatments ($P > .05$). The GF was 7% higher for pigs fed LL824 or LL024 compared to Pos fed pigs ($P < 0.05$).

Pigs fed low lactose diets with ACIDOMATRIX™ LowLac had improved feed efficiency compared to pigs fed high lactose diets. Although, the present study was not designed to examine the effects of an enteric challenge on performance and mortality of pigs fed low lactose diets, the results are suggestive that dietary lactose or ACIDOMATRIX™ LowLac provides similar gastrointestinal benefits when challenged with *E. coli* and further investigations are warranted.