



PremiumPro

Research Report

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The replacement of blood plasma and fishmeal with **PremiumPro** in nursery diets (phases 1 and 2) resulted in lower feed costs and improved growth performance

ABSTRACT: The objective of this study was to confirm in a controlled and blinded study the use of PremiumPro (PMP) in phase 1 & 2 nursery diets as a total replacement for blood plasma (BP) and fish meal (FM). Data was collected over 20 days (7d & 13d for phases 1 & 2, respectively) from 96 weaned piglets (14.3 lb) in a complete randomized design and housed in 12 pens (n=6). Diets were in meal form and formulated from a corn-soybean meal base and fortified with nutrients required for that stage of growth. The control diets (CON) contained 3.75 & 1.9% BP and 2.5 & 1.25% FM in phases 1 & 2, respectively. The test diets (TEST) contained 15.0 & 7.5% PMP in phases 1 & 2, respectively, with no BP and FM used in either. Diets were formulated to be iso-caloric and iso-lysine among treatments. Formulation costs were reduced in the TEST diets by \$102 & \$48/ton in phases 1 & 2, respectively. Pigs fed the TEST diets consumed more feed (1.16 vs. 0.95 lb/day, $P<0.05$), grew faster (0.96 vs. 0.69 lb/day, $P<0.05$) and were more efficient (1.22:1 vs. 1.37:1 FCR, $P<0.05$) than pigs fed the CON diets.

INTRODUCTION

Previous controlled studies and many field observations have demonstrated the superior palatability and performance advantages when the premium protein products typically used in nursery diets (i.e. blood meal, blood plasma and fish) were partially or totally replaced with PremiumPro. This study was designed to confirm those observations.

MATERIALS AND METHODS

The protocol was approved by the Institutional Animal Care and Use Committee of Midwest Veterinary Services, and the study was administered by Midwest Veterinary Services, Oakland, NE, USA.

Ninety-six weaned piglets (~20d old, Hermitage NGT, Columbus, NE) weighing an average of 14.3 lb were randomly assigned to twelve pens (4'x8') with equal gender distribution (4 barrows and 4 gilts), then randomly assigned to one of two dietary treatment regimes. Each pen was equipped with stainless steel feeder and a water nipple, which served as the experimental unit (n=6).

As in previous studies, dietary treatments (Table 1) were formulated to be iso-caloric and iso-lysine (total lysine with appropriate amino acid ratios), thus allowing the resulting true amino acid levels to be evaluated as they occur. Other ingredients recognized as necessary for phase 1 (d 0 to 7) and phase 2 (d 8 to 20) nursery diets (e.g. milk protein & lactose) were included in all diets. The variable between the treatments was selection of premium protein ingredients. The CON diets contained 3.75 & 1.9% BP and 2.5 & 1.25% FM in phases 1 & 2, respectively, while the TEST diets contained 15.0 & 7.5% PremiumPro in phases 1 & 2, respectively, with no BP and FM used in either. All diets were in meal form and fed ad-libitum from day-0 to -20.

Pigs were weighed individually on days 0, 7 and 20. Average daily gain, feed disappearance and feed:gain ratio were determined for each phase of the study.

Table 1. Composition of the experimental diets, as-fed basis

Item, %	CONTROL		TEST	
	Phase 1	Phase 2	Phase 1	Phase 2
Corn	13.29	27.60	19.34	35.35
Oat Groats	10.00	5.00	10.00	5.00
Soybean meal	30.35	32.50	20.00	22.50
Whey Permeate	25.00	18.25	25.00	18.25
CWG	3.75	3.00	-	0.85
Vit/Min/TM/Antibiotic ¹	11.36	10.50	10.66	10.55
Blood Plasma	3.75	1.90	-	-
Fish Meal (select)	2.50	1.25	-	-
PremiumPro	-	-	15.00	7.50
TOTAL	100.00	100.00	100.00	100.00
Calculated Composition				
ME, Kcal/lb	1535.75	1535.03	1532.24	1534.91
Lysine, %	1.65	1.55	1.65	1.55
True Dig. Lysine, %	1.52	1.42	1.45	1.39
Dig. Lys:ME (g:Mcal)	4.49	4.19	4.30	4.11

¹ Antibiotic: Chortetracycline (400g/ton) and Tiamulin (35g/ton)

RESULTS AND DISCUSSION

Across both phases of this trial (20 days), pigs fed the TEST diets consumed 22% more feed (1.16 vs. 0.95 lb/day, $P<0.05$), grew 39% faster (0.96 vs. 0.69 lb/day, $P<0.05$) and tended to be more (11%) efficient (1.22:1 vs. 1.37:1 FCR, $P=0.07$) than pigs fed the CON diets (Table 2). In both feeding phases, the performance of pigs fed diets containing PremiumPro was superior to those fed diets supplemented with blood plasma and/or fish meal.

Market conditions at the time of this study allowed for much lower feed costs in favor of the TEST diets, as well. Specifically, by using PremiumPro to replace blood plasma and fishmeal, the cost per ton was reduced by \$102 and \$48/ton for phase 1 & 2, respectively. That, together with enhance performance, the cost/lb of gain resulting from feeding PremiumPro was reduced by more than \$0.10/lb (\$0.62 vs. \$0.5135/lb of gain for the control and PremiumPro groups, respectively).

Table 2. Growth responses to the substitution of blood plasma and fishmeal with PremiumPro in phases 1 and 2 of swine nursery diets (least square means, n=6).

Item		CONTROL	TEST	Variance
Body Wt (total gain), lb	d0	14.08	14.49	+ 0.41
	d7	17.07 (2.99)	18.68 (4.19)	+ 1.61 (1.20)
	d20	27.95 (13.87)	33.60 (19.11)	+ 5.65 (5.24)
Avg. Daily Feed Disp, lb	P1	0.52	0.68	+ 0.16
	P2	1.19 ^a	1.42 ^b	+ 0.23
	P1&2	0.95 ^a	1.16 ^b	+ 0.21
ADG, lb	P1	0.43 ^a	0.60 ^b	+ 0.17
	P2	0.84 ^a	1.15 ^b	+0.31
	P1&2	0.69 ^a	0.96 ^b	+ 0.27
Feed:Gain	P1	1.22	1.14	- 0.08
	P2	1.42	1.24	- 0.18
	P1&2	1.37 ^c	1.22 ^d	- 0.15

^{a,b} Within a row, means without common superscripts differ ($P<0.05$)

^{c,d} Within a row, means without common superscripts differ ($P=0.07$)