

EFFECT OF PLASMA PROTEIN SOURCE IN PERFORMANCE OF EARLY-WEANED PIGS

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Story in Brief

Plasma protein has consistently improved performance in early-weaned pigs when compared to milk protein or soybean proteins. Until recently, American Protein Corporation was the only supplier of plasma protein (AP 820). This study compared an alternative source of plasma protein (Merrick's, Inc., MP 722). Performance during the two week prestarter period was similar in pigs fed both plasma protein sources. This study suggest that MP 722 will produce results similar to those observed with AP 820 in our nursery system.

(Key Words: Early-weaned Pigs, Plasma Protein Source.)

Introduction

Spray dried plasma protein, a by-product of blood obtained from pork slaughter plants, has consistently improved performance in early-weaned pigs. Until recently American Protein Corporation was the only supplier of plasma protein and the AP 820 plasma protein product improved performance in our studies when compared to dried skim milk (Sohn et al., 1991). Merrick's, Inc. has now developed a similar plasma protein product (MP 722). This study was conducted to compare the efficacy of AP 820 and MP 722.

Materials and Methods

Seventy two pigs (Hampshire and/or Yorkshire) were group weaned (from one farrowing room) when the oldest pigs were approximately 25 days of age, and the youngest pigs were approximately 19 days old. Pigs were blocked by age group (36 pigs in each of 2 groups) and stratified by litter, weight, and sex (boars and gilts) into 6 pens with 6 pigs per pen in each

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weight group (total of 12 pens). Three pens from each weight group were randomly allotted to one of two treatments (6 pens/treatment) consisting of a basal prestarter diet with AP 820 as the plasma protein source (Table 1) or the basal prestarter diet with Merrick's Plasma Protein (MP 722) as the plasma protein source. The prestarter diet was fed for a two week period (Period 1)

Table 1. Composition of experimental diets.

Ingredient	Diets	
	Period 1	Period 2
Plasma protein ^a	5.00	
Dried skim milk	10.00	
Whey, dehydrated	20.00	
Steam rolled oats	10.00	
Pro-88 (cheese by-product)	5.00	
Corn, ground	38.725	67.40
Soybean meal	-	28.5
Soybean oil	4.00	
Lysine, HCl	0.24	0.15
Fishmeal, menhadden	5.00	
Ethoxyquin	0.025	
Mecadox premix	0.25	0.25
Flavor, berry	.1	
CuSO ₄	.1	.075
Calcium carbonate	-	.90
Methionine	.02	
Dicalium phosphate	0.80	1.95
Vit. Min. Mix	.74	.375
Salt	-	.40
Total	100.0	100.0
Calculated composition of diet		
ME, Kcal/lb	1570	1453
CP, %	20.86	18.32
Lysine, %	1.40	1.11
Try, %	.27	.24
Met + Cys, %	.80	.61
Ca, %	.96	.88
P, %	.80	.74

^a AP 820 or MP 722 for Treatment 1 and 2, respectively.

when the diets were changed to a basal starter diet (Table 1). Starter diets (Period 2) were continued for an additional three weeks. Periods 1 and 2 were conducted in an environmentally controlled nursery with temperatures initially maintained at 86°F and decreased 2°F weekly until the temperature reached 78°F. Both feed and water were available on an ad libitum basis. Interim gain and efficiency of gain estimates were obtained weekly.

Table 2. Effect of plasma protein on performance of early-weaned pigs^a.

Item	Treatment						SE
	1 - AP 820			2 - MP 722			
	Old	Young	Mean	Old	Young	Mean	
Initial age, d	26.5	21.5	24.0	26.2	21.9	24.0	
Initial wt, lb	17.27	12.94	15.11	17.17	12.99	15.08	
ADG, lb							
Week 1	.60	.52	.56	.69	.49	.59	.07
Week 2	.78	.77	.77	.75	.76	.75	.04
Period 1							
WK1-2	.69	.65	.67	.72	.62	.67	.04
Period 2							
WK3-5	.97	.88	.93	1.00	.92	.96	.05
ADFI, lb							
Week 1	.61	.52	.57	.61	.54	.57	.04
Week 2	1.00	.87	.94	.91	.90	.90	.04
Period 1							
WK1-2	.81 ^b	.70 ^c	.76 ^b	.76 ^{bc}	.72 ^{bc}	.74	.03
Period 2							
WK3-5	1.74 ^{bc}	1.61 ^c	1.68	1.81 ^b	1.64 ^c	1.73	.04
G:F							
Week 1 ^d	.99 ^{bc}	1.00 ^{bc}	1.00	1.11 ^b	.91 ^c	1.01	.06
Week 2	.78	.88	.83	.83	.85	.84	.06
Period 1							
WK1-2 ^d	.88	.94	.91	.97	.88	.92	.05
Period 2							
WK3-5	.56	.55	.55	.55	.56	.56	.02

^a Least squares means.

^{b,c} Treatment means without a common superscript are significantly different ($P < .05$).

^d Treatment x Age interaction ($P < .2$).

Results and Discussion

During week 1, week 2, and Period 1, when two sources of plasma protein were fed, average daily gain, feed intake and feed efficiency was excellent and performance was similar among pigs fed the two plasma protein sources (Table 2). During Period 1 and for Period 2, older pigs consumed more feed than pigs weaned at a younger age although differences were not significant in either weaning age group. Similarly, older pigs grew more rapidly than younger pigs, although differences were not significant.

During Period 2 (weeks 3-5) when pigs were fed a common corn-soybean meal starter diet, performance was not affected by plasma protein source fed during Period 1.

This study suggest that MP 722 will produce results similar to those observed with AP 820 in our nursery system.

Literature Cited

Sohn, et al. 1991. Spray dried plasma protein as a protein source for early-weaned pigs. Okla. Agri. Exp. Sta. MP-134:342.