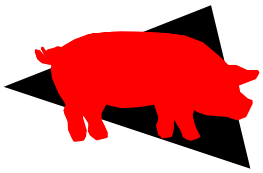
AJINOMOTO

AJINOMOTO ANIMAL NUTRITION

AJINOMOTO HEARTLAND, INC.

SWINE RESEARCH REPORT 1



Digestible Amino Acid Balance Improves Performance of Baby Pigs

Objective

Determine the effect of formulating baby pig diets on a digestible amino acid basis. Compare performance of a "standard" specification Canadian diet with a similar diet formulated to digestible amino acid levels and balance recommended by Ajinomoto Heartland, Inc.

Experimental Procedures

Animals

128 pigs were allotted to two treatments, with eight pigs per pen and eight pens per treatment. The pigs were placed on trial immediately after weaning at an initial live weight of approximately 7.9 kg. The experiment lasted for 28 days.

Diets

Experimental diets were primarily barley, wheat and soybean meal based with dried skim milk and whey powder added. Crystalline amino acids were added to provide the necessary dietary recommendations. Diets were formulated on a digestible amino acid basis using values for each ingredient from Heartland Lysine's 1988 Apparent Ileal Digestibility table for swine.

Table 1. Experimental diets

Ingredients (%)	Control	Test
Barley	10.0	10.0
Wheat	53.7	48.8
SBM (48%)	20.0	25.0
Dried Skim Milk	4.0	4.0
Whey	4.0	4.0
L-Lysine HCl	.37	.24
DL-Methonine	--	.01
L-Threonine	--	.14
Dicalcium Phos.	2.0	2.0
Limestone	1.2	1.2
Salt	.3	.3
Mineral premix	.5	.5
Vitamin premix	.5	.5
Choline Chloride (60%)	.3	.3
Vegetable fat	3.1	3.0

Table 2. Nutrient analysis and amino acid balance

	Control		Test	
	Calc Dig	Anlz Total	Calc Dig	Anlz Total
DE Kcal/kg	3450	---	3450	---
CP, %	15.90	18.60	17.30	20.48
Lys, %	1.10	1.22	1.12	1.29
M+C, %	.49	.69	.62	.76
Trp, %	.19	.20	.21	.22
Thr, %	.54	.70	.73	.92
Relative to lysine				
Lys	100		100	
Thr	49		65	
Trp	17		19	
M+C	45		55	

Results

Table 3. Results of pig performance

	Control	Test	Sem[a]
Initial wt (kg)	7.94	7.96	
Final wt (kg)	18.42	19.16	
Avg daily gain (g/d)	370	400	.5*
Avg feed intake (g/d)	550	560	.5*
Feed/Gain	1.46	1.39	.01*

[a] Standard error of the mean

* P<0.05

Discussion

All performance figures were excellent, demonstrating that environment and genetic factors allowed the response to improved diet formulation to be expressed. Performance was significantly increased using the improved amino acid balanced test diet. Pigs fed the test diet exhibited a 8.1% increase in average daily gain and required 4.8% less feed to gain 1 kg live weight. Pigs fed the test diet were .74 kg heavier at the end of the experimental period.

Conclusion

Formulating diets on a digestible amino acid basis produces improved dietary specifications that more correctly match the pig's requirement for rapid growth. Recommended amino acid balance of pig diets should be as follows:

	Relative to lysine
Lysine	100
Threonine	65
Tryptophan	18
M+C	55

H.L.I. 1989

Bibliography

Patience, J.F. 1989. Selection of an improved pig starter formulation. 1989 Annual Report of the Prairie Swine Centre. University of Saskatchewan.