

**Supplementation with crystalline amino acids improves protein utilization in growing pigs and results in lower nitrogen excretion**

**Objective**

Ideal protein represents an amino acid pattern for the highest dietary protein utilization and subsequent minimum protein excretion. But the levels of protein and amino acids in the diets should also match a daily intake sufficient to sustain the high growth rate of modern breeds with rapid growth potential.

The aim of this trial was to evaluate the extent to which the objective of highest performance and lowest N-excretion can be addressed under practical conditions.

**Experimental Procedures**

**Animals**

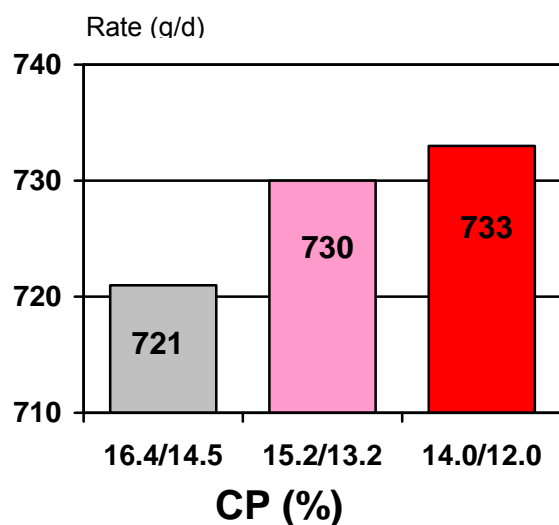
Each of three experimental groups consisted of 25 individually fed mixed sex pigs. The animals were end products from a 3 line crossbred sow and a Pietrain boar. The 3 treatments consisted of a progressive reduction of dietary protein in both, the grower and finisher phase while amino acids levels were kept constant.

<b>Table 1. Experimental diets</b>						
Treatments	25-55 kg liveweight			55-100 kg liveweight		
	I	II	III	I	II	III
Nutrient constraints (%)						
Protein	16.4	15.2	14.0	14.5	13.2	12.0
Lysine		0.89			0.75	
Threonine		0.59			0.49	
Metabolizable energy (MJ/kg)		13.0			13.0	
Feedstuffs						
Cereals	44.4	48.2	51.8	48.1	53.3	58.4
Soybean meal	19.2	15.1	11.1	12.2	8.7	5.2
Wheat bran		2.0	4.0		2.0	4.0
Corn gluten	3.9	1.9		7.8	3.9	

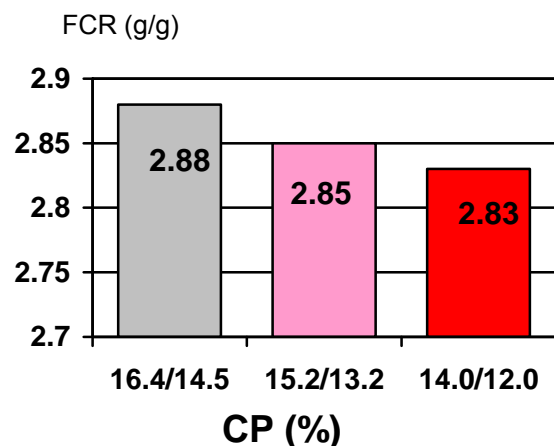
In all diets: 20% Tapioca, 2% fat, 2% molasses, 5% peas. All feeds were supplemented with premix and crystalline amino acids to reach the required levels. The animals were fed on a restricted scale based on liveweight.

## Results

### Growth Rate (g/d)



### Feed Conversion Ratio



## Discussion

Reduction of protein level had a slightly positive effect on growth rate and feed conversion ratio. Protein ingestion could be decreased by 14% from treatment I to III (308 g/d versus 265 g/d). A nitrogen balance trial carried out in parallel to the growth trial showed that nitrogen excretion decreased as much as 25%. No effect of protein level on carcass quality could be detected.

## Conclusion

Dietary protein of 14% and 12%, respectively in the grower and finisher phase are sufficient to allow for growth rates in excess of 720 g/d.

## Bibliography

Noon, H., Brettschneider, J. Jeroch, H. and F. Koch 1993. Reduction of nitrogen excretion of fattening pigs. Proceedings of the Scientific Symposium of Feed Value and Feed Improvements for Changes in Ecological and Quality of Pig and Poultry Products. Germany, Dec. 1992: 31-39.