

Effect of dietary net energy and digestible lysine levels on growth performance of growing pigs



J. K. Htoo¹ and J. Morales²

¹Evonik Nutrition & Care GmbH, Hanau, Germany; ²PigChampPro Europa, SL, Segovia, Spain



Introduction

- Adequate dietary supply of lysine (Lys) is essential to achieve maximum growth of the pigs.
- Because energy density of the diets may influence feed intake, it is a common practice to maintain an optimum Lys to energy ratio in swine diets.
- Increased Lys requirement has been reported for pigs with different body weight (NRC, 2012).
- However, published data on the optimal dietary standardized ileal digestible (SID) Lys:net energy (NE) ratios in diets for growing pigs are scarce.

Objective

- To evaluate the effect of dietary SID Lys and NE levels on growth performance of 23- to 45-kg pigs.

Materials & methods

- 288 pigs (PIC; initial BW 23.3 ± 0.40 kg)
- 6 replicates (3 barrows and 3 gilts/pen)/ treatment
- 6 diets based on corn, soybean meal, wheat bran and crystalline AA
 - 2 x 3 factorial arrangement
 - 2 levels of Lys (0.97 and 1.06% SID Lys)
 - 3 NE levels (9.65, 10.00 or 10.35 MJ/kg)
 - Soy oil was added to increase NE content
- Ingredients: analyzed for total AA; NE was estimated based on macro nutrients (via NIR analysis)
- Measured parameters: Individual BW, ADFI, ADG and G:F
- Statistical analysis: ANOVA using GLM of SAS
- Duration: 28 days

Results

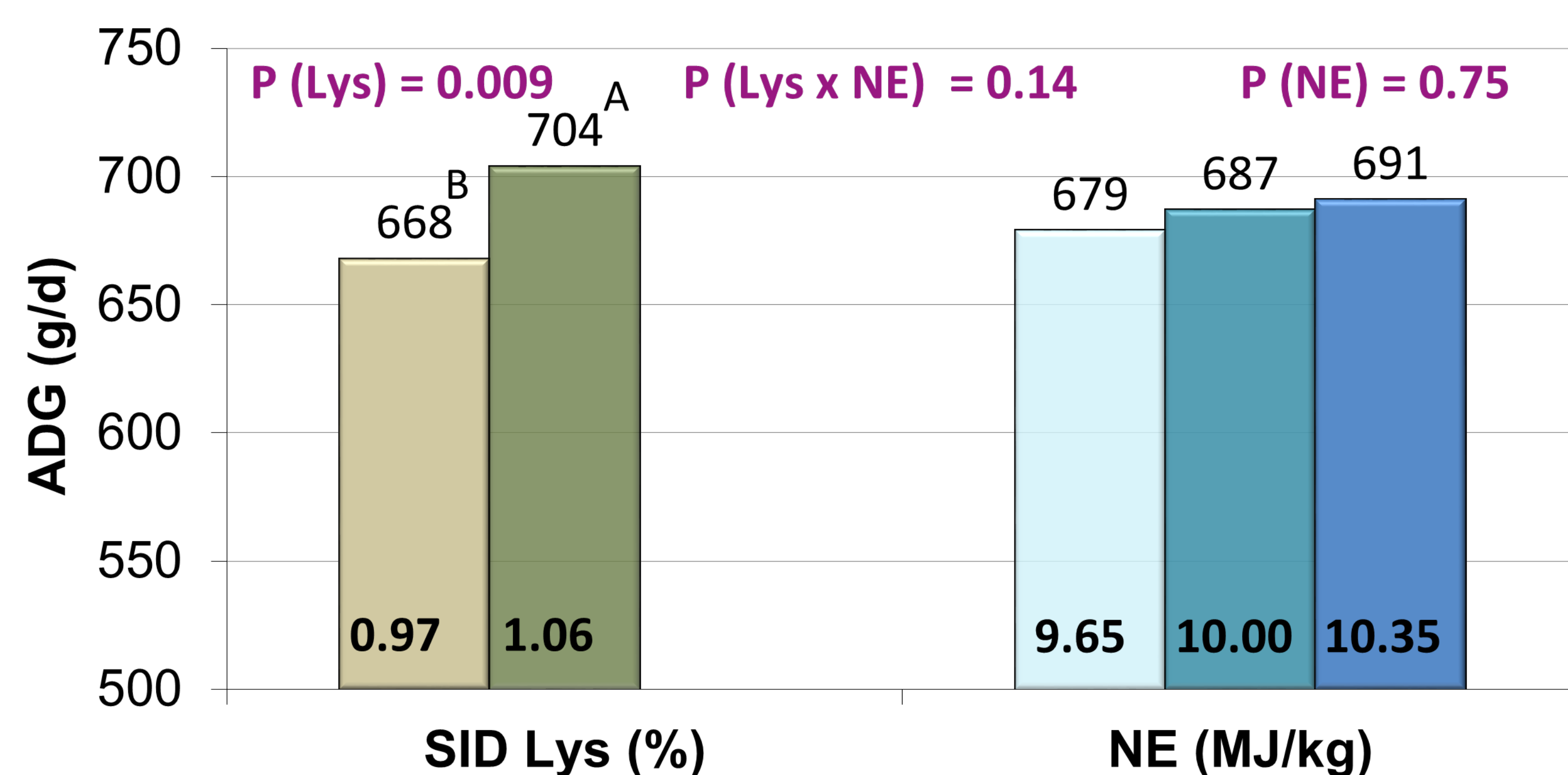


Figure 1: Main effect of dietary SID Lys and NE contents on ADG (d 0-28)

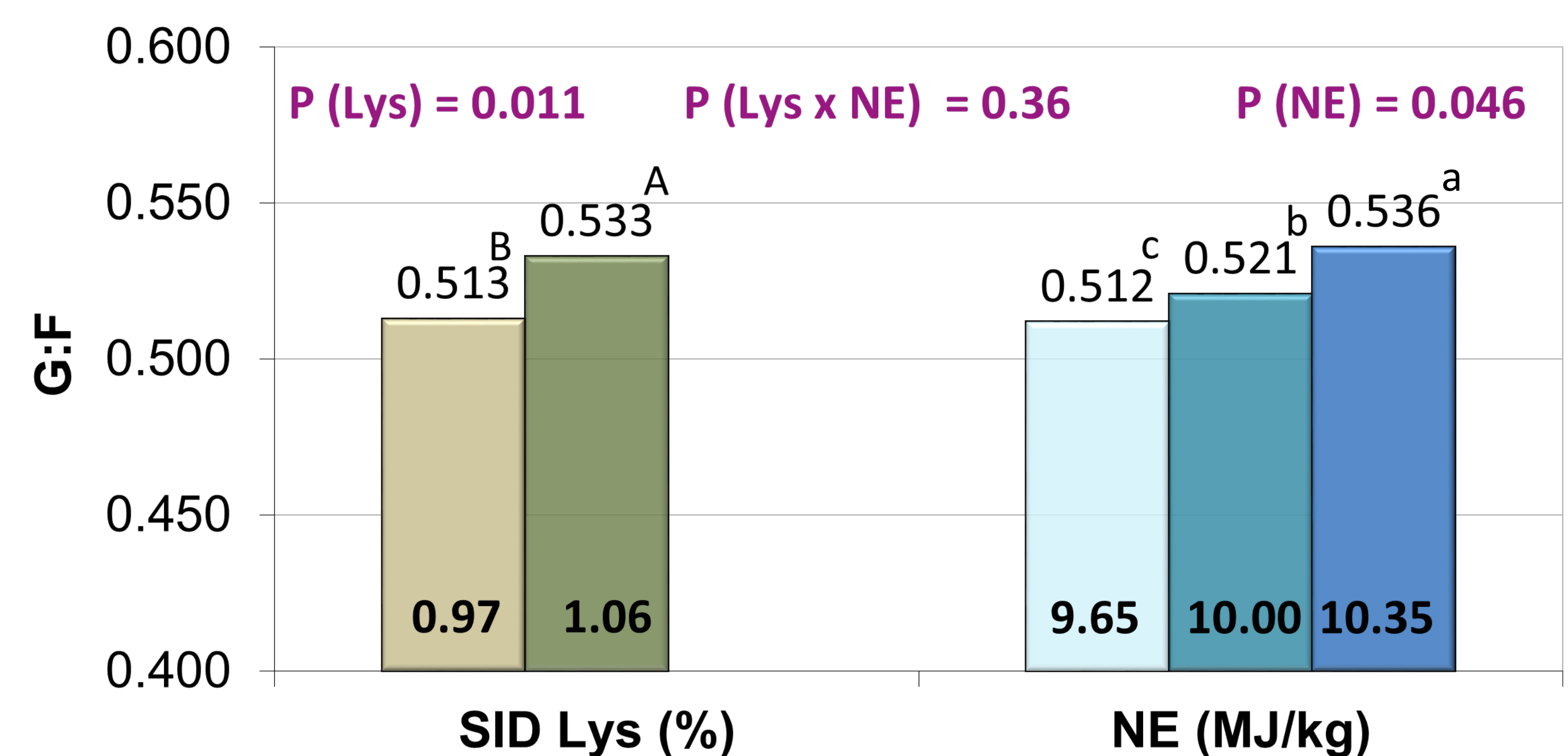


Figure 2: Main effect of dietary SID Lys and NE contents on G:F (d 0-28)

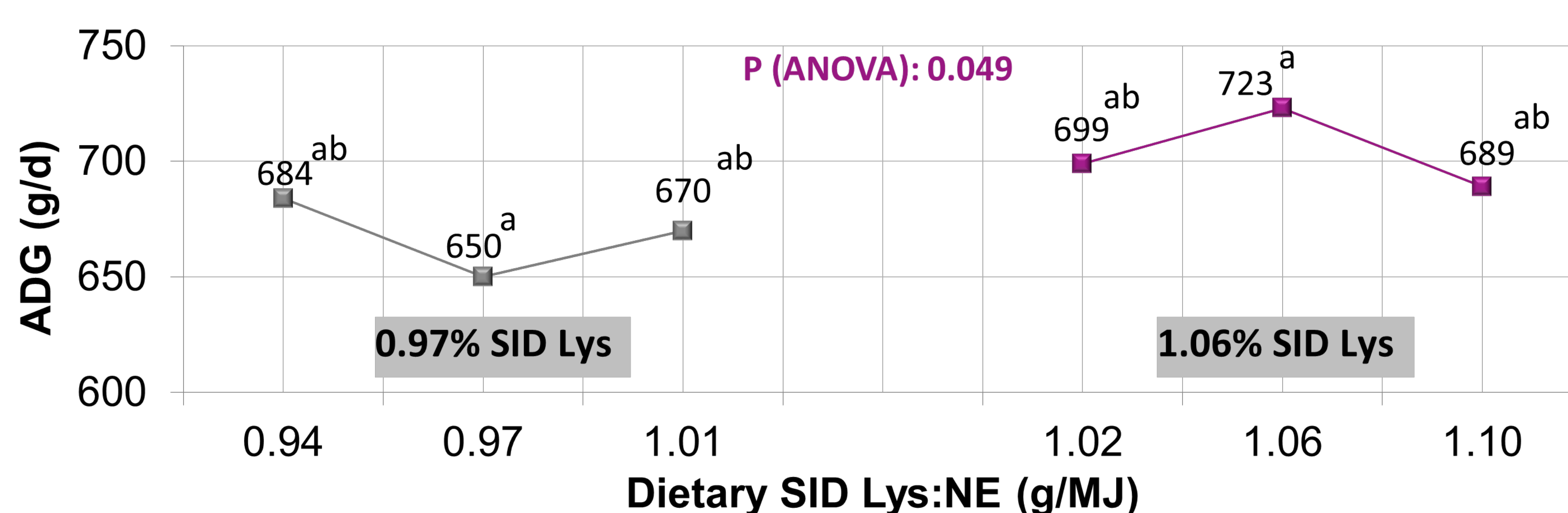


Figure 3: Effect of SID Lys:NE ratio (g/MJ) on ADG (d 0-28)

Item	SID Lys, %		NE (MJ/kg)				P-values			
	0.97	1.06	SEM	9.65	10.00	10.35	SEM	Lys	NE	Lys x NE
ADFI, kg/d	1.31	1.32	0.14	1.33	1.32	1.29	0.17	0.39	0.24	0.28
SID Lys, g/kg gain	18.99	19.93	0.21	19.89	19.53	18.95	0.25	0.003	0.039	0.39
NE, MJ/kg gain	19.56	18.79	0.20	18.92	19.26	19.35	0.25	0.010	0.43	0.37

Table 1: Effect of dietary SID lysine and NE contents on average daily feed intake (ADFI) and utilization efficiency (d 0-28)

Conclusions

- The ADG of 23- to 45-kg pigs maximized at 1.06 % SID Lys and NE of 10.00 MJ/kg (SID Lys:NE of 1.06 g/MJ).
- The G:F of 23- to 45-kg pigs maximized at 1.06 % SID Lys and NE of 10.35 MJ/kg (SID Lys:NE of 1.02 g/MJ).

Reference

NRC. 2012. Nutrient Requirements of Swine, 11th edn. National Academic Press, Washington, DC, USA.