

A total of 192 pigs were used in the study, which was conducted in 2 trials of 24 pens each (4 pigs per pen). Pigs were weaned at 21 d (Initial Weight = 5.9 ± 0.3 kg) and allotted to pens based on weight, sex, and litter). Dietary treatments were randomly assigned to pens within weight blocks (Control diet (C), C+ lipase, C+ Cu and C+ lipase + Cu). Diets were formulated to meet or exceed all the nutrient requirements based on the 2012 NRC and fed in 2 phases (d 0 to 14 and d 14 to 28). Titanium dioxide (0.3%) was used as digestibility marker and fecal samples were collected at the end of each phase. Growth performance (ADG, ADFI, and G:F) data were obtained on d 7, 14, 21 and 28 post-weaning and analyzed using PROC GLM. There were no significant lipase x Cu interactions on growth performance. Overall, there was a significant main effect of Cu on BW (16.4 vs 18.1 kg, $P < 0.001$), ADG (373 vs 432 g/d, $P < 0.001$), ADFI (497 vs 535 g/d, $P < 0.020$), and G:F (0.75 vs 0.81), $P < 0.001$). There was a trend for lipase to improve ADG from d 0 to 14 (237 vs 254, $P < 0.200$) and overall G: F (0.77 vs 0.79, $P < 0.100$). Copper supplementation improved digestibility of fat in phase 1 and N and P digestibility in both phases. There was no consistent effect of lipase or interaction of lipase x copper on nutrient digestibility. In conclusion, Cu supplementation improved growth performance and nutrient digestibility. There was a trend for exogenous lipase to improve the growth performance, but no consistent effect on digestibility and no evidence of a copper x lipase interaction.

Key Words: Nursery Pig, Lipase, Growth performance

NONRUMINANT NUTRITION IV: AMINO ACIDS REQUIREMENTS

307 Optimum Dietary Standardized Ileal Digestible Lysine and Crude Protein for Growth and Carcass Performance in Finishing Pigs after 100 Kg BW.

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Two experiments were conducted to determine the optimum standardized ileal digestible (SID) Lys and CP concentrations in finishing pig diets. In Exp. 1, 253 pigs (DNA 600 × 241, initially 102.0 kg BW) were used in a 23-d trial. Pens of 7 or 8 pigs were allotted by BW and randomly assigned to 1 of 4 dietary treatments with 8 replications per treatment. Diets contained 4 SID Lys

	CP, %					SEM	Quadratic, $P <$
	9	10	11	12	13		
ADG, g	810	851	894	912	930	22.5	0.001
ADFI ¹ , g	2,994	3,143	3,137	3,118	3,109	55.3	0.322
G:F	0.270	0.272	0.285	0.293	0.299	0.0044	0.001
HCW, kg	99.7	100.7	101.4	101.6	101.3	0.87	0.074

¹Linear, $P = 0.073$.

concentrations (0.45, 0.55, 0.65, and 0.75%). Increasing SID Lys influenced (quadratic, $P < 0.05$) ADG (0.86, 0.97, 0.94, and 0.92 kg) and ADFI (2.79, 3.01, 2.85, and 2.87 kg) with pigs fed 0.55% SID Lys having the greatest final BW. Marginal improvements (quadratic, $P = 0.058$) in G:F (0.307, 0.323, 0.329, and 0.319) and (linear, $P = 0.051$) carcass yield (73.7, 74.2, 74.1, and 74.5%) and reduction (quadratic, $P = 0.074$) in backfat (15.7, 16.3, 15.7, and 15.0 mm) were also observed with increasing SID Lys. Carcass ADG (0.63, 0.72, 0.70, and 0.68 kg) increased (linear, $P = 0.014$) and carcass G:F (0.226, 0.240, 0.244, 0.238) was marginally influenced (quadratic, $P = 0.063$), resulting in pigs fed 0.55% SID Lys having the greatest HCW. The quadratic polynomial model for ADG and G:F predicted maximum response at 0.62 and 0.63% SID Lys, respectively. The broken line linear model predicted no further improvement in G:F over 0.55% SID Lys. In Exp. 2, 238 pigs (DNA 600 × 241, initially 111.8 kg) were used in a 26-d trial to determine the optimum dietary CP concentration. Pens of 7 or 8 pigs were allotted by BW and randomly assigned to 1 of 5 dietary treatments with 6 replications per treatment. Diets included 5 levels of CP (9, 10, 11, 12, and 13%). Increasing CP influenced (quadratic, $P < 0.05$) ADG, G:F, carcass ADG and carcass G:F with the greatest response for pigs fed the diet with 13% CP. Increasing CP marginally influenced (quadratic, $P < 0.074$) HCW, with the greatest response for pigs fed the diet with 12% CP. In conclusion, the SID Lys requirement was 0.62 to 0.63% with performance maximized with diets containing 13% CP and HCW maximized with 12% dietary CP in pigs over 100 kg BW.

Key Words: crude protein, lysine, finishing pig

308 Determination of Sid Lys:ME Requirements in 129 to 149 Kg Pigs. U. A. D. Orlando*¹, R. Hinson², M. Goncalves¹, A. D. Woodward², N. R. Augspurger², ¹Genus PIC, Hendersonville, TN, ²United Animal Health, Sheridan, IN

A total of 990 pigs (PIC 337 X Camborough) were utilized to determine the SID Lys:ME (g/Mcal ME) requirement from 129 to 149 kg BW. Pigs were randomly allotted by BW to one of five SID Lys:ME levels (1.49, 1.73, 1.97,