

141 Evaluation of a Fermented Corn Protein Source on Growth Performance of Nursery Pigs.

Ethan Stas¹, Jenna A. Chance¹, Robert D. Goodband¹, Mike D. Tokach¹, Jason C. Woodworth¹, Joel M. DeRouchey¹, Jordan T. Gebhardt¹, ¹Kansas State University

Abstract: Two experiments were conducted to determine if fermented corn protein (FCP) can serve as a replacement to enzymatically treated soybean meal (ESBM) in 6.0 to 15.8 kg or as a replacement for soybean meal in 12.1 to 24.7 kg pig nursery diets. In Exp. 1, 350 barrows (initially 6.0 kg) were randomly allotted to 5 treatments with 5 pigs/pen and 14 replications/treatment. Dietary treatments were arranged in a 2×2 + 1 factorial with a control diet or diets with 5 or 10% FCP or ESBM. Newly weaned pigs were fed phase 1 diets for 10-d followed by phase 2 diets for 21-d. There were no interactions throughout the experiment. Overall (d 0-31), pigs fed increasing FCP had decreased (linear, $P \leq 0.026$) ADG and ADFI with no differences in G:F, whereas increasing ESBM had no effect on growth performance (Table). Pigs fed ESBM had increased ($P \leq 0.034$) ADG and G:F compared with pigs fed FCP with no effect on ADFI. In Exp 2, 350 pigs (initially 12.1 kg) were randomly assigned to pens with 5 pigs/pen and 14 replications/treatment. On d 24 after weaning (d 0 of trial), pens of pigs were weighed and assigned to 5 dietary treatments. Dietary treatments were arranged in a 2×2 + 1 factorial with a control diet or diets with 10 or 20% FCP with either high or low Val+Ile:Leu ratios. There were no interactions observed throughout the experiment. Overall (d 0-21), ADG, ADFI, and G:F worsened (linear, $P < 0.001$) as FCP increased. High Val+Ile:Leu ratios improved ($P = 0.017$) G:F compared with low Val+Ile:Leu ratios with no effect on ADG and ADFI. In summary, using FCP to replace ESBM for nursery pigs weighing 6.0 to 15.8 kg had decreased growth performance. Increasing concentrations of FCP in diets for pigs weighting 12.1 to 24.7 kg worsened growth and increasing Val+Ile:Leu ratios only improved G:F.

Table 1. Interactive effect of protein source and inclusion level on nursery pig performance, Exp. 1

Item	Control	Fermented corn protein		Enzymatically treated soybean meal		SEM	$P^{1,2}$ Protein source ²
		5%	10%	5%	10%		
Overall (d 0-31)							
ADG, g ³	331	300	299	319	318	9.3	0.034
ADFI, g ³	419	381	386	398	398	10.6	0.161
G:F, g/kg	790	785	776	801	799	8.0	0.010

¹ There were no quadratic responses observed ($P > 0.05$) for increasing fermented corn protein, no linear or quadratic responses observed ($P > 0.05$) for increasing enzymatically treated soybean meal, and no protein source × inclusion level interactions observed ($P > 0.05$).

² Comparison of fermented corn protein and enzymatically treated soybean meal excluding the control.

³ Pigs fed increasing fermented corn protein had decreased (linear, $P \leq 0.026$) ADG and ADFI.

Keywords: fermented corn protein, enzymatically treated soybean meal, branch chain amino acids

137 Inclusion of Spray Dried Plasma in Diets Based on Different Ingredient Combinations Increases the Digestibility of Energy, Fiber, Ca, and P by Young Pigs.

Hannah M. Bailey¹, Hans H. Stein², Joy Campbell³, ¹University of Illinois, ²University of Illinois at Urbana-Champaign, ³APC, LLC

Abstract: An experiment was conducted to test the hypothesis that spray dried plasma (SDP) increases the apparent total tract digestibility (ATTD) of gross energy (GE), nitrogen (N), total dietary fiber (TDF), Ca, and P and the standardized total tract digestibility (STTD) of P from other ingredients in diets for young pigs. Eighty barrows (body weight: 9.30 ± 0.97 kg) housed in metabolism crates were allotted to a randomized complete block design with 10 diets and 2 blocks. Diets typically used in 4 regions using combinations of corn, soybean meal, wheat, barley, or rice were formulated: U.S.A., European Union, Canada, and Asia, and included 0 or 6% SDP. Differences between measured and predicted values for ATTD and STTD of energy and nutrients in diets with SDP were calculated. Data were analyzed using PROC MIXED of SAS as a 2 × 4 factorial with 2 SDP levels and 4 regions. When 6% SDP was included in the diet, ATTD and STTD values, except TDF, were increased ($P < 0.05$) compared with diets without SDP (Table 1). The ATTD of GE, TDF, and P and the STTD of P was greater ($P < 0.05$) for the Asia diet compared with the other diets. The measured ATTD of TDF was greater ($P < 0.05$) than the predicted for the U.S.A. and European Union diets (Table 2), and the measured ATTD of GE, N, Ca, and P and STTD of P was greater ($P < 0.05$) than the predicted for the Asia diet compared with the other diets. In conclusion, addition of 6% SDP to a diet increases the ATTD of energy and nutrients and the STTD of P regardless of diet composition, and therefore, the actual ATTD of energy and nutrients and the STTD of P in diets with SDP may be greater than predicted.