

170 Energy values and digestibility of amino acids in dried yeast and soybean meal fed to pigs.

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Two experiments were conducted to evaluate the digestible energy (DE), metabolizable energy (ME), and standardized ileal digestibility (SID) of amino acids (AA) in dried yeast (DY) and soybean meal (SBM) fed to pigs. In Exp. 1, 30 barrows with an initial body weight (BW) of 20.7 ± 1.01 were assigned to 5 diets in a randomized complete block design with period and BW as blocking factors. A basal diet was prepared to contain corn, canola meal, and soybean oil as energy-contributing ingredients. Four additional diets were prepared by adding 5 or 10 g/kg DY or SBM at the expense of energy-contributing ingredients in the basal diet to estimate the DE and ME in test ingredients by regression analysis. On a dry matter basis, estimated DE and ME in DY were 4,022 and 3,352 kcal/kg, respectively, and those in SBM were 3,876 and 3,601 kcal/kg, respectively. There was no difference in estimated DE or ME between DY and SBM. In Exp. 2, 21 barrows (initial BW = 20.0 ± 1.31 kg) surgically fitted with T-cannulas at the distal ileum were assigned to 3 diets in a randomized complete block design with BW as a blocking factor. Two diets were prepared to contain DY or SBM as the sole source of nitrogen, and a nitrogen-free diet was prepared to determine the basal ileal endogenous losses of AA. The SID of AA, except for Gly and Pro, in SBM were greater ($P < 0.05$) than in DY. The SID of indispensable AA in DY ranged from 64.7% for Thr to 86.1% for Arg, whereas those in SBM ranged from 84.8% for Thr to 92.3% for Arg. In conclusion, energy values in DY was comparable with SBM, but the SID of most AA in DY were less than in SBM.

Keywords: amino acid, dried yeast, metabolizable energy

158 Effect of fumonisin-contaminated corn on growth performance of 9- to 28-kg nursery pigs.

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A total of 350 pigs (241×600; DNA, Columbus, NE; initially 8.9 kg) were used in a 28-d study to determine the effect of fumonisin-contaminated corn on growth performance of nursery pigs. Dietary treatments consisted of fumonisin-contaminated corn blended with low fumonisin corn to provide analyzed toxin (FB1 + FB2) levels in the final diet of 7.2, 14.7, 21.9, 32.7, and 35.1 ppm. There were 5 pigs per pen and 14 pens per treatment. Pens were assigned to treatments in a randomized complete block design with initial weight as the blocking factor. Data were analyzed using lme package in R program with pen as the experimental unit. From d 0 to 28, increasing fumonisin decreased (linear, $P < 0.05$) ADG, ADFI, G:F, and final BW. Although responses tested linear, the greatest reduction in ADG and G:F was observed in pigs fed 32.7 and 35.1 ppm of fumonisin. Increasing fumonisin increased serum sphinganine to sphingosine (Sa:So) ratios (linear, $P < 0.001$) on day 14 and 28. Serum Sa:So ratio appears to be a useful biomarker indicating fumonisin intoxication. These results suggest that for 9- to 28-kg nursery pigs, diets containing 32 ppm of fumonisin or greater decreased growth performance and increased serum Sa:So ratio. Further research is warranted to determine the effects of fumonisin concentrations between 22 and 32 ppm.

Table 1. Effect of fumonisin-contaminated corn on growth performance and serum sphinganine to sphingosine ratio of 9- to 28-kg nursery pigs¹

Item	Analyzed dietary fumonisin, ppm					SEM	Probability, <	
	7.2	14.7	21.9	32.7	35.1		Linear	Quadratic
d 0 to 28								
ADG, g	677	666	674	640	633	10.4	0.001	0.18
ADFI, g	1016	993	1010	974	978	18.6	0.05	0.77
G:F	0.667	0.672	0.668	0.658	0.648	0.0064	0.02	0.11
d 28 BW, kg	28.1	27.7	27.8	26.8	26.6	0.42	0.001	0.41
Sa:So								
d 14	0.47	0.84	1.00	1.14	1.40	0.088	0.001	0.36
d 28	0.55	0.77	0.93	1.42	1.58	<0.146 ²	0.001	0.14

¹Average daily gain (ADG); average daily feed intake (ADFI); gain to feed ratio (G:F); body weight (BW); sphinganine (Sa); sphingosine (So); sphinganine to sphingosine ratio (Sa:So).

²Heterogenous variance: 7.2 ppm (0.031), 14.7 ppm (0.073), 21.9 ppm (0.076), 32.7 ppm (0.067), and 35.1 ppm (0.146).

Keywords: corn, fumonisin, nursery pigs