

Effect of phytase-xylanase supplementation on energy metabolism in growing-finishing pigs fed wheat-based diets ad libitum

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Xylanase improves carbohydrate digestion in pigs. Phytase improves mineral and possibly amino acid digestibility. Dietary protein reduction improves energy utilization. Our objective was to study the effects of protein reduction and phytase and/or xylanase inclusion in pig diets on energy metabolism.

72 gilts (58 ±6 kg, initial BW) were fed the same six wheat-based diets in a randomised complete design as used for abstracts #8 and #10. Energy metabolism was assessed using the C-N balance method based on N-balance and gas exchange (O₂, CO₂ and CH₄) by indirect calorimetry for 24 h. Reducing dietary protein (LP+ vs. C) increased retained energy, energy utilization and net energy numerically by 7 – 8%. Omitting phosphorus (LP-) from diet LP+ led to a slight reduction in energetic efficiency. Retained energy (+15%) and net energy (+12%) for diet P were greater than for diet C. Pigs fed diets PX and X performed similarly to pigs fed C.

Parameter ¹	Diets						SE	P Diet
	C	LP+	LP-	P	PX	X		
ME intake, MJ/d	31.8	32.1	31.1	32.4	32.9	32.4	0.6	0.97
Heat, MJ/d	19.0	18.3	18.2	17.6	18.4	19.4	0.1	0.85
RE, MJ/d	12.8 ^a	13.7	12.8	14.8 ^b	13.4	12.1	0.6	0.42
RE/ME intake	0.39	0.42	0.41	0.45	0.40	0.37	0.01	0.63
RQ	1.28	1.13	1.18	1.14	1.19	1.22	0.03	0.65
NE, MJ/kg	9.9 ^a	10.7	10.5	11.1 ^b	10.3	10.0	0.2	0.40

¹ ME: metabolizable energy, RE: retained energy, RQ: respiratory quotient, NE: net energy. ^{a,b} values differ at P<0.05. No superscript: no difference (P>0.1).

Implications:

Feeding reduced protein and phosphorus diets supplemented with synthetic amino acids and phytase to finisher pigs optimizes the utilization of dietary energy. (Supported by Danisco Animal Nutrition, Alberta Pork, Degussa AG)