Effect of exogenous xylanase on performance of fed corn/soya based diets. H. Schulze\textsuperscript{1} and R. G. Ellis\textsuperscript{2}. 1Finfeeds International Ltd., Marlborough, UK 2Burges Industries Ltd., Corowa, Australia.

Studies indicate that in the potential of suitable in-feed enzymes to improve digestibility and productive performance in pigs. A study in pigs (average initial BW 42 kg) was conducted to evaluate the effect of supplementing a corn/soya-based diet with two different xylanase derivatives from Thermohalina longibrachiatum, providing the pigs with xylanase activity levels. Forty-four pigs were randomly assigned to four treatment groups (positive Control (\(+ve\)), negative Control (\(-ve\)), +ve + xylanase, and -ve + xylanase). The +ve diet contained 73% corn, 20% wheat, and 6.9-7% diet, 20% corn was replaced by wheat and other ingredients without adjusting energy and nutrient contents. The -ve diet contained 3460 kcal DE/kg and 1.20% total lysine, compared with 2770 kcal/kg and 1.28% total lysine for the +ve diet. Feed intake and growth were measured after 42 days of the experimental period. To predict the feed intake, backfat (P2) was measured by real-time ultrasound at feeding and at the end of the experiment. Over the entire experimental period, mean daily feed intake was 776, 706, 716, and 796 (P = 0.01) for the +ve group compared with 0.78 kg and 1.52% total lysine for the +ve group. Pigs fed +ve + xylanase had lower feed intake compared to the -ve group, achieved similar growth rates to the +ve group. Pigs fed -ve + xylanase had increased feed intake. It is concluded that, depending on the enzyme source, performance responses might vary. In the present study, addition of xylanase to the diet led to a significant increase in digestibility of dry matter and NDF, but not in the digestibility of ADF.

Key Words: Pig, Xylanase, Performance

3. Growth performance and apparent digestibility of feed containing low-starch soybean meal. C. R. Risley\textsuperscript{1} and T. Lohrmann\textsuperscript{2}. 1Continental Grain Company, Chicago, IL, 2Optimum Quality Grains, L.L.C., Des Moines, IA.

Three trials, a total of 404 weaning pigs (18 days old and BW = 5.77 kg) were used, and the results were randomly assigned to one of the four treatments: (a) no xylanase, (b) a factorial arrangement to evaluate the effects of low-starch soybean meal on growth performance and apparent digestibility of energy, protein, phosphorus, and dry matter. Main effects were: (1) complex pre-starter diets, and (2) level of low-starch soybean meal (0%, 5%, 10%, 15%). Pigs were fed their respective diet for five to seven weeks post-weaning, after which, a common starter diet was fed to the pigs. During weeks 3 post-weaning, chronic oxidative stress (0.65%) was added to the diets as an indispensable marker and feed and fecal samples (3 pigs per diet) were collected to determine apparent digestibility coefficients. Feed complex pre-starter diets significantly (P < 0.01) greater than 13.05 kg, ADG (391 vs. 346 kg), G:F (983 vs. 916) and ADFI (398 vs. 378 kg, P < 0.01) compared to pigs fed simple xylanase diets. Pigs fed pre-starter diets containing 30% low-starch soybean meal tended to have greater body weights (13.74 vs. 13.23 kg, P < 0.10), and meal (399 vs. 378 kg, P < 0.01), and had significantly lower ADG (380 vs. 355 kg, P < 0.03) compared to pigs fed diets not containing low-starch soybean meal. Dietary treatments had no effect on feed intake (P > 0.03). No diet complexity by low-starch soybean meal interaction was observed (P = 0.56). Pigs fed diets containing low-starch soybean meal had poorer apparent digestibility coefficients for crude protein (25.41 vs. 21.65%, P < 0.05) and dry matter (25.75 vs. 19.15%, P = 0.01), but had a better apparent digestibility coefficient for fat (25.41 vs. 21.65%, P < 0.01) than pigs fed diets containing low-starch soybean meal. In summary, the incorporation of low-starch soybean meal diets tended to improve performance and the apparent digestibility of phosphorus.

Key Words: Pigs, Digestibility, Soybean Meal

694. Effect of lignin from different origins in combination with carbohydrases in pig diets on digestion processes. C. Wenker\textsuperscript{a}, R. Messkommer, and G. Bee, Institute of Animal Science ETH-Zurich, Switzerland.

Lignin in plant materials is well known to limit nutrient availability of monogastric animals, due to cell wall lignification. In a free form it can bind to organic substances and minerals which decrease their absorption. This phenomenon has a positive effect for the host animal if toxins like amonia, nitrate or carcinogens are absorbed. However, a negative effect can be expected if nutrients like proteins or trace elements get unavailable or enzymes are inactivated. Due to the beneficial technological properties, lignin is often used in diets for pigs and poultry. In two experiments with growing pigs from 22 to 105 kg body weight the effect of four different lignin sources on the digestibility of energy, nitrogen and dietary fiber fractions (experiment two) and the interaction with a carbohydrase was evaluated. Both experiments were set up as a 2 x 3 factorial latin square design. The following lignin sources were examined in the experiment: (a) Ca-lignin sulfonate (Attisol F) (2.5%) and oak bark (1%); (b) lignin sulfonate (Lignobond) (5%) and sulfur-free lignin (Callie) (5%). The basal diet was based on cereals. In each trial, six male castrates per treatment were used. After an adaptation period of 17 days, feces were collected for four days. Digestibility was measured with the indicator method. Energy and nitrogen digestibility of the basal diet was high in both experiments (dE=0.845, dN=0.834). The supplementation of the basal diet with the carbohydrase did not affect the digestibility. The dietary supplementation with the different lignin sources had a negative effect on dE and dN. The combination with the carbohydrase enabled a complete compensation of the negative effect of Attisol F and oak bark. For Lignobond only a slight and for sulfur-free lignin no compensation could be observed. It can be concluded that free lignin inactivates extensively the activity of exogenous enzymes in pig diets. The carbohydrase supplementation affected positively the NDF digestibility, whereas no significant effect was determined for ADF.

Key Words: Pig, Carbohydrase, Lignin


Two 35-d growth trials were conducted to evaluate increasing high protein, whey protein concentrate (HPWPC, 73% CP, 6.8% lysine) and spray-dried animal plasma (SDAP) on weaning pig performance. In both trials, pigs were blocked by weight, equalized for sex and age, and assigned to one of five dietary treatments with different protein sources (pigs/pen and 10 pens/treatment). Diets were based on a corn-soybean meal diet, 20% dried whey control diet, or the control diet with added SDAP (2.5 or 5.0%); HPWPC (2.5 or 5.0%). Diets were formulated to contain 1.5% lysine (Exp. 1) or 1.4% lysine (Exp. 2) and fed from d 0 to 14 after weaning in a pelleted form. From d 14 to 35, all pigs were fed a corn-soybean meal diet (1.36% lysine, 9% Ca, 8% P). In Exp. 1, 180 pigs (initially 5.7 kg and 21-d of age) were used. From d 0 to 14 after weaning, there were no differences in ADG or ADFI for pigs fed any of the experimental diets; however, increasing HPWPC, increased G:F (linear, P < 0.01). In Exp. 2, 180 pigs (initially 5.0 kg and 17-d of age) were used. From d 0 to 14 after weaning, ADG, ADFI, and G:F increased with increasing SDAP (linear, P < 0.05). Increasing SDAP improved ADG and G:F (linear, P < 0.05; table below). In either study, protein sources fed from d 0 to 14 had no effect on growth performance from d 0 to 35. In conclusion, with heavier and older pigs (Exp. 1), increasing HPWPC or HPWPC had no effect on ADG or ADFI; however, with lighter and younger pigs (Exp. 2), increasing SDAP or HPWPC improved growth performance from d 0 to 14.

Spray-dried Animal plasma,% Whey Protein Concentrate,%

<table>
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<th>Control</th>
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Key Words: Pigs, Animal Plasma, Whey Protein Concentrate