The interactive effects of zinc source and feed grade antibiotic on weanling pig growth performance, J. C. Woodworth1, M. D. Tokach2, J. L. Nelssen1, R. D. Goodband1, J. T. Sawyer1, and T. M. Fakler1, 1Kansas State University, Manhattan, KS, 2Zinpro Corp., Eden Prairie, MN.

Two hundred eighty-eight weanling pigs (5.6 kg and 18 d of age; PIC) were used in a 27 d growth assay to determine the interactive effects of Zn source and feed grade antibiotic on growth performance of weanling pigs. Treatments were arranged in a 2 x 2 factorial design with main effects of antibiotic (none or 55 ppm carboxad) and Zn source (none, 250 ppm Zn from a zinc amino acid complex (ZnAA), or 3,000 ppm Zn from ZnO). Pigs were blocked by initial weight and allotted randomly to each dietary treatment with eight pigs per pen and six replications per treatment. All diets contained 165 ppm Zn (ZnO) from the trace mineral premix. Diets were fed in meal form in three phases: d 0 to 7, d 7 to 14, and d 14 to 27. There were no Zn source x antibiotic interactions (P < .2) observed throughout the entire experiment. Antibiotic only increased (P < .05) ADG from d 14 to 27. Pigs fed ZnO had greater (P < .05) ADG compared to pigs fed other treatments from d 7 to 14 and d 0 to 14. Pigs fed ZnO also had increased (P < .03) ADFI compared to ZnAA (d 7 to 14) and no additional Zn (d 7 to 14) and 0 to 14). Gain to feed ratio (G/F) was highest (P < .004) for pigs fed diets containing ZnO compared to pigs fed no additional Zn from d 7 to 14 and d 0 to 14. Pigs fed diets containing ZnAA had higher (P < .04). ADFI compared to pigs fed no additional Zn from d 0 to 14. For the entire trial, pigs fed ZnO had increased (P < .04) ADFI compared to pigs fed containing no additional Zn, with pigs fed ZnAA having intermediate responses. In addition, pigs fed ZnO from d 0 to 27 had higher (P < .03) ADFI compared to pigs fed diets containing either ZnAA or no additional Zn. These results suggest 3,000 ppm Zn from ZnO should be added to diets fed to pigs from d 0 to 14 after weaning. Antibiotic addition tended to influence growth performance toward the end of the experiment.

Key Words: Weanling Pigs, Zinc, Antibiotic

250 Effect of diet complexity and supplemental zinc amino acid complexes on performance of nursery pigs. B. Z. de Rodas1, C. V. Maxwell1, D. C. Brown1, M. E. Davis1, Z. B. Johnson1, and T. M. Fakler2, 1University of Arkansas, Fayetteville, AR, 2Zinpro Corp., Eden Prairie, MN.

An experiment involving 144 pigs (17 to 22 d of age; 6.1 kg BW) was conducted to determine the interactive effects of diet complexity and added Zn on performance of weanling pigs. Pigs were blocked by weight, penned six/pen in a conventional nursery, and fed a phase 1 diet (1.35% lys) for 10 d, followed by a phase 2 diet (1.15% lys) for 4 wk, and a control no Zn diet (1.14% lys) for 2 wk. Treatments were arranged in a 3 x 2 factorial with three diets (complex, intermediate, and simple), and two Zn levels [0 and 100 ppm Zn from Availa-Zn zinc amino acid complex (ZnAA), Zinpro Corp., Eden Prairie, MN]. The phase 1 complex diet contained 7% soybean meal (SBM), 10% soy protein concentrate (SPC), 2% plasma protein, 1.5% blood meal, 2% peptide plus, 5% select menhadon fishmeal (FM), and 20% lactose; the intermediate diet contained 15% SBM, 15% SPC, 2% FM, 7% lactose, and 33% the amount of vitamins and trace minerals added to the complex diet; and the simple diet contained 39.5% SBM with no vitamins, minerals or antibiotics added. Diets were pelleted and pigs were allowed access to feed on an ad libitum basis. During phases 1, 2 and 3, increasing diet complexity improved (diet effect, P < .01) ADG and ADFI. Gain:feed during phase 1 was improved with the addition of ZnAA in the intermediate and complex diet, but not in the simple diet (interaction, P < .05). During phase 2, pigs fed the intermediate and complex diets had greater (P < .01) G/F than those fed the simple diet. During the overall experiment, there was a tendency for an improvement in ADG (interaction, P < .1) and ADFI (interaction, P = .12) with the addition of ZnAA in the intermediate and complex diets, but not in the simple diet containing ZnAA. The results of this study indicate that complex diets were clearly superior to simple diets in improving performance of weanling pigs, and that 100 ppm Zn from ZnAA improves performance of pigs fed the intermediate and complex diets, but not the simple diet.

Key Words: Pig Performance, Diet Complexity, Zinc

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Key Words: Weanling pigs, Zinc, Growth