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Effects of isoquinoline alkaloids on nutrient absorption and growth performance of weanling pigs fed corn-soybean meal diets

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An experiment using a 3-phase feeding program was conducted to determine effects of isoquinoline alkaloids (IQ) in diets for weanling pigs. A total of 160 pigs (initial BW: 6.33 ± 0.61 kg) were allotted to four treatments, four pigs per pen, and 10 replicate pens per treatment. Phase 1, 2, and 3 diets were provided during week 1, weeks 2 and 3, and weeks 4 and 5, respectively. Within each phase, the four corn-soybean meal based diets were identical with the exception that they contained either 0, 90, 180, or 360 mg/kg IQ. Data were analyzed by ANOVA using the Proc MIXED of SAS. There were no differences among treatments in growth performance over the entire experimental period; however, in phase 1, ADFI, ADG, and gain:feed (G:F) quadratically decreased ($P < 0.05$) with IQ inclusion with the least values observed for the diet with 180 mg/kg of IQ. In phase 2, ADFI linearly decreased ($P < 0.05$), whereas G:F increased (quadratic, $P < 0.05$) in phase 3 as IQ was added to the diet with the greatest G:F obtained in diets containing 90 or 180 mg/kg IQ. A quadratic increase ($P < 0.05$) of total protein (TP) in plasma was observed in phase 1, with the highest value in plasma of pigs fed the 180 mg/kg IQ diet, and there was a tendency for plasma urea nitrogen (PUN) to increase linearly in phases 2 and 3 ($P = 0.07$) if IQ was added to the diet. In conclusion, IQ supplementation had no effect on overall pig growth rate although G:F was improved in phase 3 if 90, 180, or 360 mg/kg IQ was added to the diet. Results indicate that absorption of amino acids was improved by inclusion of IQ in the diets because PUN and TP values were increased.