
Two 28-d experiments involving 288 Yorkshire-Hampshire weanling pigs (initial weight, 6.7 kg, initial age, 28 d) were conducted to evaluate the effects of sodium metabisulfite (SMBS) level on the nutritional value of undercooked soybeans. In both experiments, pigs were fed a purified corn-soybean (or soybean-meal) diet containing 17.5% CP and .91% lysine. SMBS was added to the ground soybeans prior to heating them in an autoclave at 120°C for 20 minutes at 121°C. In Exp. 1, four replicates of six pigs/pen were fed a corn-soybean diet with SMBS added to the soybeans at levels of 0, .25, 1.0, or 2.0%. Diet 6 was corn-soybean diet. In Exp. 2, six replicates of six pigs/pen were fed three corn-soybean diets in which SMBS was added to the soybeans at levels of 0, .5, or 1.0%. Diet 4 was corn-soybean diet. In both experiments, trypsin inhibitor (TI) activity of the soybeans decreased with increasing level of SMBS, but TI activity at the highest level of SMBS still higher than the TI of soybean meal. In Exp. 1, daily gain and feed/gain improved quadratically (P<.05) as the level of SMBS increased. Similar responses to SMBS occurred in Exp. 2, except that gain was linear (P<.05). In Exp. 1, performance of pigs fed the highest level of SMBS was different (P<.05) from pigs fed soybean meal, but in Exp. 2, pigs fed the highest level of SMBS gained slower and less efficiently (P<.01) than those fed soybean meal. The results indicate that SMBS inactivates the TI of undercooked soybeans and improves their nutritional value for weanling pigs. The 1% level of SMBS seemed to be the most efficacious level.

Key Words: Pigs, Soybeans, Sodium Metabisulfite

Use of whey protein concentrate, dried buttermilk and porcine plasma protein to replace dried skim milk in diets for weanling pigs. B.T. Richert, J.D. Hancock, R.H. Hines, and K.S. Burton, Kansas State University, Manhattan.

The hundred thirty-two weanling pigs (3.8 kg avg BW) were used in a 28-d growth study to determine the effects of replacing dried skim milk (DSM) with whey protein concentrate (WPC), dried buttermilk (DBM) and spray-dried plasma protein (SDPP) in diets for weaning pigs. The control diet contained 20% DSM, 20% dried buttermilk and 3% soybean oil. All diets were formulated to 1.45% lysine, 25% lactose, 1% fat, 9% Ca and .8% P. These diets were fed from 0 to 14, and a common diet (20% DSM, 1.25% w/w fish meal, .85% Ca, .95% Na and .8% P) was fed from 14 to 28. For 0 to 14, pigs fed SDPP had greater G/F (P<.01) than pigs fed WPC and DSM and DBM (P<.01). For 14 to 28, pigs fed SDPP had greater G/F (P<.01) than pigs fed WPC and DSM. In Phase I, pigs fed SDPP had the poorest G/F (P<.02). Pigs fed WPC had greater ADG (P<.01) than those fed DSM and DBM. However, pigs consuming SDPP had the poorest G/F (P<.02). Pigs fed WPC had greater ADG (P<.01) than those fed DSM and DBM. However, pigs consuming SDPP had the poorest G/F (P<.02). During 0 to 14 and 14 to 28, there was no difference in ADG or ADFI.

Key Words: Milk Products, Plasma Protein, Fights

One hundred and four pigs (initially 5.3 kg and 21 d of age) were utilized to determine the effect of soybean meal level during phase I (0-14) on growth performance in the early-weaned pig. The experiment was designed as a randomized complete block, consisting of four dietary treatments: 0, 7.5, 15, and 22.5% soybean meal (SBM). The diets were formulated to contain 1.5% lysine, 24.4% lactose. All four diets contained 20% dried whey and 8.9% spray-dried porcine plasma, with soybean meal and lactose replacing dried skim milk on a lysine and lactose basis. From d 1-14 (phase I), all pigs were fed a common diet (21.5% SBM with soybean meal containing 10% lysine and 2.5% spray-dried blood meal. Growth performance was not affected (P>.05) d 0-14 post-weaning. However, pigs fed the control diet (9% SBM) had a numerical increase in ADG compared to pigs fed the diets containing soybean meal. When pigs were fed a common diet d 14-21, ADG tended (P<.10) to linearly decrease in pigs that had been fed lower levels of SBM compared to pigs that had been fed a 22.5% SBM diet d 0-14. This decrease in ADG was not a prolonged response, as ADG increased after d 21. Numerical decreases in gain to feed ratio (G/F) (P<.05) and feed efficiency (P<.05) were observed in pigs fed the control diet (9% SBM) d 14-21 compared to pigs fed a 22.5% SBM diet d 0-14. The results indicate that SBM in the starter diet, ADFI was linearly and quadratically decreased (P<.05) for the entire 35 d trial. Gain to feed ratio (d 0-35) showed a linear and quadratic (P<.05) increase, with G/F maximized in pigs fed a 15% SBM diet from d 0-14 post-weaning. These data suggest that SBM has to be included in starter diets to avoid depressed growth performance when pigs are switched from an all milk protein diet to a diet containing SBM in phase I and II, respectively.

Key Words: Starter Pigs, Soy Protein, Growth Performance.


A total of 298 weanling pigs (initially 5.5 kg and 19-24 of age) was used in a 28-d growth trial to determine the influence of spray-dried porcine plasma/spray-dried blood meal (SDPSSDBM) combinations on starter pig performance. Pigs were allotted by weight to replicates of 5 treatments. The control diet during Phase I (d 0-14) contained 10% SDPP and 20% dried whey and was formulated to 1.5% lysine. Either 25, 30, 35 or 40% of the 10% of SDPP was replaced with SBM on a lysine basis to form the five dietary treatments. Therefore, the SDPSSDBM combinations diets (100%, 75:25, 50:50, 25:75 or 0:100) contain 10, 7.5, 5.0, 2.5 or 0% SBM and 0.1, 1.3, 2.5, 4.8 or 6.5% SBM, respectively. All Phase I diets contained at least .81% histidine and 37% methionine. A common, 1.25% lysine diet containing 10% dried whey and 2.5% SBM was fed to all pigs during Phase II (d 14-24). There was a quadratic response for ADG (P<.06) during Phase I with pigs fed diets containing a combination of SDPP and SBM having superior performance compared to pigs fed diets containing either SDPP or SBM alone. Daily gain was maximized during Phase I for pigs receiving the 75:25 SDPSSDBM combination. Phase II and overall performance was not influenced by Phase I diet. In conclusion, diet cost can be reduced and growth performance improved by using combinations of SDPP and SBM in Phase I, rather than SDPP alone.