Amino acid and energy digestibility in soybean meal from high protein and low oligosaccharide varieties of soybeans fed to growing pigs

K. M. Baker and H. H. Stein

Two experiments were conducted using 5 sources of soybean meal (SBM) that included hexane extracted SBM produced from high-protein soybeans (SBM-HP) and conventional soybeans, and mechanically expelled SBM produced from high protein soybeans, low oligosaccharide soybeans (SBM-LO), and conventional soybeans. The standardized ileal digestibility (SID) of CP and AA in the 5 sources of SBM were measured in Exp. 1. Five diets that each contained 1 source of SBM as the only AA-containing ingredient and a N-free diet were formulated. Twelve growing barrows (initial BW: 67.7 kg) were allotted to a replicated 6 X 6 Latin square design with 6 periods and 6 diets. Each period lasted 7 d and ileal digesta were collected on d 6 and 7 of each period. Results of the experiment showed that there were no differences between the extracted SBM-HP and the extracted conventional SBM in SID values for any AA except for Trp. However, the expelled SBM-HP and SBM-LO had greater ($P < 0.05$) SID for His, Ile, Lys, Thr, and Val than the expelled conventional SBM. The SID for all indispensable AA in the expelled SBM-HP were greater ($P < 0.05$) than in the extracted SBM-HP, and for the conventional SBM, the SID for Arg, Ile, Leu, Phe, and Trp were greater ($P < 0.05$) in the expelled meal than in the extracted meal. Experiment 2 was conducted to measure ME in the 5 sources of SBM using 48 growing barrows (initial BW: 38.6 kg) that were placed in metabolism cages and randomly allotted to 6 diets with 8 replicates per diet. A

corn-based diet and 5 diets based on a mixture of corn and each source of SBM were formulated. Urine and feces were collected during a 5-d collection period, and values for ME in each source of SBM were calculated using the difference procedure. Results showed that ME in the extracted SBM-HP was greater ($P < 0.05$) than in the extracted conventional SBM (4,074 vs. 3,672 kcal/kg DM). The ME in the expelled SBM-HP was also greater ($P < 0.05$) than in the expelled conventional SBM and in the SBM-LO (4,059 vs. 3,620 and 3,721 kcal/kg DM). It is concluded that SBM-HP has a greater feeding value than conventional SBM.