

---

**304 Effect of particle size of soy protein concentrate on amino acid digestibility and concentration of metabolizable energy and effects of soy protein concentrate on growth performance of weanling pigs.**

G. A. Casas<sup>1,2,\*</sup>, C. Huang<sup>3</sup>, H. H. Stein<sup>2</sup>,

<sup>1</sup>Universidad Nacional de Colombia, Bogota,

Colombia, <sup>2</sup>University of Illinois at Urbana-

Champaign, Urbana, <sup>3</sup>Beijing TongLiXingKe

Agriculture Science & Technology Co. Ltd,

BEIJING, China.

Two experiments were conducted to determine the standardized ileal digestibility (SID) of AA and the concentration of ME in soy protein concentrate (SPC) ground to 3 particle sizes and in soybean meal and fish meal when fed to weanling pigs. An additional experiment was conducted to determine effects on growth performance of including SPC in diets fed to weanling pigs. In Exp. 1, diets containing soybean meal, fish meal, or SPC ground to a mean particle size of 70, 180, or 700  $\mu\text{m}$  as the only source of AA were fed to weanling barrows ( $12.90 \pm 1.51$  kg initial BW) that had a T-cannula installed in the ileum. In Exp. 2, 36 barrows ( $13.70 \pm 1.86$  kg BW) were allotted to a corn-based diet or diets containing corn and soybean meal, fish meal, or SPC ground to the 3 particle sizes. In Exp. 3, 160 pigs ( $7.06 \pm 1.07$  kg initial BW) were allotted to 4 dietary treatments and 8 pens per treatment with 5 pigs per pen. Diets included a control diet containing fish meal and spray dried plasma protein and diets in which fish meal, spray dried plasma protein, or both fish meal and spray dried plasma protein were replaced by SPC ground to 180  $\mu\text{m}$ . Pigs were fed 1 of 4 diets during phase 1 and a common diet in phase 2. Results indicated that the SID of Lys tended ( $P = 0.078$ ) to be greater in SPC ground to 180  $\mu\text{m}$  than in soybean meal and that the SID of Arg and Trp were greater ( $P < 0.05$ ) in SPC ground to 70 or 180  $\mu\text{m}$  than in SPC ground to 700  $\mu\text{m}$ . There were no differences in the ME among corn, soybean meal, fish meal, and SPC ground to 70, 180, or 700  $\mu\text{m}$ , and the ME of SPC ground to 70, 180, or 700  $\mu\text{m}$  was 3,683, 3,903, and 3,886 kcal/kg DM, respectively. Substitution of spray dried plasma protein and fish meal by SPC ground to 180  $\mu\text{m}$  in diets fed during phase 1 had no effect on pig growth performance. In conclusion, reduction of the particle size of SPC may improve digestibility of some indispensable AA but did not affect concentration of ME. Soy protein concentrate may replace animal proteins in diets fed to weanling pigs without affecting growth performance.

**Key Words:** amino acid digestibility, energy digestibility, soy protein concentrate

doi:10.2527/asasmw.2017.304