

Amino acid digestibility in liquid and fermented liquid feed

Two experiments were conducted to compare the apparent ileal digestibility (AID) of amino acids by growing pigs in a corn soybean meal diet that was fed in a dry form to values obtained for the same diet fed in a liquid form or in a fermented liquid form. In Exp. 1, a corn soybean meal diet was formulated. This diet was fed as a dry diet or as a liquid diet that was produced by mixing dry feed and water in a 1:1 ratio or in a 1:3 ratio. Feed and water were mixed immediately before each feeding. In Exp. 2, a corn soybean meal diet and two fermented liquid diets were used. The fermented liquid diets were produced by fermenting the corn soybean meal diet with water for 24 hours prior to feeding. When preparing one of these diets, 90% of the fermented feed was removed every 24 hours and fed to the pigs, and the remaining 10% were left in the fermentation tank as new feed and water were added (F-10). The other fermented liquid diet was prepared in a similar way, but 50% of the fermented feed was left in the fermentation tank as new feed and water were added to the tank (F-50). All diets were fed to growing pigs that were equipped with a T-cannula in the distal ileum. Chromic oxide (4g/kg) was included in all diets as an indigestible marker. Each diet were fed to six pigs during a 7-day period with fecal samples collected on day-5 and ileal digesta being collected in 10-hour periods on day-6 and day-7. Results of the experiments showed that when feed and water were mixed in a 1:1 ratio, AID of AA were not changed with the exception that the AID of Pro and Ser were increased ($P < 0.05$). However, when feed and water were mixed in a 1:3 ratio, the AID of Ile, Leu, Phe, Trp, and Tyr were reduced ($P < 0.05$) as compared with the AID for pigs fed the dry diet. Fermentation reduced ($P < 0.05$) the concentration of ADF and NDF, Arg, and GE in the feed. The pH of the F-50 feed stabilized after 10 hours, whereas in F-10, it took 15 hours for the pH to stabilize. Pigs fed the fermented diets had lower AID of CP, Ile, Lys, Phe, Val, Ala, Asp, and Tyr than pigs fed the dry diets.

The apparent total tract digestibility of GE and DM were not different among treatments, with the exception that there was a trend ($P = 0.06$) for pigs fed the F-50 diet to have a greater DM digestibility than pigs fed the dry diet.