

Influence of feed soaking and fermentation on amino acid digestibility by growing pigs

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Two experiments were conducted to study the influence of feed soaking and feed fermentation on the apparent ileal digestibility (AID) of AA by growing pigs. Each experiment utilized six barrows that were equipped with a T-cannula in the distal ileum (initial BW: 77.2 ± 5.9 and 91.2 ± 5.9 kg for Exp. 1 and 2, respectively). Within each experiment, pigs were arranged in a repeated 3 x 3 Latin square design. A corn-soybean meal based diet (16.6% CP) was formulated and used in both experiments. In Exp. 1, this diet was fed in a dry form or after having been mixed with water in a 1:1 ratio or in a 1:3 ratio. In Exp. 2, the diet was fed to the pigs in a dry form or after having been fermented for 24 h using either 10% residual feed or 50% residual feed to initiate the fermentation. Feed was provided to the pigs in two equal meals in a daily amount that was equal to three times the maintenance requirement for energy. Each experiment consisted of three 7-d periods and ileal digesta were collected from the cannulas during the last 2 d of each period. Results from Exp. 1 indicated that there were no differences in the AID for any of the AA between the diet fed in the dry form and the diet mixed with water in a 1:1 ratio. However, the AID for all indispensable AA except His tended ($P < 0.08$) to be lower for the pigs fed the feed that was mixed with water in a 1:3 ratio compared to the AID from the other two groups. In Exp. 2, there were no differences in the AID for Arg, Met, and Thr between the three groups. However, for the remaining indispensable AA, higher ($P < 0.05$) AID were found for the dry feed compared to the feed that was fermented with 10% residual. The AID for the dry feed were also higher ($P < 0.05$) than for the fermented feed with 50% residual for Ile, Leu, Lys, Phe, and Val. Fermentation of the feed with either 10 or 50% residual feed also reduced the concentrations of all AA (on a DM basis) by approximately 7%. It is concluded that the mixing of feed with water in a 1:3 ratio and fermentation of feed prior to feeding may reduce the quantities of digestible AA that are absorbed by the pigs.