

253 (Invited ASAS Animal Science Young Scholar) Digestibility of dietary fiber in growing pigs. P. E. Urriola* and H. H. Stein, *University of Illinois, Urbana, IL.*

In vivo and in vitro digestibility experiments were conducted to measure the apparent ileal digestibility (AID) and apparent total tract digestibility (ATTD) of dietary fiber by growing pigs fed fibrous feed ingredients. The objective of Exp. 1 was to measure the digestibility of AA, energy, and total dietary fiber (TDF) when 30% distillers dried grains with solubles (DDGS) was added to a corn-soybean meal diet. Results indicated that the AID of Lys (74.1%) was reduced ($P < 0.05$) in the diet with 30% DDGS compared with the control diet (78.6%), but the AID of most other AA was not affected. The AID and ATTD of energy and TDF were less ($P < 0.05$) in the diet with 30% DDGS (81.0 and 55.5%) than in the control diet (86.0 and 60.0%), but there were no differences in rate of passage or VFA concentration in digesta or fecal samples. The objective of Exp. 2 was to measure the AID and ATTD of TDF in 24 sources of DDGS. On average, the ATTD of TDF in DDGS was 47.3% and varied among sources of DDGS. The ATTD of TDF was correlated to the ATTD of NDF and insoluble dietary fiber ($r^2 = 0.90$ and 0.79 , respectively; $P < 0.05$). In Exp. 3, 5 Light Yorkshire (LY) pigs, 5 Heavy Yorkshire (HY) pigs, and 5 Meishan pigs were fed 5 diets with increasing concentration of soluble dietary fiber. The ATTD of TDF was different ($P < 0.05$) among groups of pigs fed DDGS (Meishan: 75.3%; LY: 39.0%; HY: 55.7%), but the ATTD of TDF was not different when pigs were fed sugar beet pulp, soybean hulls, or pectin. In Exp. 4, a 3-step in vitro digestibility procedure was used to measure the in vitro ATTD of NDF in DDGS. Results indicated that in vitro AID (28.5%) and ATTD (37.5%) of NDF were lower than the in vivo AID (45.9%) and ATTD (59.3%) and it was not possible to predict in vivo ATTD of NDF from the in vitro values ($r^2 = 0.12$). In conclusion, dietary fibers from DDGS are poorly digested by pigs but do not affect the digestibility of other dietary nutrients. The ability of pigs to digest fiber varies with age and breed and there are interactions between breed of pig and the type of fiber. The in vitro procedure that was used in this experiment did not accurately predict in vivo digestibility of TDF.

Key Words: Dietary fiber, Digestibility, Distillers dried grains with solubles, Pigs