Effect of form of fat and NDF addition on apparent ileal and apparent total tract digestibility of fat in diets fed to growing pigs

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An experiment was conducted to measure the effect of the concentration and form (liquid or intact) of dietary fat and the concentration of dietary NDF on the apparent ileal (AID) and apparent total tract (ATTD) digestibility of dietary fat by growing pigs. Eleven barrows (initial BW: 38.1 ± 1.2 kg) were fitted with a T-cannula in the distal ileum and allotted to an 11 × 11 Latin square design. Four diets containing 0.92% NDF and 1.3, 3.2, 5.1, or 6.9% liquid fat (LF) from corn oil were prepared. Three additional diets were formulated by adding 3.0, 6.0, and 9.0% NDF from solka floc to the diet containing 5.1% LF. The remaining 4 diets were prepared by mixing varying amounts of whole corn germ meal and defatted corn germ meal to produce diets containing 3.0, 5.3, 7.7, or 9.7% of intact fat (IF). Ileal digesta and fecal samples were collected from pigs and AID and ATTD of fat were calculated for each diet and linear and quadratic effects of the inclusion of LF, IF, and NDF were calculated. Preplanned contrasts were used to compare AID and ATTD of the 2 forms of fat and to compare AID and ATTD. The AID of fat increased (linear and quadratic, $P < 0.05$) as the inclusion of fat increased regardless of the form of fat (67, 82, 88, and 83% for LF and 53, 65, 71, and 70% for IF). The ATTD of fat also increased (linear and quadratic, $P < 0.05$) as the inclusion of fat increased regardless of the form of fat (65, 76, 88, and 86% for LF and 48, 57, 69, and 72% for IF). On average, the values for AID (80 vs. 65%) and ATTD (79 vs. 61%) were greater ($P < 0.01$) for LF than for IF. There was no effect of the dietary inclusion of NDF on the AID of fat, but the ATTD exhibited a quadratic relationship ($P < 0.05$) with increasing level of dietary NDF (88, 85, 85, and 87% for 0, 3, 6, and 9% NDF in the diet). There were no differences between AID and ATTD of fat regardless of the diets being fed. These results suggest that LF is better digested by growing pigs than IF, but the dietary concentration of NDF does not influence the AID of fat.

Key words: dietary fat, digestibility, pigs