

**T191 Metabolizable energy and digestibility of carbohydrates in cereal grains fed to growing pigs.** S. K. Cervantes-Pahm\* and H. H. Stein, *University of Illinois, Urbana.*

The objective of the experiment was to measure the ME and the apparent ileal (AID) and the apparent total tract (ATTD) digestibility of carbohydrates (CHO) and total dietary fiber (TDF) in 8 cereal grains. The 8 cereal grains were yellow dent corn (YD), NutriDense corn (ND), de-hulled barley, de-hulled oats, polished rice, rye, sorghum, and wheat. Each cereal grain was included in 1 diet and titanium dioxide (0.5% was included in each diet as an indigestible marker. Twenty-four ileally cannulated pigs (BW = 30.7 ± 3.2 kg) were randomly allotted to the 8 diets in a completely randomized design. Pigs were fed experimental diets during 3 14-d periods. In each period, 3 pigs were fed each diet for a total of 9 observations per diet and no pig was fed any diet more than once. Pigs were placed in metabolism cages and fecal samples were collected quantitatively from d 6 to 11 and ileal samples were collected on d 13 and 14 of each period. Results of the experiment indicated that ME in de-hulled oats was greater ( $P < 0.01$ ) than in ND, barley, and rice. The ME in sorghum was not different from the ME in YD and rye. The AID of CHO was greatest ( $P < 0.01$ ) in polished rice and least ( $P < 0.01$ ) in sorghum. The ATTD of CHO in rice was greater ( $P < 0.01$ ) than in all other grains and the ATTD of CHO in wheat was least ( $P < 0.01$ ) among the grains. The AID of TDF in YD, ND, de-hulled barley, and rye were not different, but were greater ( $P < 0.01$ ) than in de-hulled oats and rice. The AID of TDF in de-hulled barley was also greater ( $P < 0.01$ ) than in sorghum and wheat. The ATTD of TDF was less ( $P < 0.01$ ) in polished rice than in all other cereal grains, but no differences among the other grains were observed. In conclusion, rice had the greatest ATTD of CHO, but de-hulled oats had the greatest ME among all cereal grains.

**Table 1.** ME and digestibility of carbohydrates in cereal grains

Item	ME, kcal/kg	AID, CHO	AID, TDF	ATTD, CHO	ATTD, TDF
YD	3,443 <sup>bc</sup>	81.4 <sup>cd</sup>	12.1 <sup>ab</sup>	95.3 <sup>bc</sup>	54.7 <sup>a</sup>
ND	3,507 <sup>b</sup>	88.0 <sup>b</sup>	10.4 <sup>ab</sup>	94.5 <sup>c</sup>	50.4 <sup>a</sup>
Barley, DH	3,504 <sup>b</sup>	80.3 <sup>cd</sup>	24.0 <sup>a</sup>	95.6 <sup>bc</sup>	44.6 <sup>a</sup>
Oats, DH	3,661 <sup>a</sup>	83.6 <sup>c</sup>	-70.5 <sup>e</sup>	96.8 <sup>b</sup>	13.3 <sup>a</sup>
Rice	3,513 <sup>b</sup>	96.8 <sup>a</sup>	-6.3 <sup>d</sup>	98.4 <sup>a</sup>	-55.8 <sup>b</sup>
Rye	3,327 <sup>d</sup>	75.8 <sup>e</sup>	10.8 <sup>abc</sup>	94.8 <sup>c</sup>	62.8 <sup>a</sup>
Sorghum	3,388 <sup>cd</sup>	66.5 <sup>f</sup>	5.8 <sup>bcd</sup>	91.8 <sup>d</sup>	33.0 <sup>a</sup>
Wheat	3,471 <sup>b</sup>	78.8 <sup>de</sup>	-5.0 <sup>cd</sup>	89.8 <sup>e</sup>	27.3 <sup>a</sup>
SEM	31	1.2	4.9	0.6	25.6
P-value	0.001	0.001	0.001	0.001	0.01

CHO was calculated as DM - (CP + crude fat + ash).

**Key words:** carbohydrates, cereal grains, energy