However there certainly exists some direct relationship between diet selection and substrate oxidation during exercise since glucose oxidation before and during exercise was larger in rats with the smallest lipid intake. Therefore, the relationship between diet selection, substrate oxidation and exercise training is certainly complex. A more precise assessment of protein metabolism may be important to better understand this point.

Perprandial changes in gastric wall tension control ingestion in pigs. L Lepionka, CH Malbert *(Station de recherches porcines, Inra, 35590 Saint-Gilles, France).*

Short term control of ingestion remains hypothetical because meal induced fundic relaxation cancels the possible gastric distension. Similarly, experimentally induced wall tension changes modify the sensation of a gastric distension. The aim of this study is to evaluate the characteristics of the ingestive pattern during proximal gastric distensions.

Perprandial isobaric or isovolumic fundic distensions were performed in four awake pigs by using an electronic barostat. Distension values were: 200/7, 250/11, 400/16 and 450/21 (mL/mmHg). Ingestive pattern for 500 g meal was characterized by duration of the meal, food intake rate FIR and no ingestion periods duration. These values were obtained by continuous weighing of the contents of the trough during the meal. No ingestion periods corresponded to FIR values less than 0.5 $g.sec^{-1}$. The ingestion period was divided in three equal periods to study the role of gastric filling in the perprandial evolution of FIR.

Meal duration was not significantly different for isovolumic distension vs. control (no distension) (8.9 ± 0.31 vs 8.2 ± 0.45 min, 450 mL vs control). On the contrary, meal duration was significantly shorter for isobaric vs isovolumic distension at 7/200 mmHg/mL (8.0 ± 0.28 vs 8.9 ± 0.33 min). This shortening was the consequence of (i) an increased FIR during the second third of meal (57 ± 2.8 vs 51 ± 2.2 $g.min^{-1}$), and (ii) a reduced duration of no ingestion periods (194 ± 23.4 vs 263 ± 28.9 sec). A strictly inverse relationship was observed for higher pressures (10.2 ± 0.37 vs 8.7 ± 0.39 min, 11 mmHg vs 250 mL). The longer meal duration was related to only a reduced FIR during the second third of meal (47 ± 2.3 vs 55 ± 2.1 $g.min^{-1}$).

In conclusion, proprioceptive signals originating from the proximal stomach were responsible for perprandial control of ingestive behaviour in pigs. These stimuli corresponded to intraluminal pressure and wall tension informations.

Involvement of the protein network in the in vitro degradation of starch from spaghetti. A Fardet, C Hoebler, B Bouchet, F Guillon, DJ Gallant, JL Barry *(Human Nutrition Research Center, National Institute for the Agricultural Research, BP 1627, 44316 Nantes cedex 03, France).*

Among the factors responsible for the slow degradation of starch from pasta, the presence of a fine and compact protein network could be a decisive parameter. This work aimed to study by light microscopy and enzymatic treatments the involvement of the protein network in the alpha-amylase susceptibility of starch from spaghetti. Pasta were cooked 10 min, then either cut in 5 mm strands or ground. After 0 or 2 h of incubation with pepsin, spaghetti were incubated 24 h in vitro with either human salivary or pig pancreatic alpha-amylase (HSA and PPA, respectively). Compared to ground spaghetti, starch from intact strands of spaghetti was slowly degraded with both alpha-amylases. When incubated with HSA, starch was progressively removed from the protein network which remained intact.