When incubated with PPA, the strands of spaghetti were solubilized and the starch degradation increased after 1 h of alpha-amylolysis (+ 10% at 24 h) due to the presence of contaminating proteases which partially hydrolysed the protein network (16% at 24 h). The protein network degradation reduced the pathway for the alpha-amylase to access starch. Pre-incubation with pepsin released starch into the incubation medium, only slighty increasing the initial rate of starch degradation (+ 10% at 15 min).

We concluded that the protein network does not constitute a complete physical barrier to alpha-amylase but limits its access to starch by a supposed retarded diffusion rate. The tortuosity and the steric hindrance of the protein matrix may be involved.

Effect of seaweed fibre added in a diet on the physico-chemical characteristics of pig digesta. E Worthington [1], F Guillon [1], C Hoebler [1], M Lahaye [1], B Darcy-Vrillon [2], P Vaugelade [2], JL Barry [1] *([1] Centre de recherche en nutrition humaine, Inra, 44316 Nantes; [2] Unité d'écologie et de physiologie du système digestif, Inra, 78352, Jouy-en-Josas, France).*

Seaweed fibres have particular physico-chemical characteristics that are interesting because of their potential application to nutrition.

Two seaweed extracts (*Euchemia Cottinii,* rich in insoluble carrageenans, EC, and *Palmaria palmata,* rich in low viscous soluble xylan, PP), were studied for their effects on the physico-chemical characteristics of digesta along the whole digestive tract. Twelve Large White pigs (80 kg), adapted for 6 days to a test-diet containing 5% algal fibre or cellulose (Cel, reference fibre), were sacrificed 5 h after meal. Fresh (FM) and dry matter (DM), chemical composition, pH and short chain fatty acid (SCFA) concentration were determined in the digesta. The amount of total dietary fibre and the ratio soluble to insoluble from stomach, ileum and large intestine were determined. The amount of total fibre increased from the stomach to the colon. In the small intestine, the proportion of soluble fractions was high for EC and PP; Cel was found always in insoluble form. EC and Cel were found to be present in distal colon probably due to their poor fermentability. Supplementation of the diet with PP or EC increased the amount of wet digesta while dry matter was unchanged; this rise corresponded to an increase in the water content due to either an osmotic effect of algal fibre (PP in the small intestine), or a greater absorption of water by the fibre (EC) or by microbial mass (PP in the colon). The lowest amount of starch was found in the stomach after ingestion of the diet supplemented with PP, suggesting a more rapid gastric emptying. The SCFA concentration and pH in the large intestine are related to the fermentability of algal fibre. The high fermentation of PP in the caecum increased the concentration of SCFA (126.3 ± 55.7 mmol/g FM) and reduced the pH (6.0 ± 0.7). In contrast, EC was weakly fermented (SCFA: 72.7 ± 14.8 mmol/g FM; pH 7.0 ± 0.4) as was Cel used as the reference fibre (SCFA: 95 ± 22 mmol/g FM; pH 6.9 ± 0.1).

In conclusion, the supplementation of a diet with 5% algal fibre changes the physico-chemical characteristics of the digesta according to the algal fibre properties in the digestive compartment considered. The extent of 5% algal fibre fermentation at different sites of large intestine influences significantly the production of SCFA and consequently the pH of digestive contents.

Hydrogen production in dogs: Lactulose vs meat diet. E Pouteau, H Dumon, M Champ, M Krempf, P Nguyen *(Centre de recherche en nutrition humaine, Hôpital Nord, Nantes; Laboratoire de nutrition et*