Demonstration of health promoting effects of fish protein hydrolysates by animal testing

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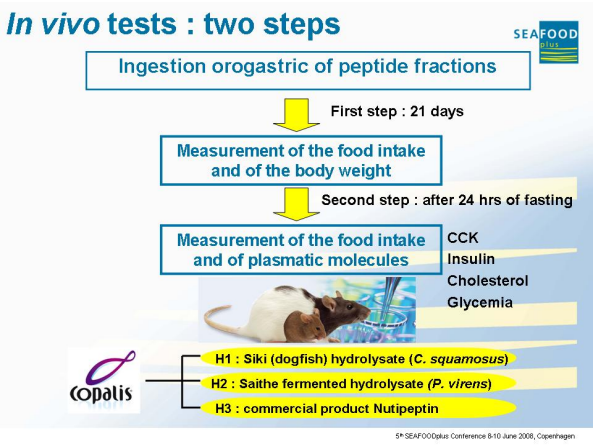

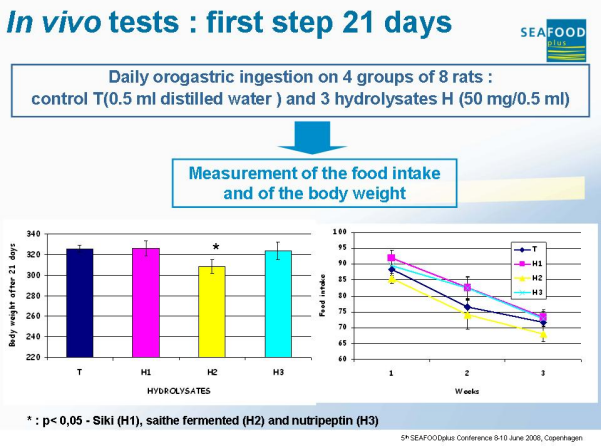

In the PROPEPHEALTH project, the goal of the researchers was to scan the byproducts produced during seafood processing with modern, improved isolation techniques in order to discover 'new' substances that might be of health value, and which of them that are 'bioactive' and may be useful in the production of functional seafood products. To go further on our biological test, we required the knowledge of researcher from Pillar 1, in particular the team of Dr Elizabeth Lund (FISHGASTRO) from the Institute of Food Research (UK). This presentation is the result of this successful integration.

In order to explore the possibility of obtaining biologically active peptides from marine processing by-products we searched for the presence of peptide hormones in fish hydrolysates. This study was focused on the cholecystokinins (CCK) family which are small peptides controlling the intestinal mobility and the secretion of digestive enzymes. The CCK also proves to be one of the paramount factors of the control of satiety. It was shown that an increased production of CCK involved a state of satiety allowing the control of the food intake of obese patients.

The biological content of hydrolysates from industrial origins was studied *in vivo* by orogastric ingestion on 32 male Wistar rats (270 g). The food intake and the body weight were followed for three weeks and the amount of plasmatic cholecystokinins, cholesterol, insulin and glucose level were measured. Six different hydrolysates (H1, H2, H3, H4, H5 and H6) were daily tested (150 mg/kg).

After the *in vivo* trial, a significant difference was observed between the body weight of the group feed with H2 in comparison with the control (ED) but also with rats stuffed with the other hydrolysates. The food intake was also lower with H2, as well as the glucose level in the blood after the last feeding. The different molecules amount in plasma consolidated these results.

These really interesting results will be completed in direct collaboration with the SME'S at the end of SEAFOODplus. This future work will focus on the characterisation (*in vitro*) and the purification of the active hydrolysate by RP-HPLC and MS/MS. From an upgrading point of view, an industrial scale fraction exhibiting an activity comparable with CCK would be of great interest in several domains such as feed or nutraceutic.