



Functional seafood products –some results from the SEAFOODplus project

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Key project information

- **Type of Project:** EU Integrated Project
- **Project title:** Health promoting, safe seafood of high eating quality in a consumer driven fork-to-farm concept
- **Coordinator:** Professor Torger Børresen, Ph.D.
- **Total budget:** 26 million euro
- **EU contribution:** 14.4 million euro
- **Number of partners:** 68 (~200 researchers)
- **Number of countries involved:** 17
- **Main research areas:** 6
- **Number of sub-projects:** 20
- **Project start:** 1. January 2004
- **www.seafoodplus.org**

Human nutrition studies



- **FISHGASTRO**
 - Gastro-intestinal health, colon cancer, inflammatory bowel diseases
- **YOUNG**
 - Health of young European families
- **METAHEART**
 - Metabolism of n-3 fatty acids and heart disease



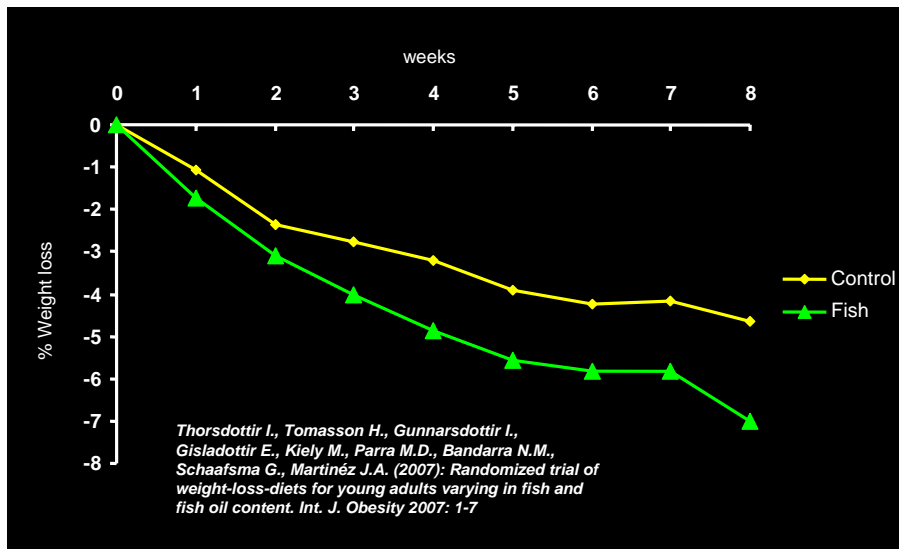
Seafood in a slimming diet



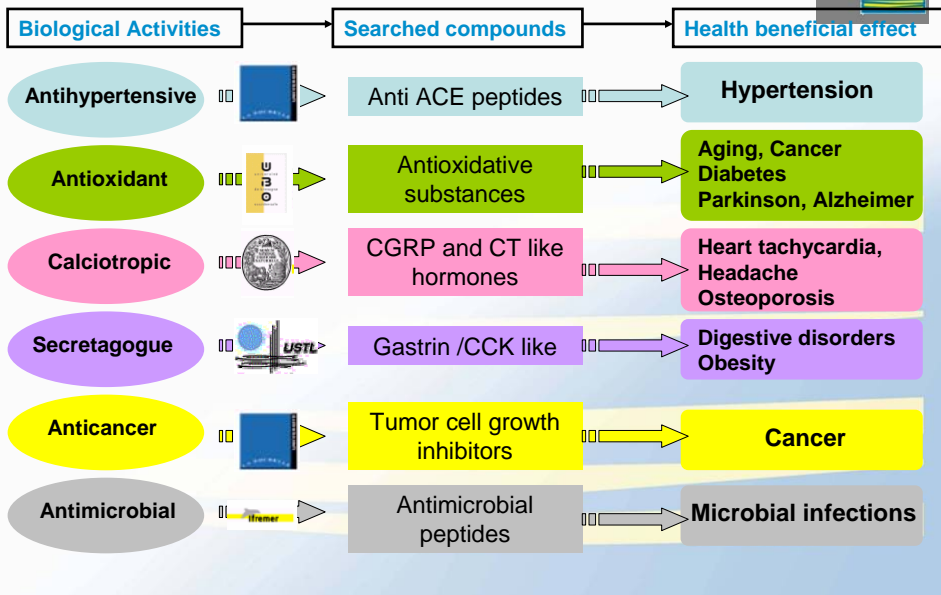
**Intervention study with 324 men
and women aged 20-40 years
served 3 x 150 g fish per week**



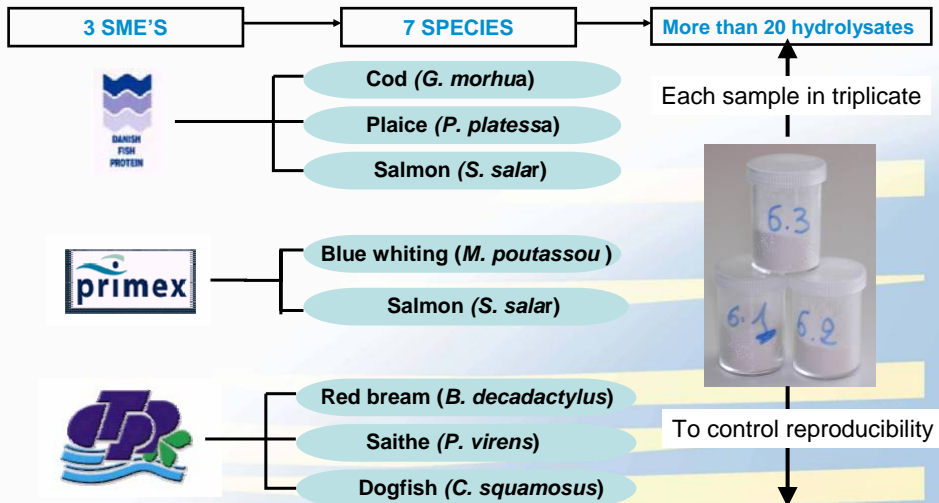
Weight loss by hypocaloric diet



Health beneficial compounds from FPH



Fish protein hydrolysate preparation



Antiproliferative activity of fish hydrolysates on cancer cell lines



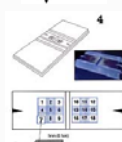
Human cancer cell lines (breast adenocarcinoma)
Growth until confluence in optimal conditions



Fish hydrolysate

Trypsine
Count

Cell suspension
in cell culture
medium
 10^5 cells . mL⁻¹



5000 cells, 1 g. L⁻¹
Growth for 72h
Cell proliferation assay
(colorimetric - viability)

→ **Growth inhibition**



Stock solution
in PBS pH 7.4 100 mM
to avoid pH variation
Sterile filtration
(0.2 µm)

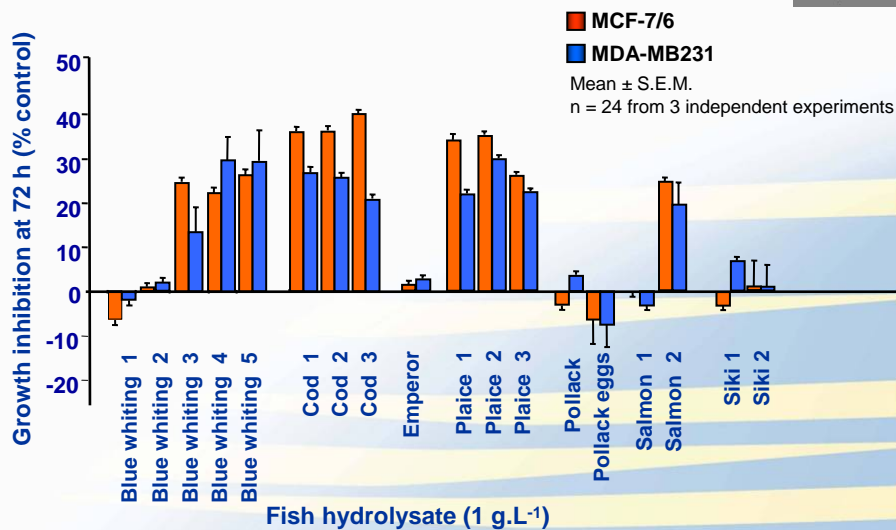


Dilution in cancer cell
culture medium

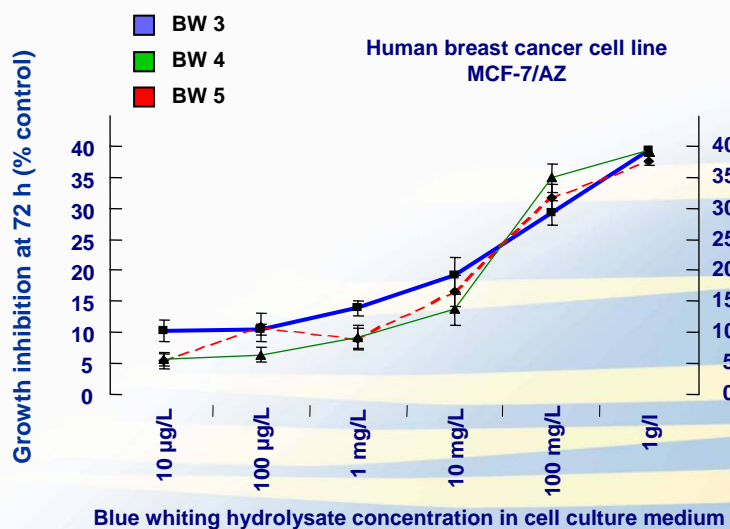


Control containing
equivalent amount
of PBS

Antiproliferative activity of fish hydrolysates on cancer cell lines



Dose dependent growth inhibition





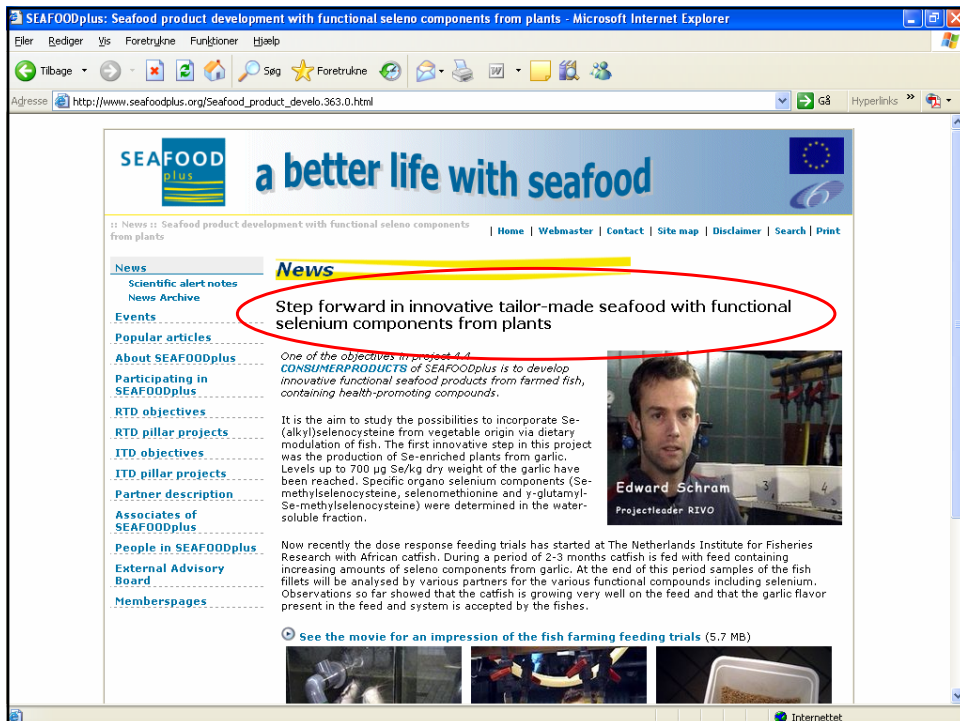
Summary antiproliferative activities of FPH

- Growth inhibition by 3 blue whiting, 3 plaice and 1 salmon hydrolysates
- Antiproliferative activity of Blue Whiting hydrolysates is dose-dependent and growth inhibition is measured with Blue whiting hydrolysate concentrations as low as 10 µg. L⁻¹
- Effect NaCl (tested in Blue whiting hydrolysate)
 - Although NaCl can clearly contribute to cancer cells growth inhibition, NaCl content is not the only parameter explaining antiproliferative activity of fish hydrolysates
- Effect lipids
 - No clear correlation between the lipid content and activity. The lipid content is not a pertinent indicator of antiproliferative activity although the presence of specific anticancer lipids is not excluded



A new concept for increasing nutritional value

Farmed fish fed selenium enriched plant components acts as carrier for functional selenium



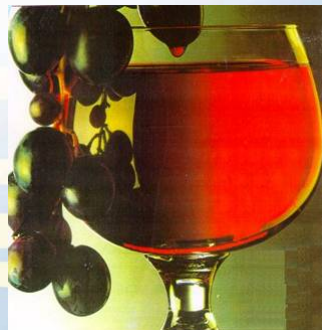
Health promoting components from other foods may be added to seafood



- Antioxidant dietary fibers
- 'A product containing significant amounts of natural antioxidants associated with the fiber matrix'

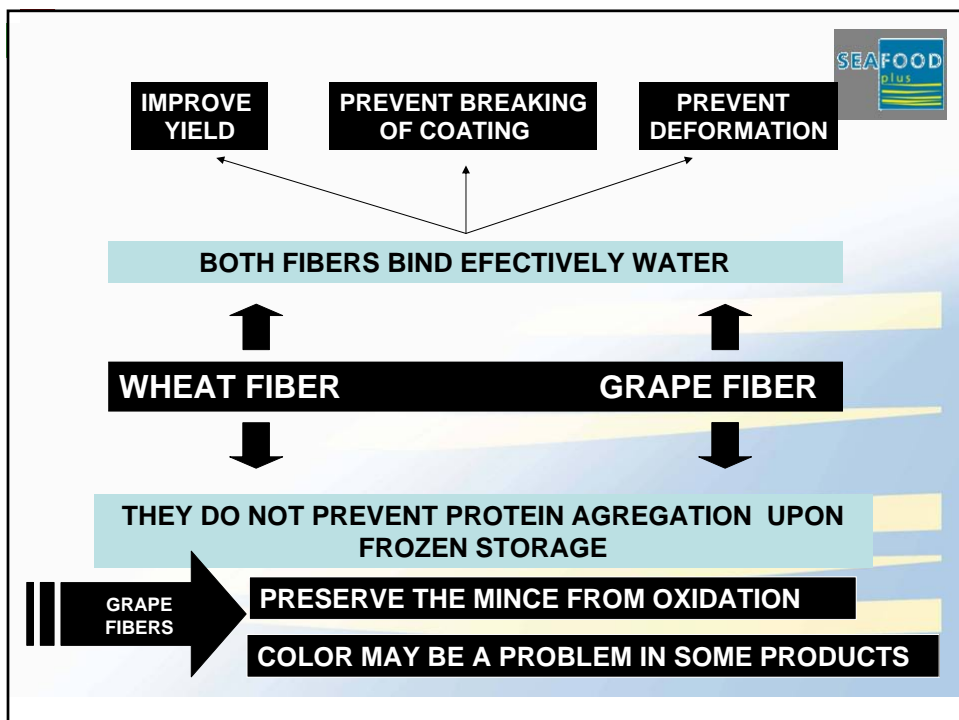
- Mango
- Guava
- Pineapple
- Seaweed Fucus
- Grapes

**Project
CONSUMERPRODUCTS**



Restructured seafood products

- Carriers of functional components
- Image
- Different matrices
- Maximal use of existing resources



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Vælg 122% Hjælp

Results of the SEAFOODplus project

Adding taurine increases the health value of seafood products

No one seriously doubts that seafood products are healthy, valuable foods. Nearly everybody knows that they contain Omega 3 fatty acids (EPA 20:5, DHA 22:6), numerous vitamins, plus minerals and trace elements. In contrast, hardly anyone knows that seafood also contains other important substances: taurine, for example, whose significance was for a long time disputed. New findings from the SEAFOODplus project have now revealed, however, just how important taurine is for our health.


In the face of the immense significance of taurine it is not surprising that various SEAFOODplus subprojects involve taurine. The first results were presented at the 3rd open conference in Tromsø.

Reduction of serum cholesterol

Edel O. Elvevoll (University of Tromsø) presented the results of a study on the influence of processing on the nutritional and health value of seafood which she had conducted together with Bjarne Østerud and other scientists. Due to the general trend towards

The body of an adult contains about 70 g of the amino acid taurine. It is mainly found in the muscles and the brain, in the heart and in the blood. White blood cells, too, have high concentrations of taurine. It is particularly important for the development of the brain, the retina of the eye, and the liver of the newly born.

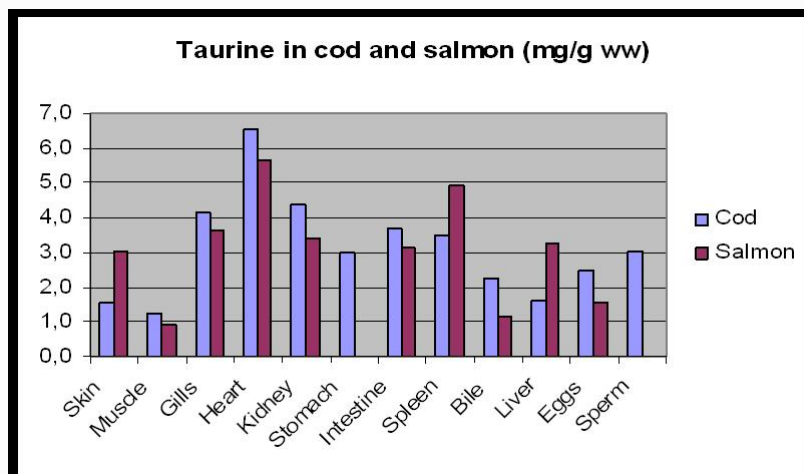
It is only a few years since scientists began re-evaluating the



From EUROFISH Magazine

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Taurine as functional component



Elvevoll et al. 2006



A better life with seafood...

SEAFOOD
plus

www.seafoodplus.org

Thanks to Torger for help with slides