**Proteome analysis of muscle tissues: Two dimensional protein mapping of pig and cod muscle.**

Certain aspects of muscle biology such as metabolism, growth and development of muscle cells influence the quality of muscle based foods. In addition, the proteolytic processes that start immediately after slaughter or catch (post mortem metabolism) have major impact on taste and texture of meat from fish and mammals. In order to secure optimal quality, it is important to understand the basic mechanisms of muscle biology as well as to understand the post mortem processes that turn muscle into meat. Hence it is important to characterize the involved proteins and genes, and how they interact with each other and with environmental factors to influence meat quality. Proteome analysis is a new and powerful tool for characterization of cellular protein expression. This method is based on 2 dimensional (2D) electrophoretic separation of the cellular proteins so that each protein can be identified by its specific coordinates in a 2D protein map from which it can be extracted and identified by micro sequencing and mass spectrometry. Our aim is to establish and optimize such 2D protein maps of muscle tissues from cod and pork. Existing methods of tissue preparation, 2D gel separation and computer assisted image analysis of the 2D maps will be optimized. The established 2D maps will be used to study proteins that are involved in post mortem changes of muscle tissue, in order to find and identify marker proteins that can be used as assays for quality labeling.

National Institute of Aquatic Resources

Danish Institute of Agricultural Sciences

Period: 01/07/1999 → 31/05/2003

Number of participants: 3

Project participant:

- Kjærgård, Inger Vibeke Holst (Intern)
- Stampe-Villadsen, Hanne Lilian (Intern)

Project Manager, organisational:

- Jessen, Flemming (Intern)

**Financing sources**

Source: Unknown

Name of research programme: Ukendt

Amount: 5,135,000.00 Danish Kroner
Advanced methods for identification and quality monitoring of (heat) processed fish

Objectives:
- Development of methods for fish species identification, which are tailored for the various types of heated products.
- Evaluation of these methods by collaborative studies.
- Testing the suitability of image analysis for interpretation and comparison of electrophoresis gels.
- Development of a data base containing physical parameters (isoelectric point and/or molecular weight) of proteins for fish species identification. This reference data base will contain data for raw and heated fish and products.
- Evaluation of electrophoretic methods to monitor processing parameters (the heating temperature) of fishery products.

National Institute of Aquatic Resources
Netherlands Institute for Fisheries Research
Federal Research Centre for Fisheries
IFREMER
Instituto Portugues de Investigacao Maritima
CSIC Instituto de Investigaciones Marinas
Rowett Research Institute
National Food Administration
NOFIMA

Swedish Institute for Food Research
Period: 01/11/1996 → 31/01/2000
Number of participants: 11
Project participant:
Stampe-Villadsen, Hanne Lilian (Intern)
Luten, Joop (Ekstern)
Rehbein, Hartmut (Ekstern)
Etienne, Monique (Ekstern)
Mendes, Rogério (Ekstern)
Perez-Martin, Ricardo (Ekstern)
Craig, Anne (Ekstern)
Malmheden-Yman, Ingrid (Ekstern)
Åkesson, Göran (Ekstern)
Project Manager, organisational:
Jessen, Flemming (Intern)

Financing sources
Source: Unknown
Name of research programme: Uendt
Amount: 500,000.00 Danish Kroner

Analytical Chemistry

Analytical Chemistry at FF is a basic activity, aimed at maintaining the chemical-analytical know-how, which is necessary for carrying out general analytical tasks, e.g. analyses for salt, crude protein, and TVB-N. In addition, newer instrumental methods may be part of this general project area, though usually such analyses are developed within specific projects (analysis of peptides, proteins, microbial metabolites, autolytic breakdown-products). The available instrumentation include i.a. 4 HPLC-instruments (UV, DAD, ELSD, RI, fluorescence detection), 3 GC instruments (MS, PFD, FID, olfactory detection), 2 scanners for 2-D-gel electropherograms, NIR, low-resolution NMR, differential scanning calorimeter. The Analytical Quality Group follows up on developments and trends in analytical principles and in analytical quality control that may be relevant for analytical chemistry at FF. This group carries out updating of standard procedures and method descriptions for the purpose of improving quality assurance and minimizing environmental effects, and occasionally manages participation in national and international inter-laboratory tests. Safety activities have been strengthened by the employment of a safety officer. Also, within this project area are placed advisory activities towards internal and external questions on analytical problems. - A central theme of present and planned activities is quality assurance and quality control of standard analytical methods. - External cooperation in the field of chemical analysis of fish with WEFTA Working Group on Analytical Methods (WEFTA = [West] European Fish Technologists’ Association. - The basal chemistry activities, comprising approx. 1 person/year, are financed by the running costs of the department.
National Institute of Aquatic Resources
Period: 01/06/1989 → 31/12/2013
Number of participants: 7
Project participant:
Berner, Lis (Intern)
Stampe-Villadsen, Hanne Lilian (Intern)
Jørgensen, Bo Munk (Intern)
Olsen, Lone Rosenkær (Intern)
Reimers, Karin (Intern)
Haahr, Anne-Mette (Intern)
Project Manager, organisational:
Jensen, Benny (Intern)