



PhD Masterclass “Dairy Protein Biochemistry and Proteomics”

Aim of the course

The aim of this masterclass is to learn about the specific properties of both classes of dairy proteins, caseins and whey proteins. You will get insight in the different analytical methodologies that exist to characterize dairy proteins, their variations and molecular features, like modifications.

Background

Dairy proteins are an important component of dairy products, but also one of the most widely used proteins in food industry. The application of dairy proteins in practice depends on both their functional and nutritional properties, which will both be dealt with in the masterclass.

Course contents

The course programme combines lectures, group work, a computer practical and a plenary discussion. The lectures will be given by first-hand experts from academia. Background material will be provided prior to the course for preparation by the course participants.

Date: 27-29 June 2022

ETCS: 1

Place: Wageningen University Campus

Programme topics

Introduction to milk proteins and casein micelles
Genetic variation and post-translational modifications
Analytical methodology for milk proteins
Nutritional aspects of milk proteins
Bioinformatics

Organizers/course lecturers:

Lotte Bach Larsen, Søren Drud Heydary-Nielsen & Nina Aagaard Poulsen (Department of Food Science, Aarhus University and iFOOD)

Kasper Hettinga & Etske Bijl (Food Quality & Design, Wageningen University and Research)

Programme

Day 1

12.30-13.00 Arrive & coffee

13.00-14.00 Welcome.

Introduction & participants introduce themselves (1 slide per person)

14.00-17.00 Introduction to milk proteins & casein micelles

-General introduction to milk proteins

-Variants of milk proteins

-Casein micelle structure

-Assignment casein micelles I

Day 2

9.00-10.30 Details of milk protein variation

-Modifications of dairy proteins and how we analyse them

-Assignment on data interpretation

10.30-12.45 Analytical methodologies

-Analytical methods for major and minor milk proteins and enzymes

-Assignment "Journal Club"

12.45-13.45 Lunch

13.45-17.00. Analytical methodologies

-Milk proteomics & peptidomics analyses

-Proteomics and peptidomics in food science: processing of big data

-Assignment on casein micelles II

18.30- Dinner

Day 3

9.00-12.30. Functional relevance of milk proteins and peptides

-Minor milk proteins and their bioactive value

-Assessment of peptides (e.g. bitterness, properties, infant digestion)

-Assignment on protein bioinformatics

-Nutritional quality of milk proteins

-Assignment on casein micelles III

Sum up and adjourn