



DOKTORSKÝ STUDIJNÍ PROGRAM/*DOCTORAL STUDY PROGRAM*

**VYPSÁNÍ TÉMATU/*LISTING OF TOPIC***

Studijní program/*Study Program*: **Nutrition and Food**

Studijní obor/*Branch of Study*: **program without field**

Katedra/*Department of*: **Center DRIFT-FOOD**

Školitel, email/*Supervisor, email*: **Ing. Iveta Klojdová, Ph.D.,**

**klojdova@af.czu.cz**

Konzultant/*Co-supervisor, email*: **prof. Constantinos Stathopoulos, Ph.D.,**

**stathopoulos@af.czu.cz**

Forma studia/*Form of Study*: **Full\_time**

Typ tématu/*Type of Theme*: **framework**

**Téma/Topic**: Preparation and properties of dairy products with enhanced functionality

**Hypotézy/Hypotheses**: Dairy products due to their abundance and nutritional value are prime candidates for the development of products with enhanced functionality

**Anotace/Summary**:

Through the utilisation of complex systems (such as w/o/w dairy emulsions) or food industry by-products (such as whey and fibre) products with enhanced functional properties can be developed. W/O/W emulsions can be used as carriers suitable for the delivery of bioactive compounds in a range of products. Isoflavones, that have been associated with a beneficial action against CVD and osteoporosis, can be encapsulated in such systems and incorporated into foodstuff, thus increasing their consumption levels. W/O/W emulsions however have many more potential applications. They can, for example, be used in ice-cream manufacture to enable the development of low-fat ice cream without detrimental effects on sensory qualities.

**Aims**:

The aim is to functionalise some of the most commonly consumed dairy products so that their nutritional value is increased

**Methodology**:

Reduced fat ice cream will be developed using complex emulsions.

W/O/W emulsions will be developed and incorporated into ice cream formulations so that reduced-fat ice cream with enhanced functional properties can be developed.

W/O/W emulsion formulations will be optimised and they will be used as carriers of bioactive compounds. The load of bioactive compounds incorporated in the emulsions will also be optimised.

The resulting products will be assessed against conventionally made ice cream. Assessment will include physical (colour, viscosity, texture, meltability) as well as chemical (proximate composition) and nutritional (bioactive compounds concentrations, stability and activity) properties.

The sensory properties and consumer acceptability will also be evaluated through the use of taste panels comprising of untrained panellists.

**Approach:**

W/O/W emulsions can have a dual function in food products. They can modify mouthfeel, thereby enabling the development of low-fat products without compromise of sensory properties but also they can act as carriers of selected bioactive compounds.

Our approach is to explore these properties and enhance one of the most popular dairy products (ice cream) with bioactive compounds that can act beneficially for the consumers, while reducing the amount of fat intake, that is one of the most common issues associated with ice cream products.

Zdroje financování práce/*Funding Sources*: The activity will be financed from the Institutional Support of the Department, from the METROFOOD-CZ research infrastructure, and from the Horizon 2020 projects (EraChair, InfraServ).

V/In Prague

dne/Date: 31.10.2022

Podpis/Signature: 