Fakulta agrobiologie, potravinových a přírodních zdrojů

DOKTORSKÝ STUDIJNÍ PROGRAM/*DOCTORAL STUDY PROGRAM*

VYPSÁNÍ TÉMATU/*LISTING OF TOPIC*

Studijní program/*Study Program*: **Výživa a potraviny**

Studijní obor/*Branch of Study*: **program bez oboru**

Katedra/*Department of*: **mikrobiologie, výživy a dietetiky**

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Forma studia/*Form of Study*: **prezenční**

Typ tématu/*Type of Theme*: Jednorázové

Téma/*Topic*: Application of IR spectroscopy for evaluation of new varieties of cereals and mill products

Hypotézy/*Hypotheses*:

1) IR spectroscopy is an effective tool for determining the nutritional composition (starch, proteins and lipids) of cereals.
2) Mid-infrared spectroscopy (MIRS) is more sensitive and suitable for the determination of cereal micronutrients than near-infrared spectroscopy (NIRS).

Anotace/*Summary*: Infrared spectroscopy can be a fast and effective analytical tool for evaluating the nutritional parameters of cereals applicable in research as well as in operational practice. The work will focus on the creation of calibration models using this technique to determine the nutritional quality of traditional and newly bred cereal varieties.

Within the study, calibration equations and its validation will be established for analysis of the protein, fat, amino acid, and starch content of different varieties of cereals and millet. For each variety, a certain number of samples must be included during the process of development of calibration model.

The aim is to develop an accurate and rapid method for the simultaneous evaluations of protein, lipid, starch, and antioxidants (*beta*-glucans and avenanthramides for whole and milled oat) by using the IR spectroscopy and chemometrics. Correlation relationships and equations between chemical data and IR outputs from the test-set validation samples will be indicated. Models of the same component for the milled grain will be compared to the whole grain.

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V/*In* Prague dne/*Date*: 21.01.2022

Podpis/*Signature*: