Fakulta agrobiologie, potravinových a přírodních zdrojů

DOKTORSKÝ STUDIJNÍ PROGRAM/*DOCTORAL STUDY PROGRAM*

VYPSÁNÍ TÉMATU/*LISTING OF TOPIC*

Studijní program/*Study Program*: **Agricultural Chemistry**

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

Katedra/*Department of*: **kvality a bezpečnosti potravin**

Školitel, email/*Supervisor, email*: **Jaroslav Havlík, Ph.D., havlik@af.czu.cz**

Konzultant/*Co-supervisor*, email:

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

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

Téma/*Topic*: Application of nuclear magnetic resonance spectroscopy (NMR) in the field of food and agriculture

Hypotézy/*Hypotheses*: NMR is a highly versatile and robust method, and it can assess changes in major metabolic pathways in plants or animal tissues

Anotace/*Summary*: Nuclear magnetic resonance is a robust method in quantitative assessment of small molecular compounds in mixtures. Depending on the extraction conditions or sample matrix, an aqueous or aqueous-ethanolic extract from plant- or animal tissue shows about 30-60 peaks in the high-field NMR spectrum, and the analysis is fully quantitative, with minimum sample preparation. In plants, for example, major secondary metabolites responsible for defence against pathogens, amino acids or carbohydrates can be determined as result to response to pathogens, substrate or different light conditions. In animal tissues, changes in amino acids, sugars, organic acids, choline, ADP or ATP can be seen.

NMR profiles of plants or organisms will be investigated in response to natural environmental and experimental stress. The extracts and their chemical composition will be assessed. New chemometric statistical approaches and methods will be developed for each sample type.

Zdroje financování práce/*Funding Sources*: vnitřní zdroje katedry

V/*In* Prague dne/*Date*: 18.10.2018

Podpis/*Signature*: