

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*: **Chemistry**

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

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

Téma/Topic: Influence of abiotic and biotic stresses on metabolites of selected wheat varieties (*Triticum aestivum* L.) and their potential role in resistance

Hypotézy/Hypotheses: 1) Cereals of selected wheat varieties will contain metabolites that can play a role in resistance to abiotic and biotic stresses.

2) In the assortment of supplied varieties it will be possible to evaluate the content of these substances (antioxidants, pigments, alkylresorcinols) and to determine their role in abiotic stresses (drought, temperature) and biotic stresses (*Fusarium spp.*).

3) The relationship between the resistance of the analyzed set of wheat varieties and the content of important metabolites and antioxidants will be found in wheat grains.

Anotace/Summary: Antioxidants contained in wheat grains (phenolic acids, alkylresorcinols), in colored varieties (anthocyanins, flavonoids, and carotenoids) are important health-promoting substances, some of which can be also important in the mechanism of wheat resistance to abiotic and biotic stresses. From this point of view, it is important for practice to evaluate the range of coloured and uncoloured wheat varieties, find out their possible ones relationship, and influence on resistance. These metabolites include alkylresorcinols, anthocyanins, benzoxazinoids, carotenoids, flavonoids, monolignols, phenolic acids, phytohormones, terpenes and other volatile organic compounds. It will be interesting to determine their contents in selected varieties, lines and genetic material of wheat and their mutual metabolic relationships. Genetic material to be provided in cooperation with the Agricultural Research Institute Kroměříž and VURV Praha Ruzyně, v.v.i. Determination of antioxidants and metabolites to be performed by HPLC-DAD / HPLC-MS, or GLC-MS and FID. Based on the analyzed varieties it will be possible to select and recommend wheat varieties with a high content of protective substances and recommend these varieties for their further breeding and cultivation. Varieties, lines or genetic material with high content of selected metabolites will be important in the resistance of varieties to abiotic and biotic stresses and may also positively influence the nutritional quality of the food produced.

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V/*In* Praze

Podpis/*Signature*:

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