ABSTRACT

Charles University, Faculty of Pharmacy in Hradec Králové
Department of Pharmacognosy
Candidate: Tereza Ošťádalová
Supervisor: Doc. PharmDr. Lenka Tůmová, CSc.
Title of diploma thesis: The selenium effect on secondary metabolites production in *in vitro* cultures of medicinal plants – II.
Key words: callus, suspension culture, abiotic elicitor, selenium, Fagopyrum

In vitro plant cultures usually produce only a small amount of secondary metabolites. The method of elicitation is one of the options how to increase the production of these substances.

The effect of selenium as abiotic elicitor on rutin production in callus and suspension culture of *Fagopyrum esculentum* Moench., variety Pyra was observed in this study. The release of rutin into the nutrient medium was studied as well. The cultivation was performed in Murashige and Skoog (MS) nutrient medium which was enriched with 1 mg/l of 2,4-dichlorophenoxyacetic acid. The solution of selenium in three different concentrations (c_1 = $9.012.10^{-3}$ mol/l, c_2 = $9.012.10^{-4}$ mol/l, c_3 = $9.012.10^{-5}$ mol/l) was used. The samples were taken after 6, 12, 24, 48, 72 and 168 hours of elicitor treatment. The rutin content was determined by high-performance liquid chromatography (HPLC).

The elicitation led to increasing of rutin amount in callus and also in suspension cultures. Statistically more signifiant results were reached in suspension culture. The highest amount of rutin (0.7 mg/g DW) was detected in the suspension culture, especially after 24 hours treatment of the elicitor in c_2 concentration. The best rutin production in callus culture was reached after 48 hours of selenium treatment in c_1 concentration. The release of rutin into the nutrient medium was not detected.

The selenium as elicitor is able to increase rutin production in callus and suspension cultures of *Fagopyrum esculentum* Moench., variety Pyra.