ABSTRACT

***In vitro* cultures of medicinal plants – IXX**

The subject of this thesis is the evaluation of secondary metabolites production in *in vitro* cultures of *Silybum marianum* L. after elicitor treatment. In this study selenium dioxide as elicitor in concentrations of $9{,}012.10^{-3}$ mol/l; $9{,}012.10^{-4}$ mol/l; $9{,}012.10^{-5}$ mol/l was used. The samples were taken after 6, 12, 24, 48, 72 and 168 hours of elicitor treatment. The effect of elicitor was compared with control samples, which were cultured without elicitation. The content of taxifolin and flavonolignans was determined by the method of HPLC. The results showed, that almost all observed metabolites were released into a nutrient medium. Cells of callus and suspension cultures produced only small amounts of taxifolin (0.01 mg/g DW).

Taxifolin and silymarin complex releasing into nutrient media was observed as in control and also in the elicitated samples of callus and suspension cultures. Selenium dioxide elicitation caused statistically significant increases in releasing taxifolin and silymarin complex into the nutrient medium. The statistically significant releasing of flavonolignans (2.2 mg/100 ml) to the medium of suspension culture was reached after 72 hours of treatment with selenium dioxide in concentration of c_1 ($9{,}012.10^{-3}$ mol/l). The statistically significant flavonolignans production in the nutrient medium of callus culture after 168 hours elicitor application (1.64 mg/100 ml) in concentration of c_2 ($9{,}012.10^{-4}$ mol/l) was reached. Selenium dioxide also was able to increase taxifolin production. The statistically significant taxifolin releasing (4.05 mg/100 ml) into the nutrient medium of suspension culture was highest after 48 hours elicitor treatment in concentration of c_1 ($9{,}012.10^{-3}$ mol/l). In medium of callus culture there was highest statistical significant taxifolin releasing (2.8 mg/100 ml) after 48 hours selenium dioxide application in concentration of c_2 ($9{,}012.10^{-4}$ mol/l).