ABSTRACT

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Title of diploma thesis: Plant tissue cultures as a potential source of phenylpropanoids I

Explant cultures are the source of plant secondary metabolites. However, the production of secondary metabolites is usually low in explant cultures. Production can be increased by a method called elicitation. The basic prerequisite for successful elicitation is, among other things, finding a suitable elicitor, its concentration and optimal time of elicitor action on plant culture *in vitro*.

The aim of this study was to observe the influence of lead chloride and ferrous sulfate (in four concentrations) on the production of podophyllotoxin in the suspension cultures of *Juniperus virginiana* L. (variety Hetzii and Glauca).

The culture was cultured on Schenk and Hildebrandt nutrient medium with addition of 3.0 $mg.l^{-1}$ α-naphthylacetic acid, 0.2 $mg.l^{-1}$ kinetin and 15 $mg.l^{-1}$ ascorbic acid. Cultivation proceed in 25 °C temperature and 16 hours light/8 hours dark period. Subsequently, the determination of the content of podophyllotoxin by HPLC was performed.

Juniperus virginiana L. variety Hetzii produces a higher amount of podophyllotoxin than the Glauca variety, at the highest concentration for both applied elicitors. The best elicitation effect on podophyllotoxin production was observed after elicitation with ferrous sulfate solution in the suspension culture of *Juniperus virginiana* L. variety Hetzii (0.116 %) after 48 hours of elicitor application with concentration of 1000 $\mu mol.l^{-1}$, with a statistically significant increase of 197 % over control culture.