Abstract

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Title of Doctoral Thesis: **Explant Culture of *Trifolium pratense* L.**

The objective of this thesis was to observe the effect of the abiotic elicitors of aluminium chloride and chromium chloride on the production of flavonoids, as well as the effect of the aluminium chloride elicitor on the production of isoflavonoids in the *Trifolium pratense* L. exulant culture (variety DO-9).

The cultures were cultivated in the Gamborg nutrient media with the addition of 2 $mg.l^{-1}$ of 2,4-dichlorophenoxyacetic acid and 2 $mg.l^{-1}$ of 6-benzylaminopurine, at the temperature of 25 °C, 16-hr light/8-hr dark period. The quantity of flavonoids was determined spectrophotometrically according to the Czech Pharmacopoeia 2009. The quantity of isoflavonoids was determined using HPLC.

The results of the elicitation of the *Trifolium pratense* L. suspension culture with aluminium chloride and chromium chloride show that the maximum increase in the flavonoid production compared to the control culture was evoked by the application of a 100 µmol concentration over a 168-hr period in both cases.

During elicitatiton of the *Trifolium pratense* L. exulant culture (variety DO-9) with aluminium chloride, quantities of isoflavonoids genistin, daidzein, genistein and formononetin were determined using HPLC. The elicitor did not display any positive effect on isoflavonoid production and was therefore declared unsuitable for this particular elicitation, only in the case of genistin, its production was stimulated by the highest concentration of the elicitor 100 µmol after a 48-hr and 168-hr application.