ABSTRACT

Plants are a source of a wide range of secondary substances, which due to their effects find use in many areas of focus. By a method called elicitation, we can achieve their higher and thus more efficient production. This diploma thesis aimed to determine whether the abiotic elicitor 2-(4-chlorophenyl)-*N*-(5-chloropyridin-2-yl)acetamide can positively affect the production of the flavonoid hyperoside in callus and suspension culture of *Hypericum perforatum* L.

The elicitor was added to the *in vitro* cultures in three concentrations: $\mathbf{C_1}$ = $3{,}571.10^{-3}$ mol/l; $\mathbf{C_2}$ = $3{,}571.10^{-4}$ mol/l and $\mathbf{C_3}$ = $3{,}571.10^{-5}$ mol/l. A sample was taken at regular intervals after 6, 24, 48, 72 and 168 hours of elicitor treatment. Control samples were taken after 24 and 168 hours. The content of hyperoside produced was subsequently determined using High Performance Liquid Chromatography. Simultaneously, the amount of hyperoside released into the nutrient media of both plant cultures was also monitored.

Maximum hyperoside production was recorded in suspension culture after 6 (17,7 µg/g DW) and 48 hours (3,69 µg/g DW) of elicitor treatment with the lowest concentration of C_3 ($3{,}571.10^{-5}$ mol/l). The content of hyperoside in the first case was 1770 % higher compared to the control sample. There was a significant release of hyperoside into its nutrient media in callus cultures with the highest values being detected in 24 hours after exposure of elicitor in concentration C_3 with a difference of 119,9 % compared to the control. The production of hyperoside in callus and suspension cultures after application of elicitor in concentration C_1 and C_2 was not so significant.

The experiment shows that the elicitor 2-(4-chlorophenyl)-*N*-(5-chloropyridin-2-yl)acetamide can increase the production of hyperoside in callus and suspension cultures of St. John's wort under specific conditions.