Abstract

The subject of this study is the evaluation of secondary metabolites production in *Hypericum perforatum* L. cultures *in vitro* after elicitor treatment. The aim was to find if orthosilicic acid as abiotic elicitor increases the flavonoid and hypericin production in *Hypericum perforatum* L. cultures *in vitro*. Experiment was carried out in callus and suspension cultures of *H. perforatum* using Murashige - Skoog nutrient medium[78] supplemented with 10 mg. ml^{-1} α-naphtylacetic acid as growth regulator. The elicitor was added in the form of solution in 3 different concentrations (C_1 = $10.4047 \cdot 10^{-3}$ mol l^{-1}, C_2 = $10.4047 \cdot 10^{-4}$ mol l^{-1}, C_3 = $10.4047 \cdot 10^{-5}$ mol l^{-1}), it was affecting 6, 12, 24, 48, 72 and 168 hours. The content of flavonoids and hypericin was determined by HPLC. Secondary metabolites release into nutrient medium was also a part of this study.

The increasing flavonoid and hypericin production in callus cultures after elicitor application at any concentrations was not observed. The maximum flavonoid content (0.04 mg g^{-1} DW) in suspension culture was detected after 72 h of elicitor treatment in concentration of C_1 where the maximum hyperoside production was observed. The maximum hypericin production (0.21 mg g^{-1} DW) in suspension culture was detected after 12 h of elicitor application in concentration of C_1 ($10.4047 \cdot 10^{-3}$ mol l^{-1}). The second significant increase in hypericin production (0.17 mg g^{-1} DW) in suspension culture after 24 h of elicitor treatment in the same concentration was reached. Flavonoid and hypericin release into nutrient medium was not detected. The elicitor orthosilicic acid is able to increase the flavonoids and hypericin production in *Hypericum perforatum* cultures *in vitro*.

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