

ABSTRACT

Higher plants represent an important source of valuable substances, so called secondary metabolites, which can be obtained through explant cultures of plants. Elicitation is a method of increasing the secondary metabolites production. This study aims to evaluate the secondary metabolites production in *Fagopyrum esculentum* variety Spacinska cultures *in vitro* after abiotic elicitor treatment. The experiment was focused on alteration of rutin production in callus and suspension cultures of *F. esculentum* var. Spacinska after selenium application. Murashige and Skoog nutrient medium supplemented with 1 mg l^{-1} 2,4-dichlorophenoxyacetic acid was used for the cultivation. Selenium solutions of various concentrations ($c_1 = 9.012 \times 10^{-3} \text{ mol l}^{-1}$, $c_2 = 9.012 \times 10^{-4} \text{ mol l}^{-1}$, $c_3 = 9.012 \times 10^{-5} \text{ mol l}^{-1}$) were affecting the cultures for 6, 12, 24, 48, 72 and 168 hours. The content of rutin was determined by HPLC. The release of secondary metabolites into the nutrient medium was studied as well.

After elicitor application, the rutin production increased in both callus and suspension cultures. Higher levels of rutin content were detected in callus culture. The maximum rutin content ($0.6 \text{ mg g}^{-1} \text{ DW}$) was reached after 12 h of elicitor treatment of c_2 concentration in callus culture. Concerning suspension culture, the maximum rutin production ($0.1 \text{ mg g}^{-1} \text{ DW}$) was detected after 6 and 48 h of elicitor application of c_3 concentration. The rutin release into the nutrient medium was not observed. The elicitor selenium is able to increase rutin production in *Fagopyrum esculentum* variety Spacinska cultures *in vitro*.