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BOOK OF ABSTRACTS

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Effect of UV – B radiation on secoiridoids production in *Centaurium erythraea* Rafn leaves

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Studies focusing on plant specialized metabolism and enhanced production of bioactive compounds in a controlled environment are of increasing interest bearing in mind that some of those compounds are widely used. *Centaurium erythraea* Rafn produces a plethora of specialized metabolites among which secoiridoid glucosides predominate. Secoiridoids in plants serve as defense compounds against herbivores and microorganisms, which makes them highly attractive for agricultural and pharmaceutical applications. In plants, ambient UV–B radiation has been suggested to prime protective responses towards various stressors. The overall goal of our research was to reveal the effect of short-term UV–B light exposure (30 and 60 minutes) on secoiridoid metabolism in leaves of common centaury grown *in vitro*. In order to achieve this goal, expression analysis of genes involved in the secoiridoid biosynthetic pathway was performed in parallel with UHPLC/(-)HESI–MS² metabolic profiling of leaves. Centaury plants exposed to a UV–B light for 60 minutes displayed prominent discoloration, indicating possible chlorophyll degradation, or its reduced synthesis. Gene expression analysis of nine secoiridoid biosynthesis-related genes (*CeGPPS*, *CeGES*, *CeG80*, *Ce8HGO*, *CeIS*, *CeIO*, *Ce7DGLT*, *Ce7DLH*, *CeSLS*) was monitored. Following the UV–B treatment, a statistically significant decrease in relative gene expression was detected only for *CeG80*, while metabolic profiling revealed elevated accumulation of sweroside, swertiamarin, and gentiopicrin in both 30 and 60 min UV–B-treated centaury plants. These results suggest that UV–B light exposure can be used to stimulate accumulation of secoiridoids in centaury plants for possible extraction and application in pharmacy, agriculture and food industry.

Keywords: *Centaurium erythraea*, UV – B radiation, secoiridoid glucosides

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