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Poster Session

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Effect of growth regulators and photoperiod on endogenous phytohormonal levels and polyphenolic production in Artemisa alba cell aggregate cultures

E Wolfram, S Peter, M Todorova, A Trendafilova, V Motyka, P Dobrev, K Danova

› Author Affiliations

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Congress Abstract | Full Text

Cell aggregate lines of *Artemisia alba* were selected and developed in liquid cultures: ER_3 [0.1 mg/l N^6-benzyladenine (BA) + 1.5 mg/l indole-3-butyric acid (IBA)] and ER_3_NAA [0.1 mg/l BA + 1.5 mg/l naphtylacetic acid (NAA)], grown in the dark, gyratory shaker, 100 rpm; ER_3_hv and ER_3_NAA_hv were grown in the same conditions, but at 16/8h photoperiod. Spectrophotometric assay of the total phenolic and flavonoid compounds was performed and the samples were also tested by HPTLC analysis with chlorogenic acid, as well as 1,3-, 1,5-, 3,5-, 3,4- and 4,5-dicaffeoylquinic acids, scopoletin and fraxidin-8-glucoside as reference compounds. The analysis showed general similarity in the tested samples. Photoperiod, however seemed to have an influence on glucosylation of the samples. While dark grown suspensions exhibited biosynthesis of both the aglycons (scopoletin and fraxidin) as well as their respective glucosides (scopolin and fraxidin glucoside), the 16/8 photoperiod suspensions produced predominantly the glucosylated derivatives. These data were confirmed also by the UHPLC analysis. 3,5-dicaffeoylquinic acid was the predominant component in all samples. In terms of endogenous cytokinin production, a significant drop of their levels was observed in suspensions, where NAA represented the exogenously added auxin. The latter samples were also characterized by a significant stimulation of polyphenolics, comparable to those produced by the differentiated shoot cultures of the plant. The obtained results are of practical interest for the targeted biotechnological delivery of scopoletin and fraxidin, which represent a higher phytopharmacological potential as compared with their glucosylated derivatives.

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