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MODIFICATION OF MORPHOGENETIC PATTERNS IN TISSUE CULTURES OF ARTEMISIA ALBA TURRA AS A KEY FOR SECONDARY METABOLITES TARGETING

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 Wednesday 19 December 2018 by Libadmin2018

ABSTRACT

Shoot cultures of the essential oil-bearing Artemisia alba Turra were established with the aim of the in vitro exploration of the biosynthetic potential and physiological behavior of the species. Plant growth regulators were applied in order to affect morphogenesis in vitro and to search for possible relations with secondary metabolites production of the plant. As a result of the applied treatments, two morphotypes of the in vitro cultured A. alba individuals were induced, based on the development of roots of the plants. Advanced analytical methods were used to reveal the concentrations and profiles of secondary metabolites and endogenous phytohormones. It was established that morphogenesis in vitro is strongly related to the production of secondary metabolites and contents of endogenous cytokinins (CKs) of A. alba cultured in vitro. Plant differentiation patterns provide the machinery for production, translocation and accumulation of secondary metabolites. Clarification of the factors affecting these processes in a given plant species represents the key for a successful optimization of secondary metabolites production by the tools of plant biotechnology.

Keywords: Artemisia alba Turra cell and tissue cultures, plant morphotypes in vitro, phytohormones, endogenous cytokinins, terpenoid profile, polyphenolic production in vitro

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