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BOOK OF ABSTRACTS



Relations between Photosynthetic Performance and Polyphenolics Productivity of *Artemisia alba* Turra *in vitro* Tissue Cultures

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Abstract: Establishing of optimal growth conditions and secondary metabolites production *in vitro* is vital for the biotechnological development of medicinal plants. In previous work the interrelations between treatments with plant growth regulators *in vitro* and terpenoid levels were studied for the fragrant shrub *Artemisia alba*. In the present work the interrelations between the supplementation of plant growth regulators (benzyladenine, BA and indole-3-butyric acid, IBA), the structural and functional characteristics of the photosynthetic (thylakoid) membranes and the productivity of antioxidant polyphenolic compounds in the medicinal plant *Artemisia alba* Turra is investigated. We assayed colorimetrically the total phenolic and flavonoid levels of total leaf extracts, the structural characteristics of isolated thylakoid membranes from the aerial parts by circular dichroism and atomic force microscopy and their functionality by pulse amplitude fluorescence modulated imaging.

Our results reveal a complex non-linear relationship between BA and IBA supplementation, the polyphenolic levels and the architecture and functionality of the photosynthetic thylakoid membranes. The cultures treated only with IBA structurally and functionally resembled the untreated control and had lower polyphenolics content, while the features of those treated with BA or combination of both hormones strongly depended on the concentration of the supplemented plant growth regulators.

Keywords: *Artemisia alba*, Benzyladenine, Indole-3-butyric, Polyphenolic compounds, Thylakoid membrane.

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