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Planta Med 2013; 79 - PN119
DOI: 10.1055/s-0033-1352461



Phytochemical assessment of the effect of stimulated *in vitro* multiplication on the metabolic profile of *in vitro* cultured *Hypericum richeri* and *Artemisia alba*

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Congress Abstract

In vitro secondary metabolite production requires a fine balance between biomass formation and expression of the biosynthetic capacity of the species. Comparison of the metabolite spectra of the *in vitro* to *ex situ* material is a crucial benchmark in this process. HPTLC methods known from similar plant species from the *Artemisia* and *Hypericum* genera [1, 2] have been adapted to extracts with varying polarity of different plant parts from *ex situ* and *in vitro* samples of *Artemisia alba* and *Hypericum richeri*. The main differences and similarities of the secondary metabolite and bioactive constituent profiles between *in situ* and *in vitro* produced plant material were assessed.

The results of this study revealed that *A. alba* can be maintained successfully long-term in medium lacking plant growth regulators (PGR) whereas *H. richeri* requires cytokinin supplementation in order to stimulate axillary bud multiplication and sustain growth *in vitro*. It was also established that N⁶-Benzyladenine (BA) strongly stimulated multiplication index and its individual application led to inhibition of rooting for both species. While the combination of BA and indole-3-butyric acid was found to be favorable for both biomass and polyphenolics stimulation in *A. alba*, enhanced growth led to the drop of polyphenols and flavonoids in *H. richeri*. At the same time hypericins were observed in significant levels *in vitro*. Further research is in progress to clarify the distinctive features of the biochemical and physiological response to PGR treatment as a model system for affecting antioxidant metabolites production *in vitro*.

Acknowledgments: This work was supported by the Swiss National Science Foundation in the framework of the Bulgarian-Swiss Research Programme (BSRP, grant No. IZEBZ0_142989; DO2 – 1153)

References:

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