

Advertorial

**Thieme Medizinjobs Cross-Media-Pakete: Print, Online, Digital**

Vom Anästhesiologen über MTRAs bis hin zu Gesundheits- und Pflegekräften erreichen wir ärztliche und pflegerische Fachkräfte. Wir bieten Ihnen individuelle Cross-Media-Pakete für eine streuverlustfreie Kandidatenansprache von aktiv-suchenden und nicht-aktiv-suchenden-Bewerbern.

[Hier geht es zu unseren Mediadaten >>](#)

Planta Med 2014; 80 - P2B62  
DOI: 10.1055/s-0034-1394939



## Bioautographic screening of Xanthine Oxidase inhibition and antioxidant activities for bioprocess control of *in vitro* cultivated medicinal and aromatic plants of the Balkan region

E Wolfram <sup>1</sup>, K Danova <sup>3</sup>, R Könye <sup>1</sup>, S Pedrussio <sup>1</sup>, I Aneva <sup>2</sup>, L Evstatieva <sup>2</sup>, S Bräm <sup>1</sup>, B Meier <sup>1</sup>

<sup>1</sup>Zurich University of Applied Sciences, Institute of Biotechnology, Phytopharmacy, Wädenswil, Switzerland

<sup>2</sup>Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria

<sup>3</sup>Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences Sofia, Bulgaria

### Congress Abstract

*In vitro* cultivation is considered as a prospective, supplementary agriculture and season independent approach for supply of plant raw material [1]. We report here on intermediate results of research activities that aim at development of an *in vitro* collection of medicinal and aromatic plants from the Balkan region. Optimizations of medium composition, as well as development of callus, suspension and root cultures are being conducted in order to stimulate production of secondary metabolites with phytopharmaceutical value. Bioprocess control strategies are needed for rapid and cost effective screening for selection of highly productive *in vitro* lines for later scale-up in bioreactor conditions. HPTLC fingerprinting coupled with DPPH,  $\beta$ -carotene/linoleic acid bleaching [2], as well as bioautographic Xanthine Oxidase Inhibition [3,4] assays, were applied in order to assess secondary metabolite and active compound content simultaneously. Different *in vitro* lines of Balkan endemic *Sideritis scardica* Griseb., *Pulsatilla montana* ssp. *balcana*, essential oil bearing *Artemisia alba* Turra, as well as several representatives of the *Hypericum* genus, differing in their biosynthetic capacity for hypericines have been studied. Hypericine non-producing *Hypericum calycinum* L. showed superior antioxidant activity as compared with the other species. *In vitro* cultured *S. scardica* originating from wild accessions showed higher activity than from field cultivation. From all tested species, *A. alba* showed several inhibitory zones in the HPTLC coupled Xanthine Oxidase Inhibition screening. Further analysis of these zones is feasible by coupled HPTLC-MS. The applied bioautographic bioprocess control methods provide for rapid and efficient targeting of prospective highly producing *in vitro* lines for future up-scaling, especially when a large number of culture variants have to be handled.

**Acknowledgements:** SNF No. IZEBZ0\_142989 and SD-MEYS No. DO2 – 1153

**Keywords:** *in vitro* cultivation, *Hypericum calycinum*, *Sideritis scardica*, *Artemisia alba*, *Pulsatilla montana*, HPTLC bioautography, antioxidant screening, Xanthine Oxidase Inhibition

### References:

- [1] Wink M. (2009). Annual Plant Reviews, 39: 1 – 20.
- [2] Marston A. (2011). Journal of Chromatography A, 1218: 2676 – 2683.
- [3] Ramallo I.A., Zacchino S.A., Furlan R.L.E. (2006). Phytochemical Analysis, 17: 15 – 19.
- [4] Bräm S., Meier B., Danova K., Wolfram E. (2014). Poster and Book of abstracts. HPTLC 2014 Conference Lyon 2.-4.7.14.