

# 3<sup>rd</sup> Symposium of Young Researchers on Pharmacognosy



Szeged, 3–4 February 2022

## BOOK OF ABSTRACTS



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# **BOOK OF ABSTRACTS**

**(ed. Tivadar Kiss, Judit Hohmann)**

**Department of Pharmacognosy, University of Szeged, Szeged,  
Hungary**

**3–4 February 2022**

**doi: [10.14232/syrpharmacognosy.2022.af](https://doi.org/10.14232/syrpharmacognosy.2022.af)**

**B2**

doi: 10.14232/syrpharmacognosy.2022.b2

### **Centrifugal partition chromatography in the separation of ecdysteroids: challenges and opportunities**

Dávid Laczkó

E-mail: laczkodavid@icloud.com

Ecdysteroids are the analogues of insect's molting hormone; they are bioactive, non-toxic compounds for mammals and are widely consumed as dietary supplements for their beneficial biological effects. Some derivatives were shown to have cholesterol-lowering [1], antioxidant and neuroprotective [2] effects, among others, and a recent *in silico* study suggests a probable anti-COVID-19 activity of an ecdysteroid (calonysterone) [3]. The extreme growth in consumer and research use requires the development of efficient and large-scale preparative purification methods.

Firstly, we analyzed large quantities of *Cyanotis arachnoidea* extracts purchased from Chinese sources using LC-MS. In addition to the major component (20-hydroxyecdysone; 20E), 5 minor components were selected, and their partitioning properties were investigated in nearly 30 two-phase liquid-liquid chromatographic solvent systems. Based on these tests, the fractionation of the extract was attempted in three ternary systems in ascending mode using a laboratory-scale centrifugal partition chromatograph (CPC) (250 ml rotor volume), and one system was selected for scale-up (10 g of injected volume per run in a 2100 ml rotor). The purity of the fractions was monitored by HPLC. The autoxidation of purified 20E yielded calonysterone, which was the first to be purified up to industrial scale-up using our CPC method.

Our optimized method can be used to produce not only 20E, but also several valuable bioactive minor ecdysteroids in a cost-effective and scalable manner. Further studies of these may well lead to the discovery of additional compounds with pharmacological potential.

**Supervisors:** Árpád Könczöl, Attila Hunyadi, Máté Vágvölgyi

**Acknowledgements:**

This work was supported by the National Research, Development and Innovation Office, Hungary (NKFIH; K-134704), the NKFIH Cooperative Doctoral Program for Doctoral Scholarships (KDP-2020).

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