

## ISOLATION OF PHENANTHRENES FROM *JUNCUS ENSIFOLIUS*

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### Introduction

Juncaceae species are good sources of phenanthrenes. To date, more than 100 phenanthrenes were isolated from ten Juncaceae species, approximately 60 from *Juncus effusus*.<sup>[1]</sup> As almost all identified phenanthrenes are substituted with vinyl group, these constituents are serve as chemotaxonomic markers. According to the literature data, phenanthrenes possess diverse biological activities (e.g. antiproliferative, antimicrobial, anti-inflammatory and spasmolytic).<sup>[1-3]</sup> In continuation of our work dealing with the phytochemical and pharmacological investigation of Juncaceae species occur in the Carpathian Basin, *Juncus ensifolius* (swordleaf rush) was chosen with the aim of the isolation of biologically active secondary metabolites, especially phenanthrenes from the plant.

### Results and discussion

The dried plant material was extracted with methanol. After evaporation, the extract was dissolved in 50% methanol and then subjected to solvent–solvent partition with *n*-hexane, chloroform and finally with ethyl acetate. Phenanthrenes accumulated in the CHCl<sub>3</sub> fraction; therefore, it was separated by a combination of different chromatographic methods, including vacuum liquid chromatography, medium pressure liquid chromatography, gel filtration, and high performance liquid chromatography.

With a combination of different chromatographic techniques, nine compounds were isolated from *J. ensifolius*, eight of them are phenanthrenes. The structures of the pure components were determined by 1D and 2D NMR spectroscopy, and MS measurements. Five compounds are new natural products. All components were isolated for the first time from swordleaf rush.

### Conclusion

Phenanthrenes can be valuable chemotaxonomic markers due to their limited occurrence. Our investigation is in progress. After isolation process, the antiproliferative activity of the pure compounds will be tested. The active compounds can serve as starting materials for semi synthetic transformations and further pharmacological investigations.

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### References

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