

3rd Symposium of Young Researchers on Pharmacognosy



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BOOK OF ABSTRACTS



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Sesquiterpene lactones of *Ambrosia artemisiifolia*

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Ambrosia artemisiifolia L. is an invasive species in Europe, containing sesquiterpene lactones as characteristic secondary metabolites. These compounds possess numerous biological activities, including allergic, allelopathic, anti-inflammatory, antitumor and antimicrobial activities [1]. Although several phytochemical and -pharmacological studies have been carried out with *Ambrosia* species, the secondary metabolites of the plant have not explored completely. As part of our work, we isolated eight sesquiterpene lactones from the aerial parts of *A. artemisiifolia*, and performed cytotoxic, antiproliferative and combination assays with the isolated compounds.

In our ongoing project the first aim is to measure the sesquiterpene lactone content by using HPLC from plant samples collected from May to October near Szeged, Tiszacsermely, and Nyíri. Our hypothesis is that the sesquiterpene lactone content of the plant may vary depending on the geographical distribution and vegetation period. Eight compounds previously isolated from the plant and will be used as reference compounds for the analytical methods. Secondly, three compounds, psilostachyin, peruvín, and acetoxidyhydrodamsin isolated from the aerial parts of the plant will undergo some semisynthetic modification to enhance the antiproliferative, cytotoxic and especially the selectivity of the compounds toward normal cells. Ultimately, we would like to evaluate the action of a selection of sesquiterpenoids from *A. artemisiifolia* on TRPA1 ion channels, whether these compounds are potent activators of these kind of receptors, which are involved in allergen-induced airways neurogenic inflammatory responses. The possible activation of TRPA1 receptors by sesquiterpene lactones promotes the allergic and inflammatory reactions induced by the plant.

Supervisor: Dezső Csupor

References

[1] Kovacs, B et al. The chemistry and pharmacology of sesquiterpenes from the genus *Ambrosia*. Heliyon, 2022. (submitted)