P-040: Characterization of secondary metabolites in different populations of *Artemisia santonicum* by vibrational spectroscopy methods

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Artemisia santonicum L. is a perennial plant belonging to the family Asteraceae. The species is native to saline habitats of the middle and southeast Europe, and several regions in Ukraine. Plant material was collected from habitats known as "saline steppe", and grown mostly on solonetz and solonchak soil types, in the northern part of the country, belonging to Pannonian plain. The aim of this research was to compare the chemical profile (composition) of individual plants from six different indigenous saline sites in Serbia.

Therefore, twenty plants per population were collected at the flowering stage in July 2018 and dried at room temperature. Dried plant material was manually cut with kitchen knife to a final particle size of max. 1 cm for near infrared spectroscopy (NIRS). The entire material was analyzed by NIRS (Multi Purpose Analyzer, Bruker Optik GmbH, Germany) followed by milling with a ball mill (MM400/Retsch) prior to investigation by attenuated total reflectance Fourier transform infrared spectroscopy (ATR-FTIR, Alfa-P Bruker). PCA analysis of NIR and ATR spectra were performed using the instruments software Opus 7.2.

Afterwards, the powdered plant material was extracted with isooctane and extracts were analyzed by gas chromatography coupled with flame ionization detection (GC-FID, Agilent 6890N Gerstel MPS 2 autosamplers). GC chromatograms were analyzed in OpenChrom 1.2 and R softwares.

PCA of spectroscopy data shows no distinct clustering of individual plants or populations based on volatile organic compounds (VOCs) neither for NIRS nor for ATR-FTIR. The observed grouping of few plants of the sixth population might be caused by different leaf to stem ratio of the plant leading to increased lignin contribution in the corresponding spectra.

On the contrary, genotypic effects on volatile levels were clearly detectable using GC-FID.

Keywords: halophyte species, chemical composition, ATR, NIR, GC analysis

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