

Differentiation of Siberian and European larch based on volatile organic compounds fingerprints

Petra Bajerova

University of Pardubice, Czech Republic

An optimized headspace solid-phase micro extraction method coupled with [gas chromatography](#) and a flame ionization detector (HS-SPME/FID) was used to distinguish between larch wood originating from Central Europe and larch wood originating from Siberia. For both types of larch, variability was found in the composition of volatile organic compounds as well as in the intensities of volatile compounds in the chromatograms. Differences between larch trees could be influenced by various factors such as genetic, environmental and spatial factors. The optimized method was used to measure 82 samples of European and Siberian larches. Volatile organic compounds fingerprints were characterized by calculating retention indices for each compound. Statistical evaluation of retention indices obtained from [VOC fingerprints](#) was performed using multivariate regression with dimension reduction - orthogonal projection to latent structure (OPLS). This approach was able to distinguish the correct origin of all tested larch wood samples. Thus, the analysis of VOC fingerprints by [HS/SPME-GC/FID](#) in combination with OPLS is a useful tool for distinguishing between European larch and Siberian larch wood.

Recent Publications

1. Ruuskanen TM, Hakola H, Kajos MK, Hellén H, Tarvainen V, Rinne J (2007) Volatile organic compound emissions from Siberian larch. *Atmospheric Environment* 41 (27):5807-5812.
2. Bajer T, Šulc J, Ventura K, Bajerová P (2019) Design of the Extraction Process for Characterization of Volatile Profile of Stem Wood by Solid-Phase Microextraction. *Natural Product Communications* 14 (5):1-5.
3. Özgenç Ö, Durmaz S, Çelik G, Korkmaz B, Yaylıc N (2017) Comparative phytochemical analysis of volatile organic compounds by SPME-GC-FID/MS from six coniferous and nine deciduous tree bark species grown in Turkey. *South African Journal of Botany* 113:23-28.
4. Szmigielski R, Cieslak M, Rudziński KJ, Maciejewska B (2012) Identification of volatiles from *Pinus silvestris* attractive for *Monochamus galloprovincialis* using a SPME-GC/MS platform. *Environmental Science and Pollution Research* 19: 2860-2869.
5. Holm O, Rotard W (2011) Effect of Radial Directional Dependences and Rainwater Influence on CVOC Concentrations in Tree Core and Birch Sap Samples Taken for Phyto screening Using HS-SPME-GC/MS. *Environmental Science & Technology* 45(22):9604-9610.

23rd International Conference and Exhibition on Pharmaceutics & Novel Drug Delivery Systems

February 21-22, 2022

WEBINAR

14th International Conference & Expo on Chromatography Techniques

Biography

Petra Bajerova completed her doctoral studies at the University of Pardubice at the age of 29. Since 2015 she has been working as an associate professor at the University of Pardubice, Faculty of Chemical Technology, Department of Analytical Chemistry and focuses mainly on the use of classical and green analytical methods for the preparation of samples of natural origin. She has published more than 40 papers in reputed journals.

Received: January 16, 2022; **Accepted:** January 17, 2022; **Published:** February 21, 2022