

Electronic supplementary material

Fast HILIC method for separation and quantitation of non-volatile aromatic compounds and monosaccharides from willow (*Salix* sp.) bark extract

Heidi Meriö-Talvio*, Jinze Dou, Tapani Vuorinen, and Leena Pitkänen**

Department of Bioproducts and Biosystems, Aalto University, P.O. Box 16300, 00076 Espoo, Finland

*Current address: Fortum waste solutions Oy, Kuulojankatu 1, 11120 Riihimäki, Finland

**Corresponding author: leena.pitkanen@aalto.fi

S1. Examples of ELSD calibration curves

The examples of ELSD calibration curves are presented in **Figure S1**. The concentration range for picein was 10 – 250 mg/l and for glucose 50 – 1000 mg/l.

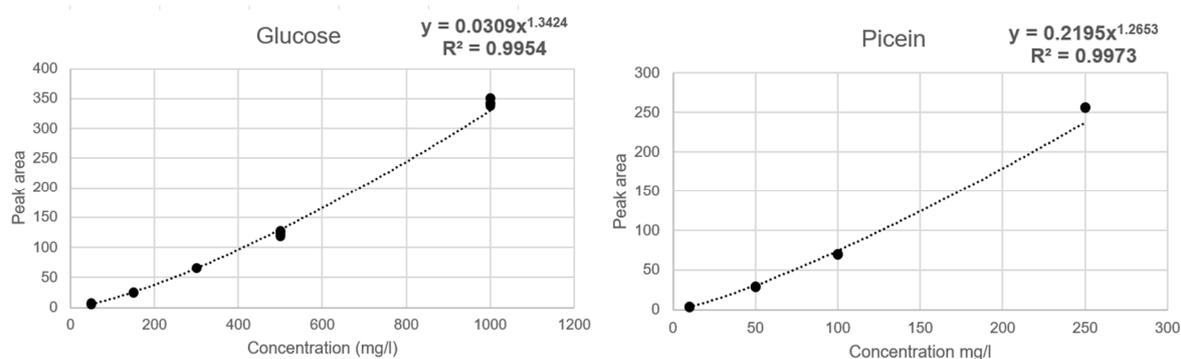


Figure S1. Calibration curves for glucose and picein obtained by HILIC-ELSD.

S2. Validation of HILIC results by HPAEC-PAD and GC-FID

The amounts for picein triandrin, (+)-catechin, fructose, and glucose in willow bark extract were determined using gas chromatography with flame-ionization detection (GC-FID) and high-performance anion-exchange chromatography with the pulse amperometric detection (HPAEC-PAD; only monosaccharides), as a reference to HILIC method.

HPAEC-PAD analyses were carried out using the Dionex ICS-3000 system (Sunnyvale, CA, USA) and GC-FID analyses using PerkinElmer AutoSystemXL. The detailed experimental parameters were described previously [S1] except that a different temperature program of GC-FID was applied here. The injector was maintained at the temperature of 250 °C with split ratio of 1:25.8. The column temperature was ramped from 120 °C for 1 min, and then raised to 320 °C at the rate of 6 °C /min (hold for 15 min). 14 psi was maintained as the constant pressure. The results obtained using the methods described above are summarized at **Table S1**.

Table S1 The amounts of picein, triandrin, (+)-catechin, fructose and glucose in willow bark extract presented as mg/g.

	Picein	Triandrin	(+)-catechin	Fructose	Glucose
GC-FID	47	43	16	128*	
HPAEC-PAD	n.a.	n.a.	n.a.	71	77

*the amount of fructose and glucose together, n.a. = not applicable

References

S1. Dou, J.; Xu, W.; Koivisto, J.J.; Mobley, J.K.; Padmakshan, V.; Kögler, M.; Xu, C.; Willför, S.; Ralph, J.; Vuorinen, V. Characteristics of hot water extracts from the bark of cultivated willow (*Salix sp.*). *ACS Sustainable Chem. Eng.* **2018**, *6*, 5566-5573. <https://doi.org/10.1021/acssuschemeng.8b00498>