

## SUPPORTING INFORMATION

# Low-Molecular-Weight Phenols Recovery by Eco-Friendly Extraction from *Quercus Spp.* Wastes: An Analytical and Biomass-Sustainability Evaluation

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**Table S1.** Mass spectral matching (%) between the selected TMS-standards and the identified phenols in the extracts.

TMS-Derivatives	<i>Quercus scerris</i> <sup>*</sup>	<i>Quercus ilex</i> <sup>*</sup>	<i>Robinia pseudoacacia</i> <sup>*</sup>	<i>Quercus petraea</i> <sup>*</sup>	<i>Quercus petraea</i> <sup>a</sup>	<i>Quercus petraea</i> <sup>b</sup>	<i>Quercus petraea</i> <sup>c</sup>
Caffeic acid	-	-	99	-	-	-	-
(+)-Catechin	95	95	93	-	-	-	-
(E)-Coniferyl alcohol	99	99	94	99	99	99	99
(Z)-Coniferyl alcohol	95	-	-	-	-	-	-
Dihydrosinapyl alcohol	-	-	-	-	99	-	-
(-)-Epicatechin	95	93	93	-	-	-	-
Ferulic acid	-	-	98	-	99	-	-
Gallic acid	99	99	-	99	-	-	-
<i>p</i> -Hydroxybenzoic acid	-	-	-	95	99	-	99
Protocatechuic acid	99	99	98	92	99	-	-
(E)-Sinapyl alcohol	98	-	-	98	-	99	99
Syringaldehyde	98	92	-	98	98	98	99
Syringic acid	99	-	-	99	99	-	99
Vanillic acid	99	-	99	99	99	-	99
Vanillin	-	95	-	-	-	99	99

(\*) by NEP; (a) by EHP-A; (b) by EHP-B; (c) by EHP-C

**Table S2.** Explored linearity ranges, LOD and LOQ values for the investigated and identified phenols. .

TMS-Derivatives	Linearity range (mg/mL)	R <sup>2</sup>	LOD (µg/mL)	LOQ (µg/mL)
Ferulic acid	0.02–0.50	0.9996	0.18	0.53
Gallic acid	0.04–1.0	0.9995	0.07	0.20
(E)-Coniferyl alcohol	0.04–1.0	0.9970	0.09	0.27

<b>(-)-Epicatechin</b>	0.02–0.50	0.9960	0.26	0.80
<b>(+)-Catechin</b>	0.04–1.0	0.9990	0.26	0.80
<b>Syringaldhehyde</b>	0.04–1.0	0.9995	0.13	0.40
<b>Vanillic acid</b>	0.04–1.0	0.9997	0.09	0.27
<b>Vanillin</b>	0.02–5.0	0.9997	0.08	0.23

The limit of detection (LOD) and quantification (LOQ) values were calculated on the basis of the standard deviation of five independent measurements of a blank sample and the slope values of each calibration curve, according to the following equations (Equation 1 and Equation 2):

$$C_{LOD} = 3.3 \frac{\sigma_y}{b} \quad (1)$$

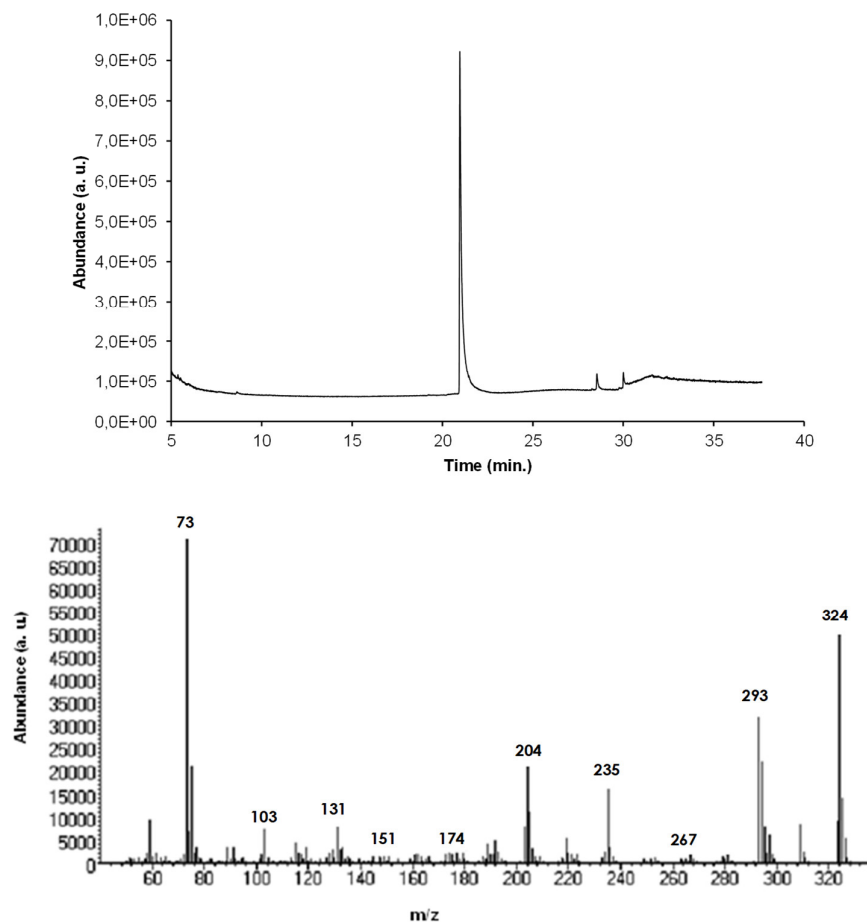
$$C_{LOQ} = 10 \frac{\sigma_y}{b} \quad (2)$$

**Table S3.** NEP/EHPs yields (mg/10g) comparison with data reported in literature for *Quercus petraea*.

<b>Compound</b>	<b>Literature</b>	<b>This Work</b>
<i>Gallic acid</i> <sup>(a)</sup>	1.06	1.14 (NEP)
<i>Vanillic acid</i> <sup>(b)</sup>		0.120% (EHP-A)
	0.2–2.4% <sup>(1)</sup>	0.063% (EHP-C)
<i>Ferulic acid</i> <sup>(b)</sup>	0.00021% <sup>(2)</sup>	0.59% (EHP-A)

<sup>(a)</sup>: global yield by EtOAc+Et<sub>2</sub>O fractionations following a EP1-like extraction, 1 year seasoned samples [1].

<sup>(b)</sup>: calculated with respect to a *Q. petraea* 30% of lignin content, dry wood; (1): in [2]; (2): extracted by a EP1-like protocol without alkaline oxidation [1].



**Figure S1.** GC-MS chromatogram and mass spectrum profile in EI mode at 70 eV for the identification of the synthesized *coniferyl alcohol* (as TMS-derivative) [3,4].

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