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MDPI

Supplementary Materials

Laccase-mediated oxidation of phenolic compounds from wine lees extract towards the synthesis of polymers with potential applications in food packaging

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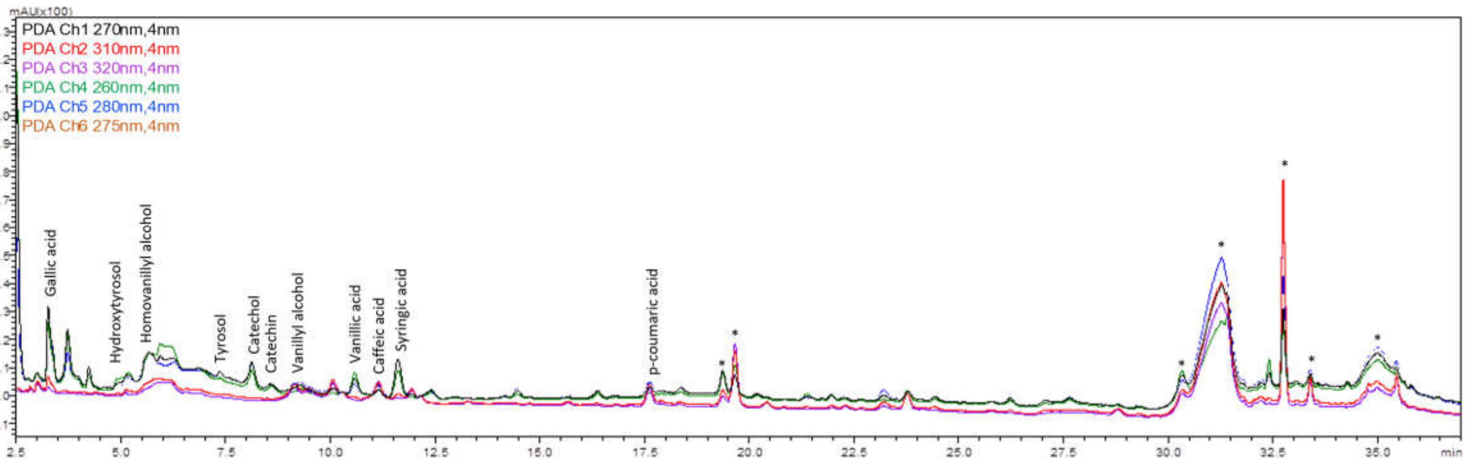

Figure S1. HPLC chromatogram of the reaction's supernatant before the polymerization process. Individual peaks of known phenolic compounds are marked by their respective names. Asterisk indicates individual unknown compounds with characteristic aromatic-like spectra.

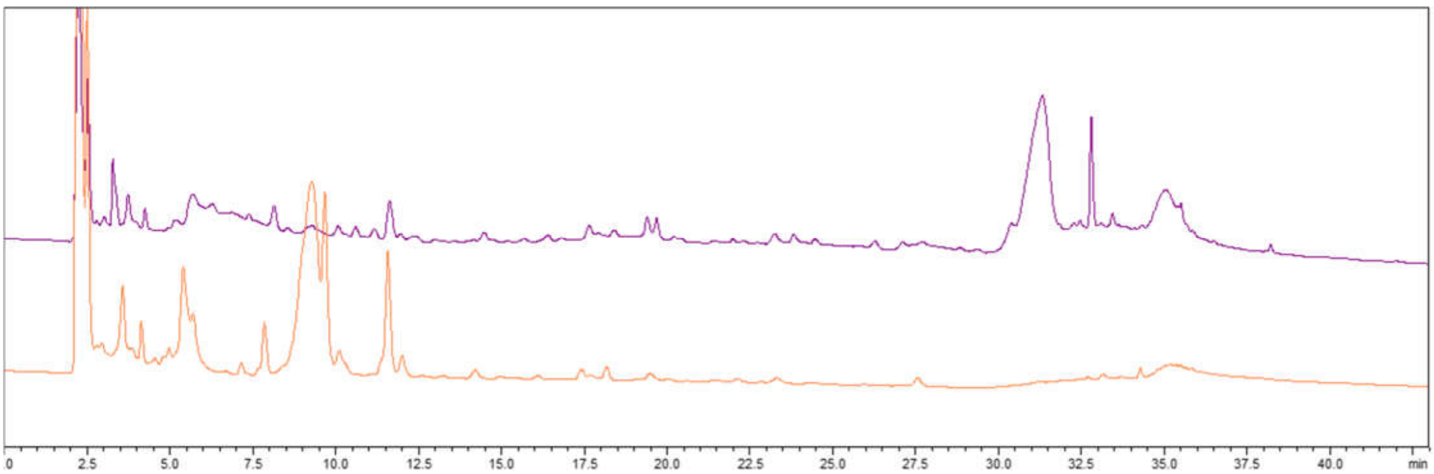

Figure S2. HPLC chromatograms at 280 nm of the WLE before and after TvL treatment.

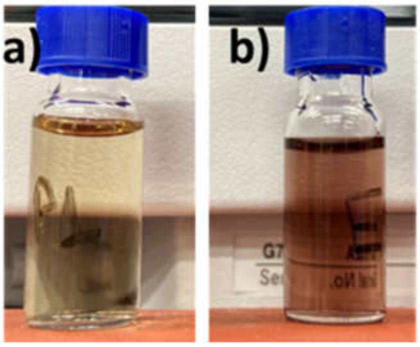

Figure S3. (a) The polymeric product P1h and (b) the extract dissolved in DMF.

Table S1. Thermal properties defined via TGA of the extract and the P1h and P24 h synthesized polymers.

Sample	$T_{d,5\%}$ (°C)	T_{d1} (°C)	T_{d2} (°C)	Residue (%)
Extract	164	194	-	35
P1h	186	238	308	29
P24h	192.5	218	271	34

Table S2. Thermal properties defined via DSC of the extract and the P1h and P24 h synthesized polymers.

Sample	Endotherm 1 (°C)	ΔH_1 (J·g^{-1})	Endotherm 2 (°C)	ΔH_2 (J·g^{-1})	Endotherm 3 (°C)	ΔH_3 (J·g^{-1})	Endotherm 4 (°C)	ΔH_4 (J·g^{-1})
Extract	31	1	137	26	201	27	283	32
P1h	38	6	122	9	272	9	356	5
P24h	40	5	123	10	271	23	344	3

Table S3. Antioxidant activity (%) of the formed polymeric products (tested concentration: 100 μg mL^{-1})

	Antioxidant activity (%)	
Sample	ABTS	DPPH
P1h	82.8 ± 1.9	93.1 ± 0.4
P2h	74.7 ± 2.8	87.4 ± 1.0
P6h	73.8 ± 2.5	84.8 ± 0.5
P24h	70.6 ± 1.5	84.9 ± 0.2