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Unveiling the Phytochemical Nature of Acorns: The Relevance of Dehusking

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Table S1

Individual p-values of the Kruskal–Wallis test for the different phenolic contents and antioxidant activity between the different manually dehusked acorn species from Gerês. Significance differences were stablished at $p<0.05$.

Parameter	*QP x QR*	*QR x QI*	*QP x QI*
Phenolics			
Free	p<0.05	p<0.05	p<0.05
Bound	n.s.	n.s.	n.s.
Total	p<0.05	p<0.05	p<0.05
Flavonoids			
Free	p<0.05	p<0.05	n.s.
Bound	n.s.	n.s.	p<0.05
Total	p<0.05	p<0.05	p<0.05
Hydrolysable tannins			
Free	p<0.05	p<0.05	p<0.05
Bound	-	-	-
Total	p<0.05	p<0.05	p<0.05
Condensed tannins			
Free	p<0.05	p<0.05	p<0.05
Bound	-	-	-
Total	p<0.05	p<0.05	n.s.
Gallic acid			
Free	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05
Ellagic acid			
Free	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05
ABTS			
Free	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05
DPPH			
Free	p<0.05	p<0.05	p<0.05
Bound	n.s.	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05
ORAC			
Free	p<0.05	p<0.05	p<0.05
Bound	p<0.05	n.s.	p<0.05
Total	p<0.05	p<0.05	p<0.05
FRAP			
Free	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05
Total	p<0.05	n.s.	p<0.05

QP: *Quercus pyrenaica*; QR: *Quercus robur*; QI: *Quercus ilex*; n.s.: not significant ($p>0.05$).

Table S2

Individual p-values of the Kruskal–Wallis test for the different phenolic contents and antioxidant activity between the different manually dehusked acorn species from Gerês. Significance differences were stablished at p<0.05.

Parameter	*Q. pyrenaeca*		*Q. robur*		*Q. ilex*	
	M *x* T	**M *x* D**	**M *x* T**	**M *x* D**	**M *x* T**	**M *x* D**
Phenolics						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	n.s.	p<0.05	p<0.05	p<0.05
Flavonoids						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Hydrolysable tannins						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	n.s.
Bound	-	-	-	-	-	-
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	n.s.
Condensed tannins						
Free	p<0.05	n.s.	p<0.05	p<0.05	p<0.05	n.s.
Bound	-	-	-	-	-	-
Total	p<0.05	n.s.	p<0.05	p<0.05	p<0.05	n.s.
Gallic acid						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	n.s.
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Ellagic acid						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	n.s.	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
ABTS						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	n.s.
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	n.s.	n.s.	p<0.05	p<0.05	p<0.05
DPPH						
Free	p<0.05	p<0.05	n.s.	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
ORAC						
Free	p<0.05	p<0.05	p<0.05	p<0.05	n.s.	p<0.05
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	n.s.	p<0.05	p<0.05	n.s.
FRAP						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	n.s.	n.s.	p<0.05	p<0.05	p<0.05

M: Manual dehusking; T: Thermal dehusking; D: Dehusking by drying; n.s.: not significant (p>0.05).

Table S3

Individual p-values of the Kruskal–Wallis test for the different phenolic contents and antioxidant activity between the different dehulled by drying acorn species harvested in Gerês and the commercial acorns from Alentejo. Significance differences were stablished at $p<0.05$.

Parameter	*QP x C*	*QR x C*	*QI x C*	*QP x QR*	*QR x QI*	*QP x QI*
Phenolics						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	n.s.
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Flavonoids						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05	n.s.	p<0.05	n.s.
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	n.s.
Hydrolysable tannins						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	-	-	-			
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Condensed tannins						
Free	p<0.05	p<0.05	n.s.	p<0.05	p<0.05	p<0.05
Bound	-	-	-			
Total	p<0.05	p<0.05	n.s.	p<0.05	p<0.05	p<0.05
Gallic acid						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05	p<0.05	n.s.	p<0.05
Ellagic acid						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
ABTS						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
DPPH						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	n.s.	p<0.05	p<0.05	p<0.05	n.s.	p<0.05
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
ORAC						
Free	p<0.05	n.s.	p<0.05	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	n.s.
Total	p<0.05	p<0.05	n.s.	n.s.	p<0.05	p<0.05
FRAP						
Free	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Bound	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
Total	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05

C: Commercial acorns; QP: *Quercus pyrenaica*; QR: *Quercus robur*; QI: *Quercus ilex*; n.s.: not significant ($p>0.05$).

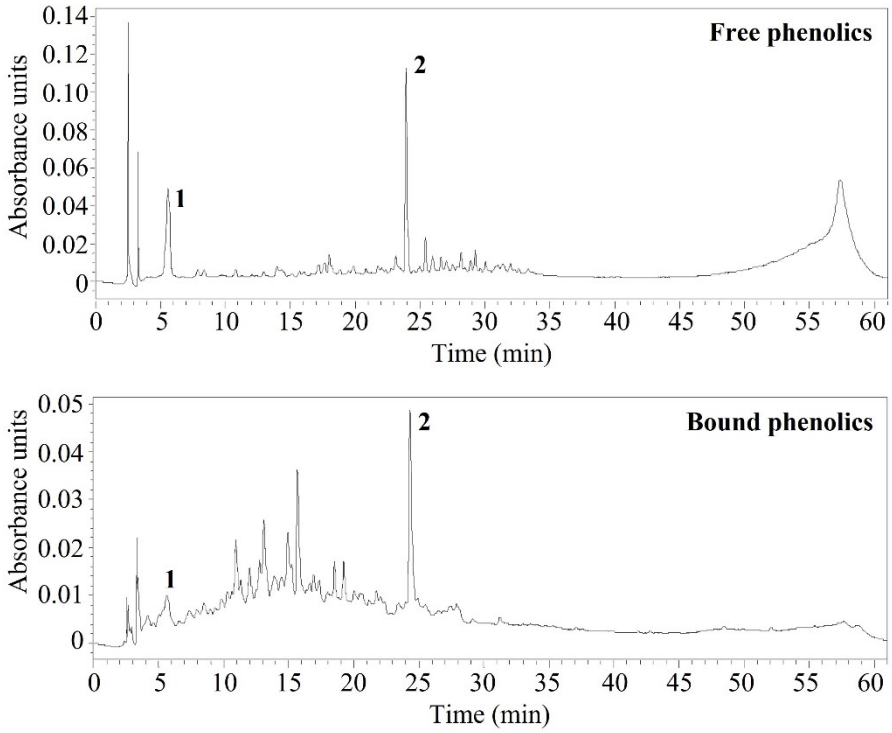

Fig. S1: Free and bound phenolic profile at 280 nm of the *Q. pyrenaica* acorns manually dehusked. Peaks 1 and 2 correspond to gallic and ellagic acid, respectively.

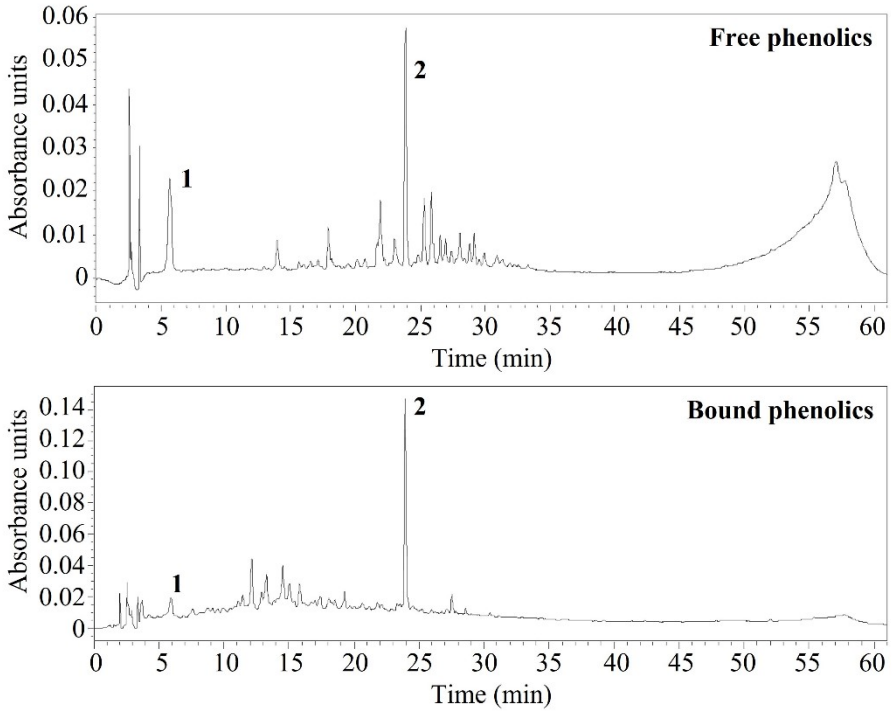

Fig. S2: Free and bound phenolic profile at 280 nm of the *Q. pyrenaica* acorns thermally dehusked. Peaks 1 and 2 correspond to gallic and ellagic acid, respectively.

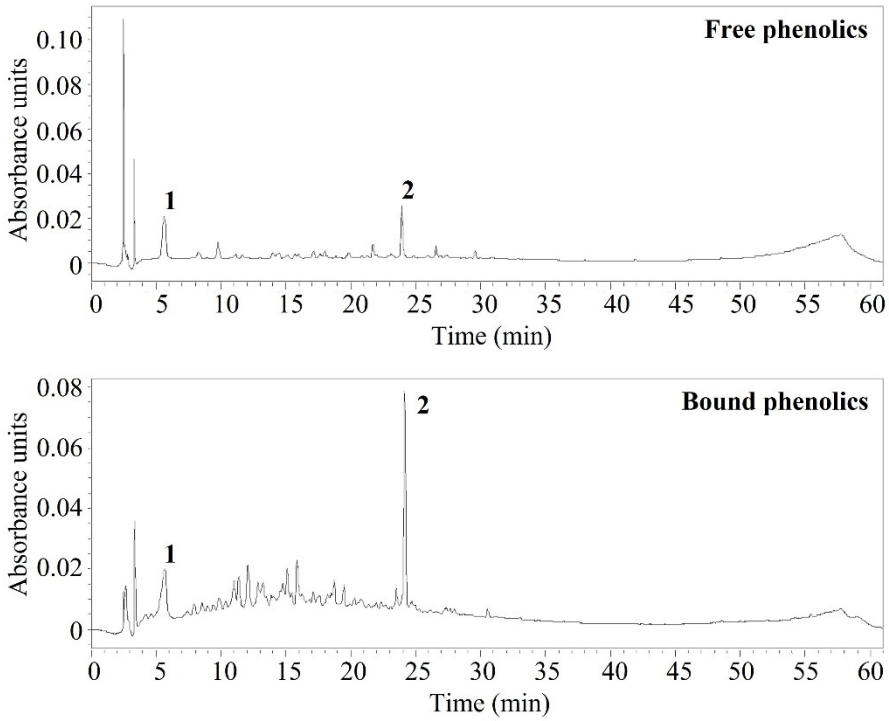

Fig. S3: Free and bound phenolic profile at 280 nm of the *Q. pyrenaica* acorns dehusked by drying. Peaks 1 and 2 correspond to gallic and ellagic acid, respectively.

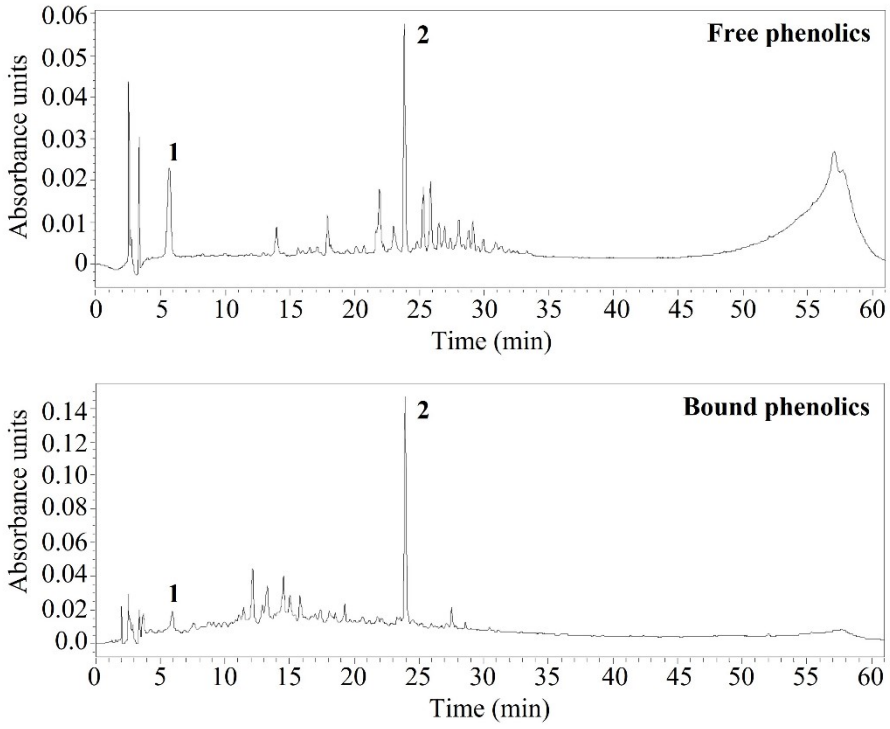

Fig. S4: Free and bound phenolic profile at 280 nm of the *Q. robur* acorns manually dehusked. Peaks 1 and 2 correspond to gallic and ellagic acid, respectively.

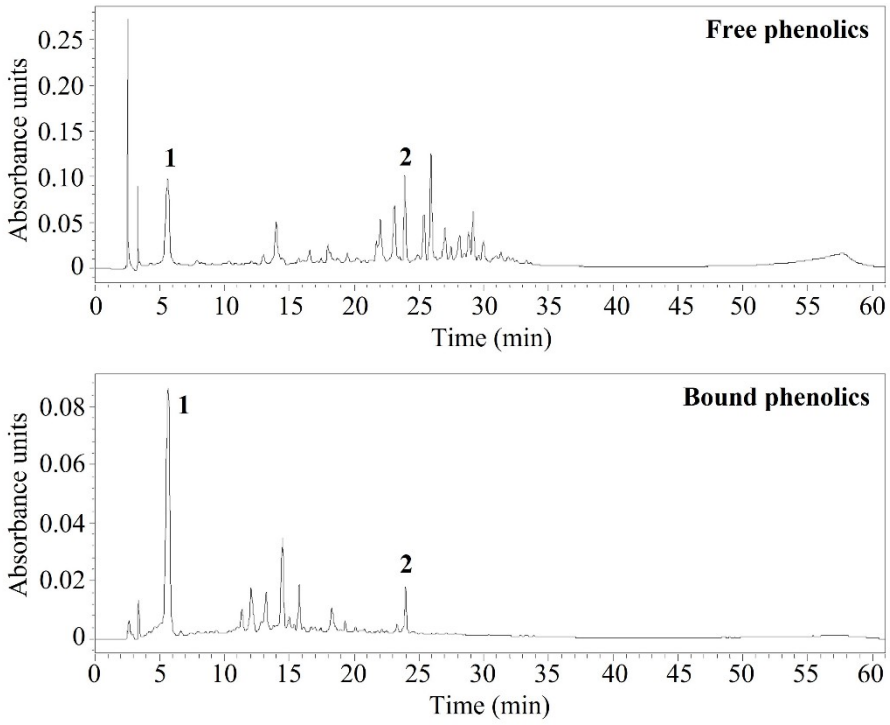

Fig. S5: Free and bound phenolic profile at 280 nm of the *Q. robur* acorns thermally dehusked. Peaks 1 and 2 correspond to gallic and ellagic acid, respectively.

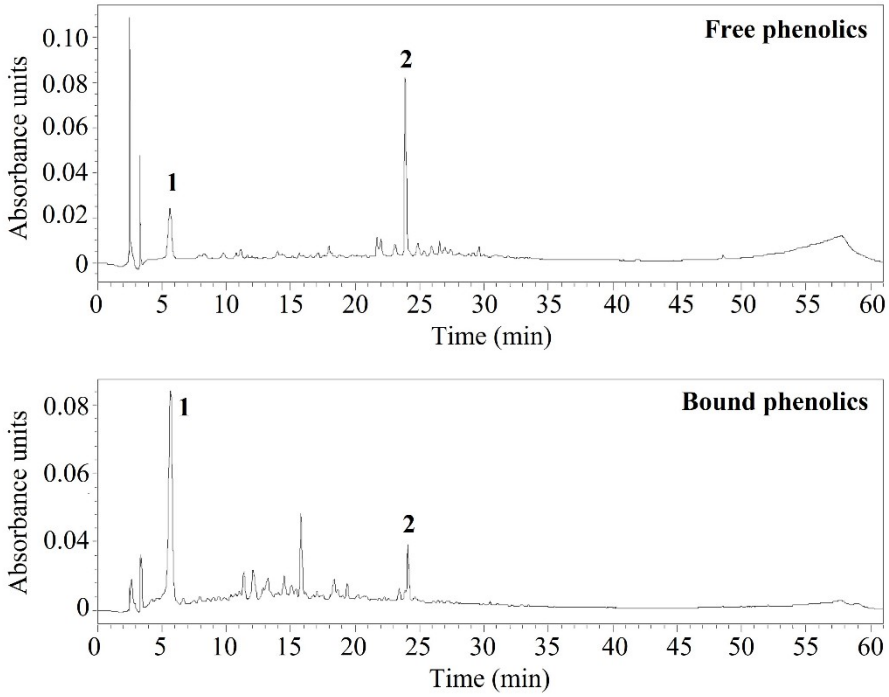

Fig. S6: Free and bound phenolic profile at 280 nm of the *Q. robur* acorns dehusked by drying. Peaks 1 and 2 correspond to gallic and ellagic acid, respectively.

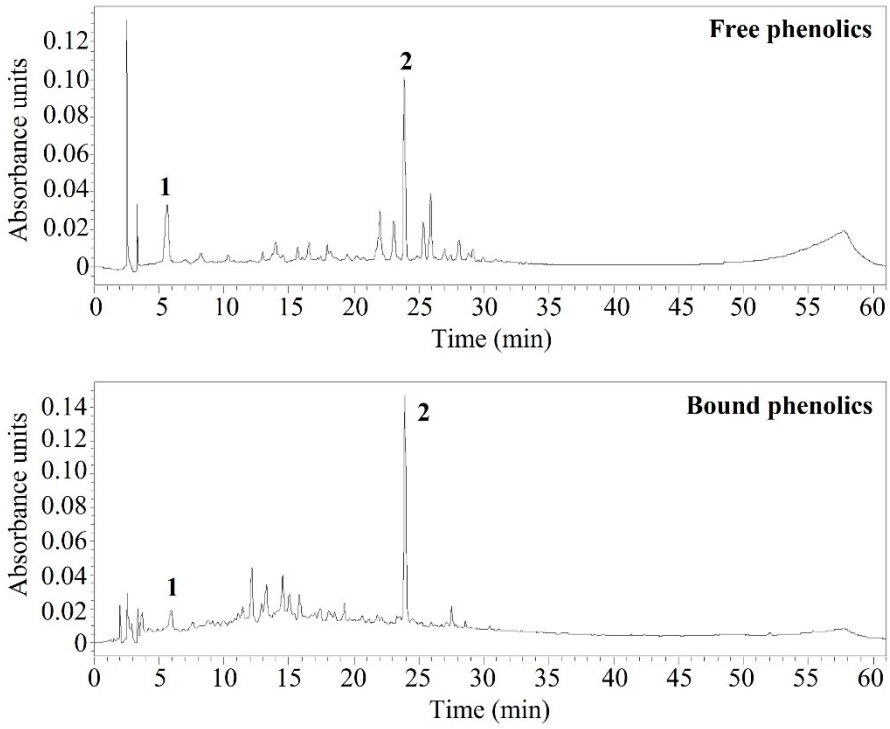

Fig. S7: Free and bound phenolic profile at 280 nm of the *Q. ilex* acorns manually dehusked. Peaks 1 and 2 correspond to gallic and ellagic acid, respectively.

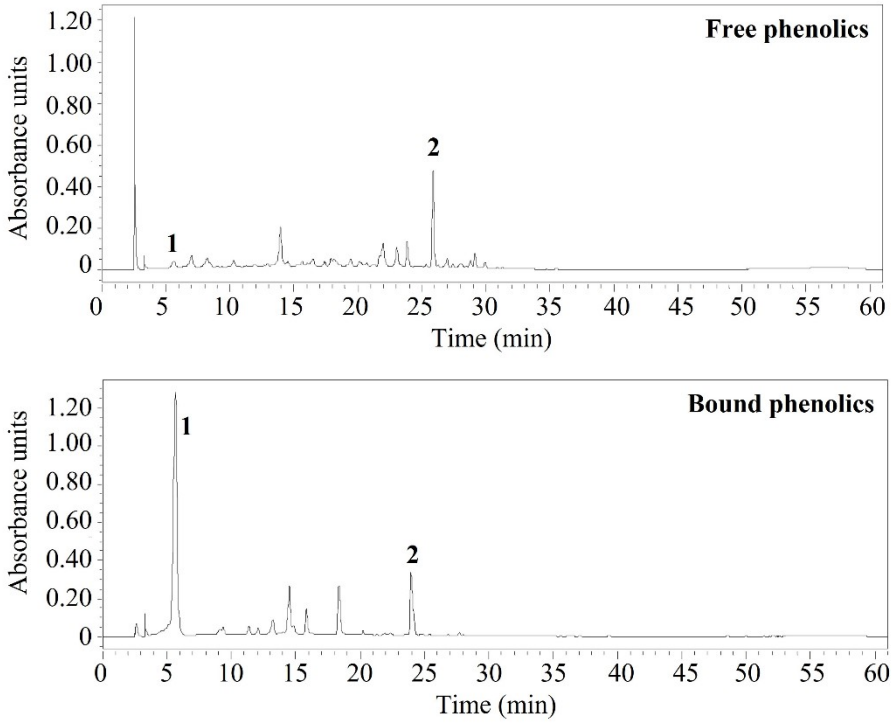

Fig. S8: Free and bound phenolic profile at 280 nm of the *Q. ilex* acorns thermally dehusked. Peaks 1 and 2 correspond to gallic and ellagic acid, respectively.

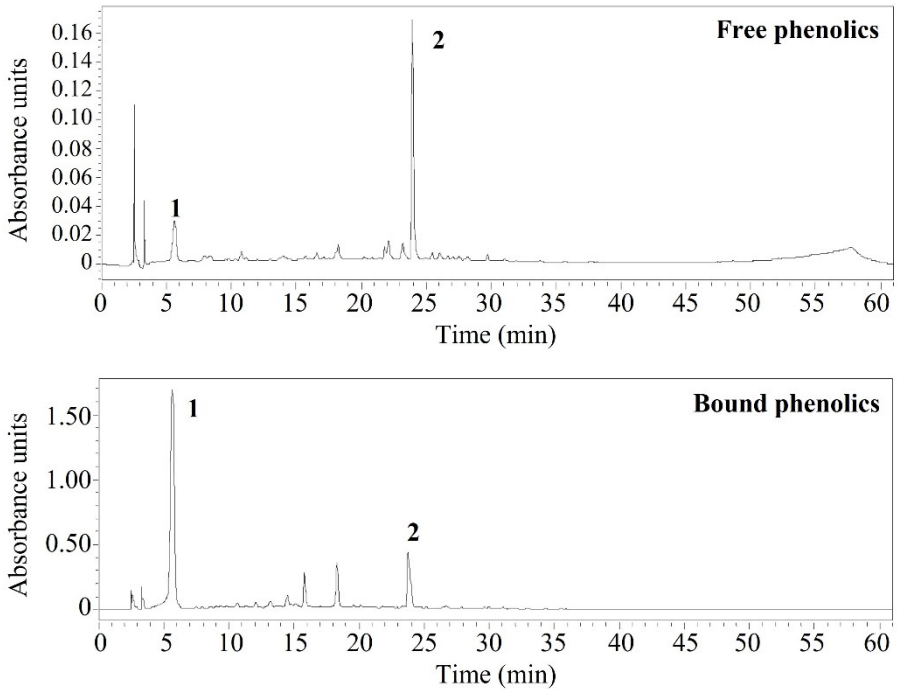

Fig. S9: Free and bound phenolic profile at 280 nm of the *Q. ilex* acorns dehusked by drying. Peaks 1 and 2 correspond to gallic and ellagic acid, respectively.

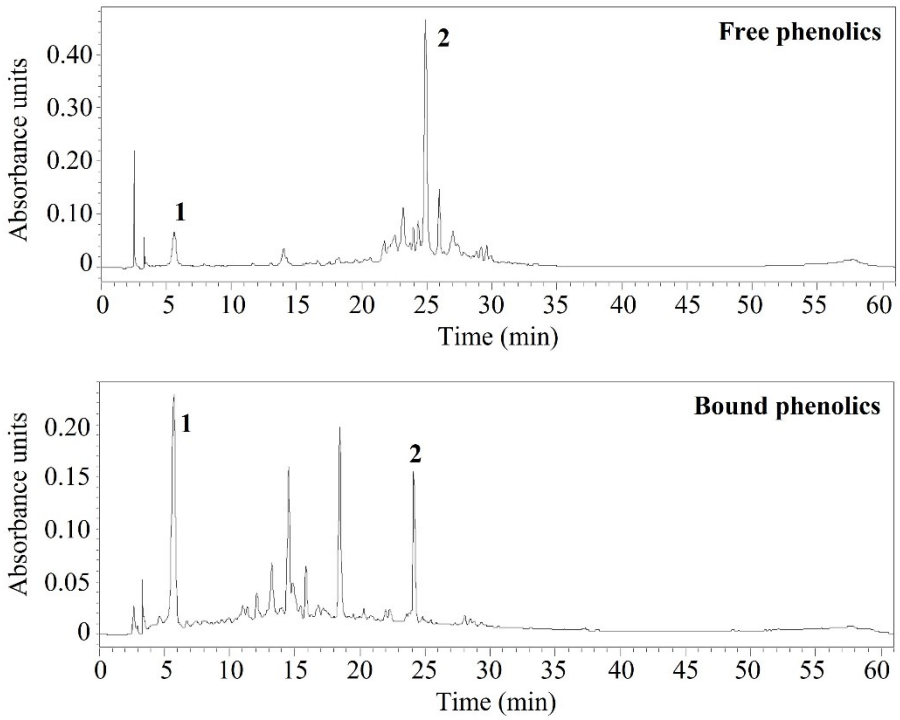

Fig. S10: Free and bound phenolic profile at 280 nm of the commercial acorns. Peaks 1 and 2 correspond to gallic and ellagic acid, respectively.