

**Supplementary Table S1.** Analysis of variance (mean square) and LSD test of tocopherols and carotenoids content (mg/kg DM; mean  $\pm$  standard error) of *Lupinus albus* seeds (Lot 1) after debittering without and with ultrasound (US), and with different solvents.

	ANOVA				LSD Treatment		LSD Solvent	
	Treatment (T)	Solvent (S)	T x S	Error	Without US	With US	1% NaCl	1% Citric acid
d.f.	1	1	1	4				
( $\alpha + \beta$ )-carotene	0.13 **	0.054 *	0.097 **	0.0040	2.46 <sup>a</sup> $\pm$ 0.04	2.21 <sup>b</sup> $\pm$ 0.11	2.42 <sup>a</sup> $\pm$ 0.03	2.26 <sup>b</sup> $\pm$ 0.14
$\beta$ -cryptoxanthin	0.0028 *	0.26 ***	0.0036 *	0.00021	0.26 <sup>b</sup> $\pm$ 0.09	0.30 <sup>a</sup> $\pm$ 0.12	0.11 <sup>b</sup> $\pm$ 0.00	0.46 <sup>a</sup> $\pm$ 0.02
Lutein	1.30 *	2.4 **	0.34	0.073	8.39 <sup>a</sup> $\pm$ 0.25	7.59 <sup>b</sup> $\pm$ 0.44	8.54 <sup>a</sup> $\pm$ 0.18	7.44 <sup>b</sup> $\pm$ 0.36
Zeaxanthin	0.030 *	0.21 **	0.025 *	0.0032	1.84 <sup>a</sup> $\pm$ 0.07	1.72 <sup>b</sup> $\pm$ 0.13	1.95 <sup>a</sup> $\pm$ 0.03	1.62 <sup>b</sup> $\pm$ 0.07
Total carotenoids	2.6 *	3.1 *	0.99	0.15	12.97 <sup>a</sup> $\pm$ 0.27	11.83 <sup>b</sup> $\pm$ 0.56	13.02 <sup>a</sup> $\pm$ 0.23	11.77 <sup>b</sup> $\pm$ 0.55
$\alpha$ -tocopherol	0.00080	0.0025	0.011*	0.00083	0.48 $\pm$ 0.02	0.50 $\pm$ 0.03	0.51 $\pm$ 0.03	0.47 $\pm$ 0.02
$\beta$ -tocopherol	0.25 *	4.2 **	0.080	0.023	1.83 <sup>a</sup> $\pm$ 0.47	1.47 <sup>b</sup> $\pm$ 0.37	0.93 <sup>b</sup> $\pm$ 0.10	2.36 <sup>a</sup> $\pm$ 0.17
$\gamma$ -tocopherol	359	79	0.50	78	185.83 $\pm$ 5.29	172.43 $\pm$ 2.19	182.28 $\pm$ 6.18	175.99 $\pm$ 4.23
$\delta$ -tocopherol	0.10	0.15	0.011	0.069	1.67 $\pm$ 0.16	1.42 $\pm$ 0.11	1.69 $\pm$ 0.06	1.40 $\pm$ 0.18
Total tocopherols	389	53	1.4	78	189.80 $\pm$ 5.16	175.82 $\pm$ 1.99	185.40 $\pm$ 6.19	180.22 $\pm$ 4.51

d.f.: degrees of freedom; \*,  $p \leq 0.05$ ; \*\*,  $p \leq 0.01$ ; \*\*\*,  $p \leq 0.001$ . Different letters indicate significant differences between samples according to the LSD test ( $p \leq 0.05$ ).

**Supplementary Table S2.** Analysis of variance (mean square) and LSD test of the polyphenols content (mg/kg DM; mean  $\pm$  standard error) of *Lupinus albus* seeds (Lot 1) after debittering without and with ultrasound (US), and with solvents different.

	ANOVA				LSD Treatment		LSD solvent	
	Treatment (T)	Solvent (S)	T x S	Error	Without US	With US	1% NaCl	1% Citric acid
d.f.	1	1	1	4				
<i>Free phenolics</i>								
Genistein der.	4.2	5068 ***	351 ***	1.3	84.67 $\pm$ 10.71	86.12 $\pm$ 18.37	60.22 <sup>b</sup> $\pm$ 3.42	110.56 <sup>a</sup> $\pm$ 4.28
Sinapic acid der.	711 *	989 *	0.86	50	96.70 <sup>a</sup> $\pm$ 6.57	77.85 <sup>b</sup> $\pm$ 7.49	98.39 <sup>a</sup> $\pm$ 5.27	76.15 <sup>b</sup> $\pm$ 6.94
Naringenin der.					4.11 <sup>a</sup> $\pm$ 0.07	3.58 <sup>b</sup> $\pm$ 0.00	nd	3.85 $\pm$ 0.16
Diosmin der.					3.94 <sup>a</sup> $\pm$ 0.03	3.24 <sup>b</sup> $\pm$ 0.00	nd	3.59 $\pm$ 0.20
Apigenin der.	753 ***	5511 ***	183 **	4.3	132.93 <sup>a</sup> $\pm$ 17.95	113.53 <sup>b</sup> $\pm$ 12.40	96.99 <sup>b</sup> $\pm$ 2.91	149.47 <sup>a</sup> $\pm$ 8.43
Total free	2798 ***	15495 ***	12	36	318.32 <sup>a</sup> $\pm$ 24.75	280.91 <sup>b</sup> $\pm$ 26.30	255.60 <sup>b</sup> $\pm$ 11.51	343.62 <sup>a</sup> $\pm$ 10.66
<i>Conjugated phenolics</i>								
Genistein der.	2.8	461	380	79	97.28 $\pm$ 9.03	98.46 $\pm$ 3.84	90.28 $\pm$ 6.53	105.46 $\pm$ 3.93
Genistein					1.55 <sup>a</sup> $\pm$ 0.03	0.44 <sup>b</sup> $\pm$ 0.03	nd	1.00 $\pm$ 0.32
Naringenin der.	0.46	0.11	0.24	0.19	2.02 $\pm$ 0.22	1.54 $\pm$ 0.21	1.90 $\pm$ 0.25	1.67 $\pm$ 0.25
Catechin der.					3.54 <sup>a</sup> $\pm$ 0.05	2.53 <sup>b</sup> $\pm$ 0.03	nd	3.04 $\pm$ 0.30
Apigenin der.					0.52 $\pm$ 0.05	0.54 $\pm$ 0.01	0.53 $\pm$ 0.03	nd
Total conjugated	0.26	681*	463	81	102.11 $\pm$ 10.38	101.75 $\pm$ 3.81	92.71 <sup>b</sup> $\pm$ 6.56	111.16 <sup>a</sup> $\pm$ 4.75
<i>Bound phenolics</i>								
Genistein der.	9.4	891 **	23	16	41.47 $\pm$ 7.28	43.63 $\pm$ 5.32	53.10 <sup>a</sup> $\pm$ 1.64	31.99 <sup>b</sup> $\pm$ 2.27
Naringenin der.	0.000013	28	0.79	4.2	16.82 $\pm$ 1.42	16.82 $\pm$ 1.34	18.71 $\pm$ 1.05	14.94 $\pm$ 0.60
Catechin der.	2.2	708 ***	0.96	1.8	18.49 $\pm$ 5.65	17.44 $\pm$ 5.27	27.37 <sup>a</sup> $\pm$ 0.83	8.56 <sup>b</sup> $\pm$ 0.41
Apigenin der.	0.00080	52 ***	0.011	0.19	3.43 $\pm$ 1.51	3.41 $\pm$ 1.45	0.87 <sup>b</sup> $\pm$ 0.07	5.96 <sup>a</sup> $\pm$ 0.24
Total bound	2.4	2980 **	23	47	80.21 $\pm$ 12.56	81.30 $\pm$ 10.41	100.05 <sup>a</sup> $\pm$ 3.18	61.45 <sup>b</sup> $\pm$ 2.79
<i>Total phenolics</i>	2690*	9212 **	179	163	500.64 <sup>a</sup> $\pm$ 22.45	463.96 <sup>b</sup> $\pm$ 18.25	448.37 <sup>b</sup> $\pm$ 9.46	516.23 <sup>a</sup> $\pm$ 14.28

d.f.: degrees of freedom; der.: derivative; nd: below the detection limit. \*,  $p \leq 0.05$ ; \*\*,  $p \leq 0.01$ ; \*\*\*,  $p \leq 0.001$ . Different letters indicate significant differences between samples according to the LSD test ( $p \leq 0.05$ ).