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SUPPLEMENTARY MATERIAL TO

Influence of enzyme-aided extraction and ultrasonication on the phenolics content and antioxidant activity of *Paeonia officinalis* L. petals

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EXTRACTION PROCEDURES

TABLE S-I. Experimental setup: extraction parameters by conventional and non-conventional applied techniques

Method of extraction	Solvents	Solvent/solid ratio, mL g⁻¹	Extraction		Ultrasonic amplitude, %	Incubation	
			t / °C	τ / min		τ / min (with cellulase)	t / °C
Conventional	water	48/1	30	120	–	–	–
	ethanol	24/1	40				
		12/1	50				
UAE	ethanol	50/1	< 32	10	50	–	–
		40/1		20	70		
				30			
Enzyme + ultrasonication	ethanol	50/1	< 32	30	50	60	40
						120	
						180	

Mathematical modeling

The influence of independent variables on the dependent variables was expressed through multiple regressions, the least squares method. The adequacy of the obtained models was tested by the sequential sum of squares and the statistical summary of the methods. The regression coefficients of all the terms that constructed the models (linear, quadratic and interaction) and their effects were analyzed using ANOVA, while the terms of the models were tested with the F Test at $p < 0.05$. The adequacy of the models was verified using determination coefficients (R^2), adjusted R^2 and predicted R^2. For each response, the most suitable model of the ones tested was selected and used to generate response plots linking independent

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variables and responses. The precision of the selected models was verified using three methods: *i*) diagnostic plots between experimental and predicted values, the linearized results indicating a good fit of the models; *ii*) the analysis of the residuals (Z, I), the low residuals indicating a good fit for all the models; *iii*) testing the normal distribution of the residuals, the linear distribution of the residuals also indicating a good fit of the models.
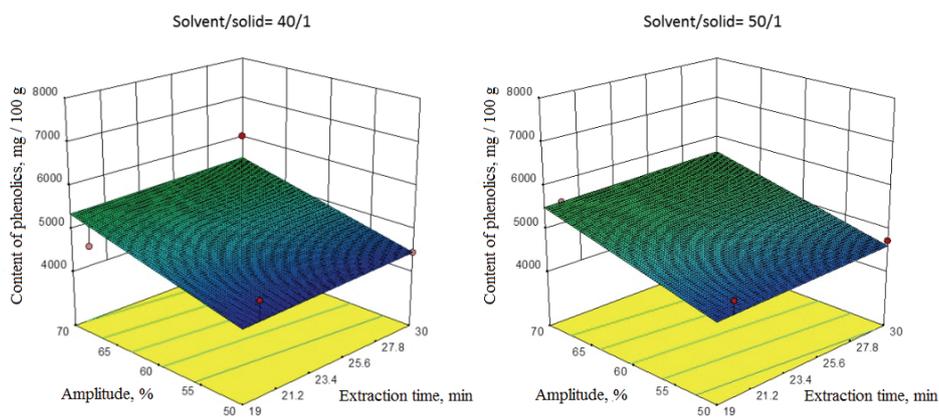

Fig. S-1. Response plots for UAE efficiency of phenolics from red peony petals as a function of extraction time and ultrasonic amplitude.
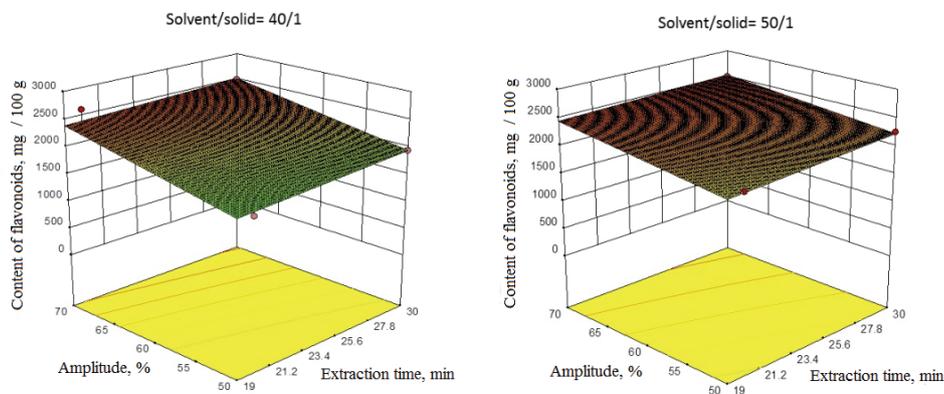

Fig. S-2. Response plots for UAE efficiency of flavonoids from red peony petals as a function of extraction time and ultrasonic amplitude.
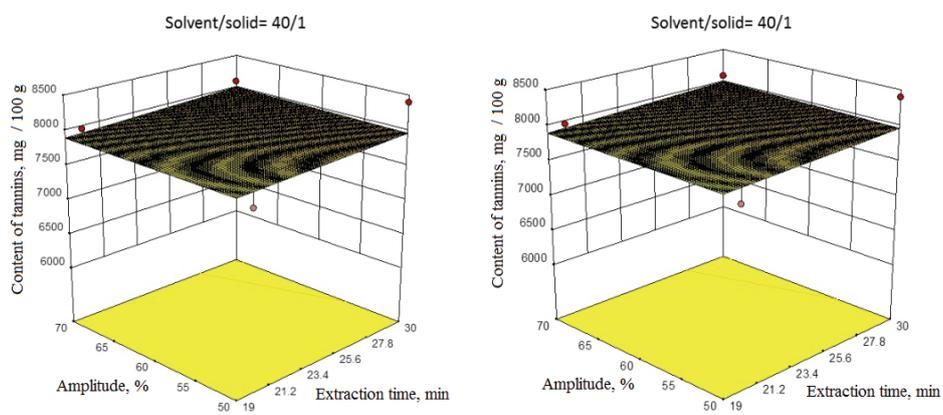
Fig. S-3. Response plots for UAE efficiency of tannins from red peony petals as a function of extraction time and ultrasonic amplitude.