SUPPORTING INFORMATION

Silver nanoparticles formation–based colorimetric determination of reducing sugars in food extracts *via* Tollens' reagent

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Solid phase extraction (SPE) for sample clean-up

SPE cartridges (C18 and polyamide) were used to remove phenolics and other interferents of complex samples to clean up sugars. This process consists of two steps. At the first step for eliminating phenolic compounds, 4 mL of sample was passed through a C18 SPE cartridge, previously conditioned with 4 mL 80% MeOH (v/v) and then equilibrated with 4 mL water. Phenolic compounds (basically flavonoids) in the sample were retained on the column while sugars passed. The cartridge was then washed with 4 mL of water. The column effluent and wash water were combined. This solution contained sugars and other unretained components. At the second step, the combined solution was passed through a polyamide SPE cartridge in order to retain other phenolics not held by the C18 column. Thus sugars were set free from all phenolic compounds after two column separations with respect to polarity differences. The phenolic compounds can be separately determined (if desired) by elution from the two SPE cartridges with the use of 80% methanol aqueous solution. All these procedures summarized in Figure S-1 were applied to both natural mixtures and synthetic samples.

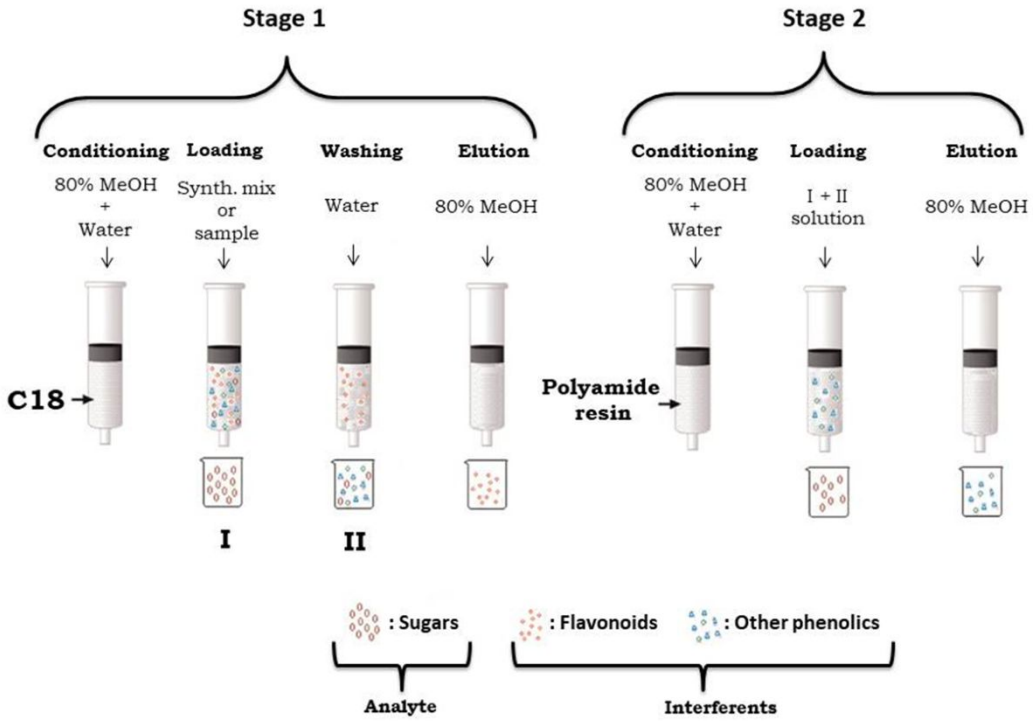

Figure S-1. Schematic presentation of SPE clean-up process for sugar analysis in the presence of phenolics as possible interferents.

Table S-1. Statistical comparison (at 95% confidence level) of the proposed method with the reference alkaline CUPRAC method for glucose (1.80 mg L^{-1}) and milk samples (declared sugar content 4.60 g per 100 mL) determination.

Sample	Parameter	Proposed method		Reference alkaline CUPRAC method
Glucose standards	Number of samples	7		7
	Average	1.89		1.82
	Standard deviation	3.3		1.6
	Variance	10.89		2.56
	Degrees of freedom		12	
	$t_{experimental}$		0.050	
	$t_{critical}$		2.179	
	$F_{experimental}$		4.253	
	$F_{critical}$		4.284	
Milk	Number of samples	5		5
	Average	3.92		4.10
	Standard deviation	1.70		1.60
	Variance	2.89		2.56
	Degrees of freedom		8	
	$t_{experimental}$		0.172	
	$t_{critical}$		2.306	
	$F_{experimental}$		1.128	
	$F_{critical}$		6.390	

Table S-2. Total reducing sugar content (as mg glucose eq. per L) of synthetic mixtures with respect to the proposed method.

Sample	Expected	Before SPE	After SPE	Error (%)
Synth mix 1	27	53.06	28.15	(+4.2)
Sugar mix 1	27		26.32	(–2.5)
Synth mix 2	18	29.96	17.57	(–2.4)
Sugar mix 2	18		18.36	(+2.0)
Synth mix 3	18	50.37	18.16	(+0.8)
Sugar mix 3	18		17.31	(–4.8)

Table S-3. Total reducing sugar content (as g glucose eq. per 100 mL) of studied samples, including the declared and found values by proposed and reference methods.

Sample	Proposed method	Alkaline CUPRAC	Declared
UHT Whole milk	3.98	4.1	4.7
Apricot-apple juice	10.3	10.6	9.10
Honey	73.7	71.9	82.3

[a] Honey results expressed as (g glucose eq. 100 g^{-1})