Supplementary Material

Magnetic molecularly imprinted conducting polymer for determination of praziquantel enantiomers in milk

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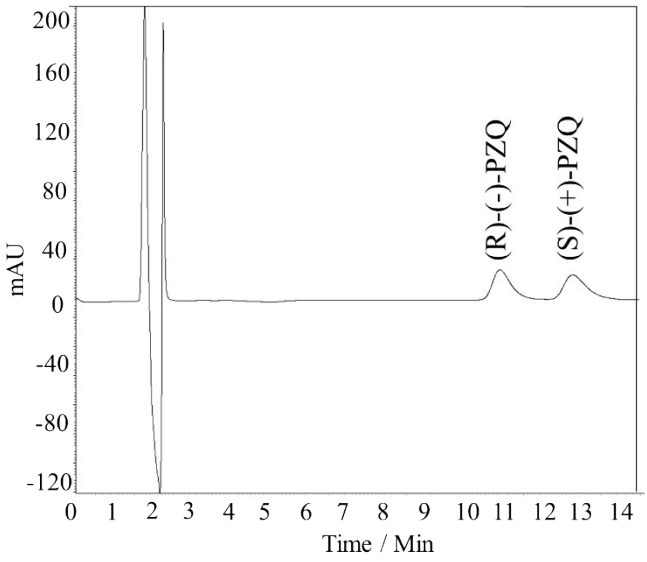

Figure S1. Chromatogram of the enantioseparation of PZQ at the concentration of 10 μg mL^{-1}, at 25 ° C, mobile phase consisting of ultrapure water: tetrahydrofuran: diethylamine (65: 35: 0.05, v/v/v), flow rate of 1.0 mL min^{-1}, injection volume of 20 μL, Chiralpak® IB column (150 mm × 4.6 mm, 5 μm) and λ = 270 nm.

Table S1. Chromatographic parameters obtained for the enantioseparation of PZQ.

Parameters	**(*R*)-(-)-PZQ**	**(*S*)-(+)-PZQ**
Tr (min)	10.89	12.76
k	5.41	6.51
α	-	1.20
Area (RSD %)	5.45	3.66
N	2754	2424
Rs	-	2.00
Fa	1.25	1.39

Tr, retention time; *k*, retention factor (where t_m = 1.72 min is defined as the first significant disturbance of the baseline, corresponds to the retention time of a non-retained analyte); *α*, separation factor; Area (RSD,%) relative standard deviation for the retention time of analytes expressed as a percentage; *N*, theoretical plates; *Rs*, resolution; *Fa*, asymmetry factor.

Table S2. Optimized conditions for MSPE.

Parameters	Optimized conditions
Washing solvent	no washing
Elution solvent	acetonitrile
Amount of MMIPPy	75 mg
Sample volume	1000 μL
Eluent volume	500 μL
pH of sample	6.5
Reuse	2×

Table S3. Precision and accuracy of the analytical method developed for determination of PZQ enantiomers in sheep milk samples.

	(*R*)-(-)-PZQ			(*S*)-(+)-PZQ		
Nominal concentration (μgmL^{-1})	**1.70**	**5.00**	**8.40**	**1.70**	**5.00**	**8.40**
Intra-day (n[a] = 6)						
Analyzed concentration (μg mL^{-1})	1.63	5.23	8.23	1.86	4.51	8.33
Precision (RSD, %)[b]	3.33	3.39	2.27	10.21	1.28	4.54
Relative error (RE, %)[c]	-3.71	4.61	-2.02	9.72	-9.74	-0.86
Inter-day (n[a] = 3)						
Analyzed concentration (μg mL^{-1})	1.59	5.28	8.71	1.91	4.40	8.52
Precision (RSD, %)[b]	2.06	0.66	6.69	1.90	2.65	2.81
Relative error (RE, %)[c]	-6.35	5.24	3.72	12.3	-11.80	1.46

[a] n, number of repetitions; [b] RSD (%), relative standard deviation; [c] RE (%), relative error.

Table S4. Chromatographic separation conditions and variations during robustness test for PZQ enantiomers analysis.

		(*R*)-(-)-PZQ				(*S*)-(+)-PZQ			
Variable	**Variation**	**Conc. (µg mL^{-1})**	**RE[a] (%)**	**RSD[b] (%)**	**p-value[c]**	**Conc. (µg mL^{-1})**	**RE[a] (%)**	**RSD[b] (%)**	**p-value[c]**
Flow rate (mL min $^{-1}$)	0.95	44.26	10.65	14.90	0.854	37.86	-5.35	3.60	0.164
	1.00	44.14	10.34	4.43		38.34	-4.15	1.19	
	1.05	45.24	13.11	8.05		34.26	-14.35	11.19	
Mobile phase composition (%)	63/37	44.39	10.98	10.64	0.847	35.98	-10.05	8.76	0.332
	65/35	44.14	10.34	4.43		38.34	-4.15	1.19	
	67/33	42.57	6.42	11.01		39.81	-0.48	10.35	
Volume of injection (µL)	20	40.69	1.73	5.75	0.101	34.94	-12.66	11.06	0.154
	30	44.74	11.85	2.33		41.14	2.84	4.74	
	40	44.14	10.34	4.43		38.34	-4.15	1.19	
HPLC model	1260	44.14	10.34	4.43	0.945	38.34	-4.15	1.19	0.571
	1290	43.93	9.81	10.09		38.15	-4.62	0.59	

[a] RE (%), mean relative error of six replicates; [b]RSD (%), mean relative standard deviation of six replicates; [c] Level of significance of $p < 0.05$.

Table S5. Stability test of the methods of analysis of PZQ enantiomers in sheep milk samples.

Test	(*R*)-(-)-PZQ		(*S*)-(+)-PZQ	
	RSD (%)	***p*-value**	**RSD (%)**	***p*-value**
12 h room temperature(n = 6)				
1.7 μg mL^{-1}	8.52	0.3113	5.45	0.0957
8.4 μg mL^{-1}	5.37	0.0820	6.24	0.3180
Freeze-thaw cycle(n = 6)				
1.7 μg mL^{-1}	7.87	0.1622	8.83	0.8893
8.4 μg mL^{-1}	3.06	0.3805	3.58	0.6975