

Supporting Information

Molecularly Imprinted Polymer Coupled with High-Performance Liquid Chromatography-UV for the Determination of Albendazole in Plasma and Urine Samples: CCD-RSM Design

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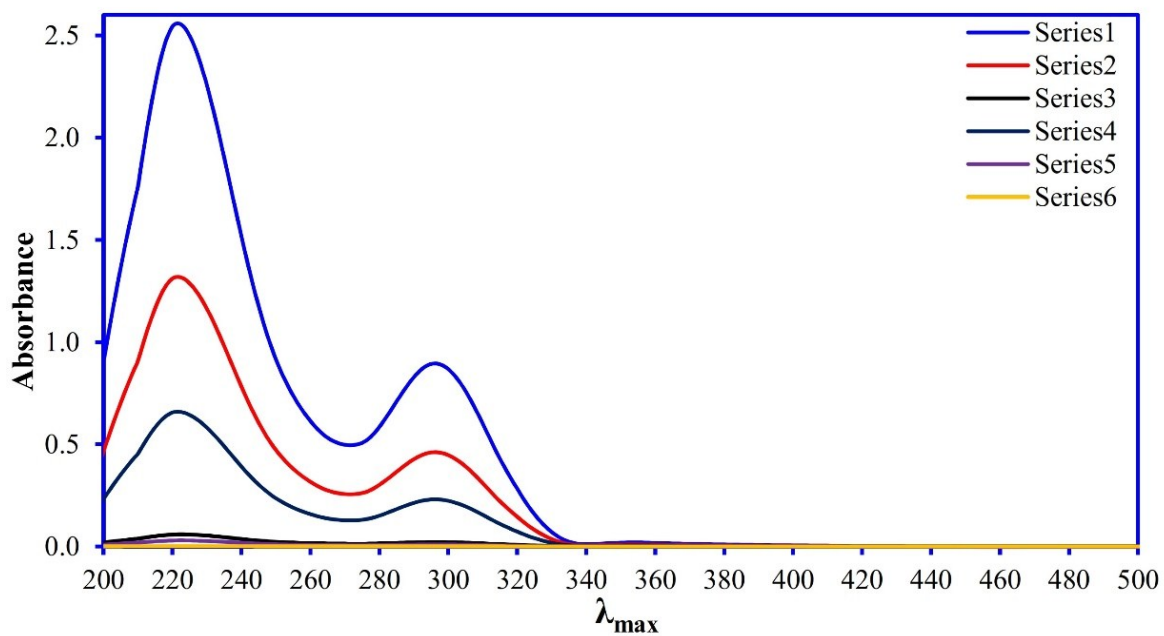


Fig. S1. Absorption spectra of ABZ in methanol/acetic acid after its removal from MIPNPs.

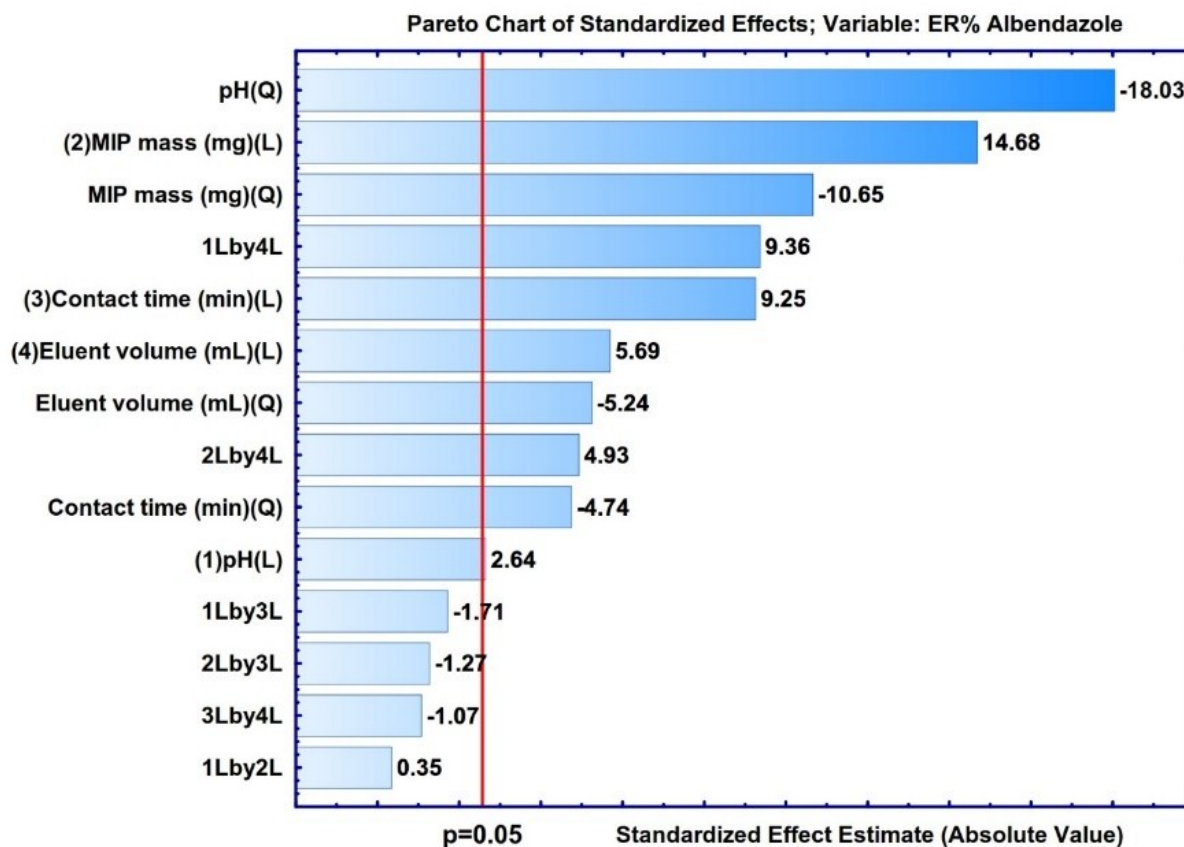


Fig. S2. Pareto chart showing the standardized effect of independent variables and their interaction on ABZ recovery.

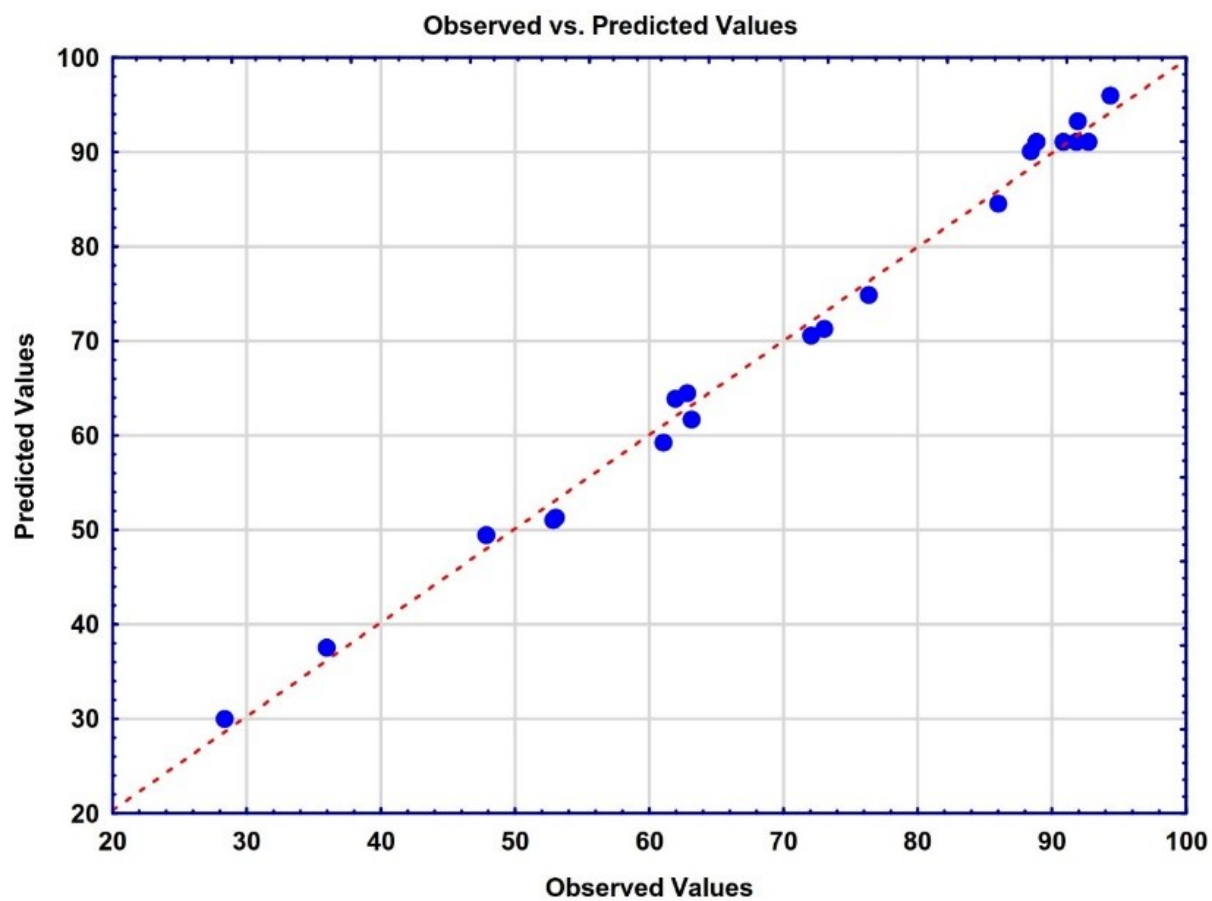


Fig. S3. Observed versus predicted ABZ (%) recovery values.

Table S1. Small CCD matrix for five test variables in un-coded units along with the observed and predicted response recovery of the ABZ.

Factors	Unit	Code	Levels				
			-α	Low (-1)	Center (0)	High (+1)	+α
pH	-	X ₁	3.0	5.0	7.0	9.0	11.0
MIP mass	mg	X ₂	5.0	10.0	15	20	25
Sonication time	min	X ₃	0.50	2.50	4.50	6.50	8.50
Eluent volume	mL	X ₄	0.10	0.20	0.30	0.40	0.50
Run	Factors				ER% ABZ		
Order	X ₁	X ₂	X ₃	X ₄	Experimental ^a	Predicted ^b	
1	9.0	20.0	6.5	0.2	63.17	61.70	
2	9.0	20.0	2.5	0.2	53.04	51.27	
3	9.0	10.0	6.5	0.4	72.06	70.59	
4	5.0	20.0	2.5	0.4	73.03	71.26	
5	9.0	10.0	2.5	0.4	61.04	59.27	
6	5.0	10.0	6.5	0.2	76.34	74.87	
7	5.0	20.0	6.5	0.4	86.03	84.56	
8	5.0	10.0	2.5	0.2	52.82	51.06	
9	3.0	15.0	4.5	0.3	35.95	37.56	
10	11.0	15.0	4.5	0.3	47.84	49.45	
11	7.0	5.0	4.5	0.3	28.35	29.96	
12	7.0	25.0	4.5	0.3	94.36	95.97	
13	7.0	15.0	0.5	0.3	61.94	63.85	
14	7.0	15.0	8.5	0.3	91.95	93.27	
15	7.0	15.0	4.5	0.1	62.84	64.46	
16	7.0	15.0	4.5	0.5	88.44	90.06	
17	7.0	15.0	4.5	0.3	88.84	91.06	
18	7.0	15.0	4.5	0.3	92.73	91.06	
19	7.0	15.0	4.5	0.3	91.84	91.06	
20	7.0	15.0	4.5	0.3	90.85	91.06	

^a Experimental values of response.

^b Predicted values of response by RSM proposed model.

Table S2. Analysis of variance of the regression parameters of the predicted response surface quadratic model.

Source	Sum of square	Degree of freedom	Mean of square	F-value	P-value
Model	7660.80	14	547.20	54.11	0.0002
X_1	70.69	1	70.69	6.99	0.0458
X_2	2178.70	1	2178.70	215.43	< 0.0001
X_3	865.65	1	865.65	85.60	0.0002
X_4	327.68	1	327.68	32.40	0.0023
X_1X_2	1.22	1	1.22	0.12	0.7426
X_1X_3	29.51	1	29.51	2.92	0.1483
X_1X_4	885.30	1	885.30	87.54	0.0002
X_2X_3	16.26	1	16.26	1.61	0.2607
X_2X_4	245.67	1	245.67	24.29	0.0044
X_3X_4	11.58	1	11.58	1.14	0.3336
X_1^2	3289.40	1	3289.40	325.26	< 0.0001
X_2^2	1148.10	1	1148.10	113.52	0.0001
X_3^2	227.41	1	227.41	22.49	0.0051
X_4^2	277.31	1	277.31	27.42	0.0034
Residual	50.57	5	10.11		
Lack-of-Fit	42.20	2	21.10	7.56	0.0673
Pure error	8.37	3	2.79		
Cor. Total	7711.30	19			

Table S3. Analytical performance data for ABZ in urine samples by the UA-D- μ -SPE-HPLC-UV method

Parameter	Analytical feature
Limit of detection (LOD) (ng mL ⁻¹)	1.46
limit of quantification (LOQ) (ng mL ⁻¹)	4.86
Linear range (ng mL ⁻¹)	10.0-6000
RSD (%)	1.43-5.21
Preconcentration factor (PF)	60.0
Enrichment factor (EF)	89.97