

Supplementary

Zeolite H-Beta as a Dispersive Solid-Phase Extraction Sorbent for the Determination of Eight Neonicotinoid Insecticides Using Ultra-High-Performance Liquid Chromatography—Tandem Mass Spectrometry

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Table S1. Parameters for UHPLC-MS/MS determination and the method performance in linearity, LODs and LOQs.

Neonicotinoid Insecticides	Compound Formula	RT (min)	Precursor Ions (m/z)	MRM Transitions (m/z)	CE (eV)	Linear Range (ng/mL)	Regression Equation	R ²	LODs/LOQs	
									Water (ng/mL)	Honey (ng/g)
Acetamiprid	C ₁₀ H ₁₁ ClN ₄	4.06	223.0	126.0/99.0	36/41	1.0–100	y=2.08×10 ⁸ x+5.38×10 ⁴	0.9995	0.05/0.1	0.5/1.0
Clothianidin	C ₆ H ₈ ClN ₅ O ₂ S	3.90	250.0	169.1/132.0	18/19	1.0–100	y=4.89×10 ⁷ x + 1.13×10 ⁴	0.9999	0.1/0.2	1.0/2.0
Dinotefuran	C ₇ H ₁₄ N ₄ O ₃	3.11	203.1	129.0/157.0	16/31	1.0–100	y=1.49×10 ⁸ x + 8.82×10 ⁴	0.9982	0.1/0.2	1.0/2.0
Flonicamid	C ₉ H ₆ F ₃ N ₃ O	3.51	230.0	203.0/148.0	14/36	1.0–100	y=5.92×10 ⁶ x – 2.91×10 ³	0.9984	0.1/0.2	1.0/2.0
Imidacloprid	C ₉ H ₁₀ ClN ₅ O ₂	3.88	256.1	175.0/209.0	24/20	1.0–100	y=5.03×10 ⁷ x – 8.00×10 ³	0.9999	0.05/0.1	0.5/1.0
Imidaclothiz	C ₇ H ₈ ClN ₅ O ₂ S	3.98	262.1	181.1/122.0	31/38	1.0–100	y=3.47×10 ⁷ x + 3.49×10 ³	0.9999	0.1/0.2	1.0/2.0
Thiacloprid	C ₁₀ H ₉ ClN ₄ S	4.22	253.1	126.1/99.1	27/17	1.0–100	y=3.00×10 ⁸ x + 1.71×10 ⁵	0.9986	0.05/0.1	0.5/1.0
Thiamethoxam	C ₈ H ₁₀ ClN ₅ O ₃ S	3.58	292.0	211.0/181.0	24/33	1.0–100	y=8.59×10 ⁷ x + 1.07×10 ⁴	0.9999	0.1/0.2	1.0/2.0

Table S2. The detailed information of honey and bottled water.

Sample No.	Brand/Manufacture No.	Ingredient	Place of Origin
1	H-1	Honey	Hangzhou City, Zhejiang Province
2	H-2	Native honey	Hangzhou City, Zhejiang Province
3	H-3	Acacia honey	Fengxian District, Shanghai
4	H-4	Honey	Dongcheng District, Beijing
5	H-3	Acacia honey	Fengxian District, Shanghai

6	H-5	Jinghua honey, Huaixiang honey	Langfang City, Hebei Province
7	H-6	Multi-flowered (mixed) honey	Quzhou City, Zhejiang Province
8	H-4	Mature Chinese wolfberry honey	Dongcheng District, Beijing
9	H-5	Tilia honey, acacia honey, mountain flower honey, rape honey	Jiamusi, Heilongjiang
10	H-6	Tilia honey	Quzhou City, Zhejiang Province
11	H-3	Acacia honey	Fengxian District, Shanghai
12	H-7	Acacia honey	Nanjing City, Jiangsu Province
13	H-8	Native honey	Taihang Mountain in Henan Province
14	H-9	Tilia honey	Fengxian District, Shanghai
15	H-10	Honey	Kunming City, Yunnan Province
16	H-11	Native honey	Weifang City, Shandong Province
17	H-12	Native honey	Huanggang City, Hubei Province
18	H-13	Native honey	Huanggang City, Hubei Province
19	H-14	Honey and Honeycomb	Henan Province
20	H-15	Native honey	Dingzhou City, Hebei Province
21	H-16	Natural royal jelly	Anyang City, Henan Province
22	H-17	Native honey	Weifang City, Shandong Province
23	H-18	Native honey	Quzhou City, Zhejiang Province
24	H-19	Natural royal jelly	Kaifeng City, Henan Province
25	W-1	Packaged drinking water	Hangzhou City, Zhejiang Province
26	W-2	Drinking natural mineral water	Guangzhou City, Guangdong Province
27	W-3	Purified drinking water	Shenzhen City, Guangdong Province
28	W-4	Purified drinking water	Shenzhen City, Guangdong Province
29	W-5	Natural water	Hangzhou City, Zhejiang Province
30	W-6	Packaged drinking water	Tonglu County, Zhejiang Province
31	W-7	Natural mineral water	Wuhan City, Hubei Province
32	W-3	Drinking natural mineral water	Shenzhen City, Guangdong Province
33	W-8	Natural mineral water	Hangzhou City, Zhejiang Province
34	W-9	Drinking natural mineral water	Guangzhou City, Guangdong Province
35	W-10	Packaged drinking water	Pudong District, Shanghai

Table S3. Recoveries, intra- and interday precisions of eight neonicotinoid insecticides in bottled waters and honey products.

Compounds	Bottled Waters				Honey Products			
	Spiked levels (ng/mL)	Recoveries (%)	Intra-RSDs (%)	Inter-RSDs (%)	Spiked levels (ng/g)	Recoveries (%)	Intra-RSDs (%)	Inter-RSDs (%)
Acetamiprid	0.2	79.1	1.9	4.5	2.0	80.7	5.5	7.3
	1.0	85.4	6.1	1.5	10	87.1	1.7	6.5
	10.0	78.7	0.9	1.8	100	80.3	6.9	3.3
Clothianidin	0.2	95.2	0.1	0.9	2.0	99.0	6.6	1.2
	1.0	100.6	1.5	3.7	10	104.6	3.0	6.4
	10.0	91.4	5.4	5.8	100	95.1	6.5	4.0
Dinotefuran	0.2	87.1	3.6	5.3	2.0	91.5	2.4	0.8

	1.0	101.6	6.8	2.4	10	106.7	0.7	5.8
	10.0	101.0	6.3	2.4	100	106.1	4.8	3.5
Flonicamid	0.2	101.4	1.1	1.5	2.0	106.5	2.7	7.4
	1.0	102.9	4.3	4.4	10	108.0	4.2	0.6
	10.0	94.2	0.2	4.7	100	98.9	1.4	6.3
Imidacloprid	0.2	92.3	4.7	3.4	2.0	106.1	4.6	4.4
	1.0	90.9	4.8	0.9	10	104.5	5.4	5.9
	10.0	94.3	1.7	7.8	100	108.4	4.6	1.5
Imidaclothiz	0.2	94.4	2.7	5.6	2.0	103.8	4.6	2.7
	1.0	96.4	0.2	4.3	10	106.0	7.1	1.5
	10.0	93.0	0.9	0.7	100	102.3	4.4	3.8
Thiacloprid	0.2	78.8	6.8	0.3	2.0	70.9	6.8	7.5
	1.0	81.6	2.1	1.0	10	73.4	2.0	4.6
	10.0	84.6	2.4	0.5	100	76.1	5.7	4.6
Thiamethoxam	0.2	93.9	5.5	4.0	2.0	104.2	5.1	6.3
	1.0	96.0	6.0	6.0	10	106.6	0.5	3.4
	10.0	93.2	2.0	3.8	100	103.5	7.7	1.6