

# Supplementary Materials: Fe<sub>3</sub>O<sub>4</sub>@COF(TAPT-DHTA) nanocomposites as magnetic solid-phase extraction adsorbents for simultaneous determination of 9 mycotoxins in fruits by UHPLC-MS/MS

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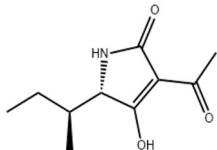
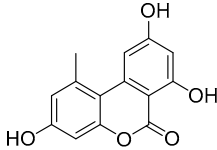
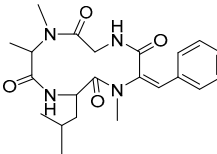
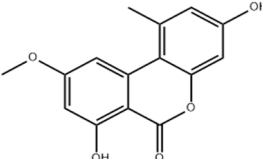
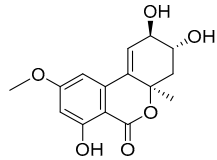
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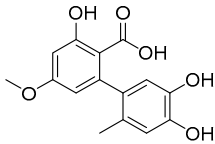
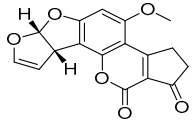
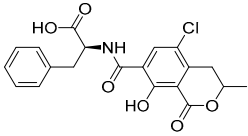
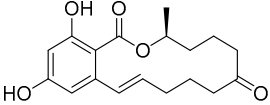
Figure S2. Comparison of the purification efficiency of 9 mycotoxins in the spiked tomato sample by 8 candidate elution solutions

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Figure S4. MRM chromatography of 9 mycotoxins in (A)solvent standard solution and (B) matrix standard solution ( $100 \mu\text{g kg}^{-1}$ ).

**Table S1.** Structure and physicochemical parameters of 9 mycotoxins

Mycotoxins	Structure	Molecular weight	pKa	Molecular Formula	Hydrogen Bond Donor Count	Hydrogen Bond Acceptor Count
Tenuazonic acid (TeA)		197.23	4.50±1.00	C <sub>10</sub> H <sub>15</sub> NO <sub>3</sub>	2	3
Alternariol (AOH)		258.23	7.16±0.20	C <sub>14</sub> H <sub>10</sub> O <sub>5</sub>	3	5
Tentoxin (TEN)		414.50	–	C <sub>22</sub> H <sub>30</sub> N <sub>4</sub> O <sub>4</sub>	2	4
Alternariol monomethyl ether (AME)		272.25	7.00±0.20	C <sub>15</sub> H <sub>12</sub> O <sub>5</sub>	2	5
Altenuene (ALT)		292.28	7.41±0.70	C <sub>15</sub> H <sub>16</sub> O <sub>6</sub>	3	6

Mycotoxins	Structure	Molecular weight	pKa	Molecular Formula	Hydrogen Bond Donor Count	Hydrogen Bond Acceptor Count
Altenusin (ALS)		290.27	3.08±0.34	C <sub>15</sub> H <sub>14</sub> O <sub>6</sub>	4	6
Aflatoxin B <sub>1</sub> (AFB <sub>1</sub> )		312.27	–	C <sub>17</sub> H <sub>12</sub> O <sub>6</sub>	0	6
Ochratoxin A (OTA)		403.81	3.40±0.10	C <sub>20</sub> H <sub>18</sub> ClNO <sub>6</sub>	3	6
Zearalenone (ZEN)		318.40	7.58±0.40	C <sub>18</sub> H <sub>22</sub> O <sub>5</sub>	2	5

**Table S2.** Mass spectrometry parameters of 9 mycotoxins

Mycotoxins	Precursor Ions (m/z)	Retention time (min)	Product Ions (m/z)	Dwell Time (s)	Cone Voltage (V)	Collision Energy (eV)
TeA	198.1 [M+H] <sup>+</sup>	1.75	153.1058 <sup>a</sup>	0.005	42	16
			125.0214 <sup>b</sup>	0.005	42	12
AOH	259.0 [M+H] <sup>+</sup>	4.45	185.1184 <sup>a</sup>	0.005	64	28
			213.1284 <sup>b</sup>	0.005	64	24
AME	273.0 [M+H] <sup>+</sup>	5.65	258.0000 <sup>a</sup>	0.012	54	26
			128.0600 <sup>b</sup>	0.012	54	25
ALT	292.9 [M+H] <sup>+</sup>	3.64	257.0693 <sup>a</sup>	0.005	30	14
			275.0738 <sup>b</sup>	0.005	30	8
TEN	415.5 [M+H] <sup>+</sup>	4.76	132.1335 <sup>a</sup>	0.005	14	34
			256.2291 <sup>b</sup>	0.005	14	34
ALS	288.8 [M-H] <sup>-</sup>	2.62	245.0728 <sup>a</sup>	0.005	8	20
			230.0566 <sup>b</sup>	0.005	45	17
AFB <sub>1</sub>	313.2 [M+H] <sup>+</sup>	3.78	241.1575 <sup>a</sup>	0.009	74	36
			284.9710 <sup>b</sup>	0.009	74	22
OTA	404.3 [M+H] <sup>+</sup>	4.28	239.0344 <sup>a</sup>	0.005	30	34
			221.0280 <sup>b</sup>	0.005	30	22

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ZEN	317.2 [M-H] <sup>-</sup>	5.33	175.0464 <sup>a</sup>	0.012	56	26
			131.0360 <sup>b</sup>	0.012	56	24

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<sup>a</sup> quantitation ion; <sup>b</sup> qualifier ions

**Table S3.** Significance analysis of adsorbed solution

Mycotoxins	Adsorption Solution (Recovery±SD %)					
	0%	1%	2%	3%	4%	5%
TeA	67.88±4.55 <sup>b</sup>	82.77±5.31 <sup>a</sup>	61.51±6.51 <sup>bc</sup>	56.64±3.63 <sup>cd</sup>	58.52±6.02 <sup>c</sup>	48.81±2.21 <sup>d</sup>
AOH	74.06±3.15 <sup>b</sup>	104.18±3.60 <sup>a</sup>	69.66±1.62 <sup>bc</sup>	74.10±5.59 <sup>b</sup>	67.32±6.41 <sup>bc</sup>	61.48±4.60 <sup>c</sup>
AME	81.23±10.28 <sup>b</sup>	99.62±5.91 <sup>a</sup>	80.73±11.58 <sup>b</sup>	79.31±4.54 <sup>b</sup>	54.19±6.29 <sup>c</sup>	40.48±5.12 <sup>c</sup>
TEN	69.31±5.76 <sup>b</sup>	87.71±12.93 <sup>a</sup>	42.84±2.48 <sup>c</sup>	34.68±3.93 <sup>cd</sup>	28.26±4.66 <sup>de</sup>	20.79±2.74 <sup>e</sup>
ALT	65.74±3.22 <sup>b</sup>	87.50±8.3 <sup>a</sup>	34.76±1.79 <sup>c</sup>	28.58±4.6 <sup>cd</sup>	25.53±1.18 <sup>d</sup>	20.71±1.57 <sup>d</sup>
ALS	63.29±4.93 <sup>b</sup>	85.81±12.76 <sup>a</sup>	53.21±6.89 <sup>b</sup>	33.83±3.17 <sup>c</sup>	20.70±2.87 <sup>d</sup>	15.47±2.86 <sup>d</sup>
AFB <sub>1</sub>	74.50±7.50 <sup>ab</sup>	79.15±9.81 <sup>ab</sup>	81.32±8.69 <sup>a</sup>	72.99±9.95 <sup>ab</sup>	64.18±9.76 <sup>bc</sup>	55.54±5.03 <sup>c</sup>
OTA	87.73±3.66 <sup>a</sup>	90.71±2.66 <sup>a</sup>	79.62±4.22 <sup>ab</sup>	79.86±14.06 <sup>ab</sup>	60.09±11.08 <sup>bc</sup>	46.78±8.03 <sup>c</sup>
ZEN	77.34±2.40 <sup>bc</sup>	95.94±6.18 <sup>a</sup>	91.45±5.87 <sup>ab</sup>	85.69±10.75 <sup>ab</sup>	65.70±12.43 <sup>cd</sup>	54.05±4.43 <sup>d</sup>

**Table S4.** Significance analysis of pH value of adsorbed solution

Mycotoxins	pH of Adsorption Solution (Recovery±SD %)					
	pH=3	pH=4	pH=5	pH=6	pH=7	pH=8
TeA	62.15±10.15 <sup>b</sup>	83.01±4.11 <sup>a</sup>	61.26±7.34 <sup>b</sup>	54.28±2.44 <sup>bc</sup>	48.93±3.32 <sup>c</sup>	50.50±2.89 <sup>c</sup>
AOH	83.49±7.06 <sup>ab</sup>	95.99±7.95 <sup>a</sup>	94.92±1.23 <sup>a</sup>	83.86±4.26 <sup>ab</sup>	79.01±8.35 <sup>ab</sup>	71.14±1.11 <sup>b</sup>
AME	94.96±7.36 <sup>a</sup>	104.51±5.25 <sup>a</sup>	83.36±4.24 <sup>ab</sup>	66.26±0.87 <sup>bc</sup>	51.31±11.75 <sup>c</sup>	47.87±11.26 <sup>c</sup>
TEN	74.34±5.19 <sup>b</sup>	89.95±6.48 <sup>a</sup>	92.88±4.96 <sup>a</sup>	81.03±2.08 <sup>ab</sup>	54.14±1.31 <sup>c</sup>	50.55±4.46 <sup>c</sup>
ALT	57.45±3.82 <sup>b</sup>	87.64±9.59 <sup>a</sup>	68.03±1.13 <sup>b</sup>	68.52±8.17 <sup>b</sup>	67.94±3.59 <sup>b</sup>	62.89±11.75 <sup>b</sup>
ALS	64.06±9.09 <sup>b</sup>	82.81±4.02 <sup>a</sup>	83.79±1.88 <sup>a</sup>	63.01±5.34 <sup>b</sup>	54.50±0.88 <sup>c</sup>	51.20±1.70 <sup>c</sup>
AFB <sub>1</sub>	57.98±1.04 <sup>b</sup>	76.42±3.92 <sup>a</sup>	55.95±0.70 <sup>b</sup>	39.09±0.62 <sup>c</sup>	39.30±3.25 <sup>c</sup>	36.93±4.58 <sup>c</sup>
OTA	50.43±3.84 <sup>b</sup>	88.29±0.93 <sup>a</sup>	53.94±0.62 <sup>b</sup>	39.42±1.07 <sup>c</sup>	41.15±5.64 <sup>c</sup>	28.23±1.07 <sup>d</sup>
ZEN	63.94±3.70 <sup>b</sup>	92.12±6.32 <sup>a</sup>	62.07±5.13 <sup>b</sup>	40.19±2.91 <sup>c</sup>	34.67±3.86 <sup>c</sup>	33.96±0.86 <sup>c</sup>

**Table S5.** Significance analysis of NaCl concentration in adsorbed solution

Mycotoxins	Concentration of NaCl (Recovery±SD %)					
	0 mg mL <sup>-1</sup>	2 mg mL <sup>-1</sup>	4 mg mL <sup>-1</sup>	6 mg mL <sup>-1</sup>	8 mg mL <sup>-1</sup>	10 mg mL <sup>-1</sup>
TeA	85.10±10.52 <sup>a</sup>	76.62±1.64 <sup>b</sup>	67.87±3.04 <sup>c</sup>	62.54±1.39 <sup>c</sup>	59.34±1.33 <sup>c</sup>	49.91±2.48 <sup>d</sup>
AOH	103.11±5.38 <sup>a</sup>	95.00±7.56 <sup>a</sup>	81.63±3.99 <sup>ab</sup>	71.01±2.99 <sup>b</sup>	59.63±3.05 <sup>bc</sup>	43.69±4.25 <sup>c</sup>
AME	100.28±5.87 <sup>a</sup>	95.88±2.09 <sup>a</sup>	61.61±4.72 <sup>b</sup>	54.77±10.44 <sup>bc</sup>	47.84±1.35 <sup>c</sup>	43.84±7.11 <sup>c</sup>
TEN	94.67±6.53 <sup>a</sup>	73.01±5.57 <sup>b</sup>	69.21±1.79 <sup>b</sup>	58.18±4.38 <sup>c</sup>	55.36±3.71 <sup>cd</sup>	47.92±3.30 <sup>d</sup>
ALT	83.22±2.68 <sup>a</sup>	69.68±5.56 <sup>b</sup>	63.43±2.09 <sup>c</sup>	68.46±1.48 <sup>bc</sup>	72.07±4.47 <sup>b</sup>	54.96±0.57 <sup>d</sup>
ALS	84.88±8.35 <sup>a</sup>	75.66±4.23 <sup>a</sup>	60.68±5.88 <sup>b</sup>	55.42±4.90 <sup>b</sup>	54.07±2.97 <sup>b</sup>	59.46±4.12 <sup>b</sup>
AFB <sub>1</sub>	76.83±3.76 <sup>a</sup>	65.97±7.32 <sup>b</sup>	64.89±3.53 <sup>b</sup>	58.69±6.10 <sup>bc</sup>	49.10±1.57 <sup>cd</sup>	43.52±5.01 <sup>d</sup>
OTA	87.43±2.43 <sup>a</sup>	61.69±0.50 <sup>b</sup>	59.38±3.17 <sup>b</sup>	48.51±6.29 <sup>c</sup>	35.55±5.50 <sup>d</sup>	36.71±2.77 <sup>d</sup>
ZEN	94.10±6.01 <sup>a</sup>	62.32±7.32 <sup>b</sup>	49.90±5.80 <sup>c</sup>	41.82±0.72 <sup>cd</sup>	35.48±2.34 <sup>de</sup>	29.85±1.15 <sup>e</sup>

**Table S6.** Significance analysis of Adsorption time

Mycotoxins	Adsorption time (Recovery±SD %)				
	2 min	4 min	6 min	8 min	10 min
TeA	22.73±5.42 <sup>d</sup>	49.39±5.19 <sup>c</sup>	72.92±8.54 <sup>b</sup>	88.30±11.50 <sup>a</sup>	88.79±4.91 <sup>a</sup>
AOH	41.34±5.65 <sup>d</sup>	59.93±4.12 <sup>c</sup>	82.08±7.92 <sup>b</sup>	96.43±4.57 <sup>a</sup>	95.80±7.52 <sup>a</sup>
AME	32.58±2.22 <sup>d</sup>	46.02±2.27 <sup>c</sup>	74.66±1.91 <sup>b</sup>	96.58±1.55 <sup>a</sup>	99.66±4.02 <sup>a</sup>
TEN	31.00±1.00 <sup>d</sup>	62.92±1.10 <sup>c</sup>	74.50±8.64 <sup>b</sup>	95.97±0.72 <sup>a</sup>	92.66±8.90 <sup>a</sup>
ALT	53.48±4.49 <sup>b</sup>	76.77±9.62 <sup>a</sup>	88.26±8.01 <sup>a</sup>	85.46±7.79 <sup>a</sup>	93.18±1.74 <sup>a</sup>
ALS	49.84±3.18 <sup>b</sup>	61.23±8.91 <sup>b</sup>	79.39±4.90 <sup>a</sup>	89.42±1.79 <sup>a</sup>	93.76±9.50 <sup>a</sup>
AFB <sub>1</sub>	19.75±11.71 <sup>b</sup>	31.63±6.87 <sup>b</sup>	64.74±0.31 <sup>a</sup>	78.16±2.73 <sup>a</sup>	77.41±4.22 <sup>a</sup>
OTA	49.23±8.70 <sup>c</sup>	65.93±5.84 <sup>b</sup>	72.23±7.82 <sup>b</sup>	91.29±6.68 <sup>a</sup>	86.36±8.04 <sup>a</sup>
ZEN	29.34±1.29 <sup>c</sup>	36.57±1.91 <sup>c</sup>	58.31±5.81 <sup>b</sup>	94.87±7.99 <sup>a</sup>	101.09±5.72 <sup>a</sup>



**Table S7.** Significance analysis of adsorbent amount

Mycotoxins	The amount of adsorbent (Recovery±SD %)				
	10 mg	15 mg	20 mg	25 mg	30 mg
TeA	71.26±4.03 <sup>c</sup>	85.57±4.75 <sup>ab</sup>	90.58±8.38 <sup>a</sup>	88.27±1.05 <sup>ab</sup>	75.02±2.30 <sup>bc</sup>
AOH	59.90±2.87 <sup>d</sup>	69.81±3.21 <sup>c</sup>	96.95±2.56 <sup>a</sup>	72.97±1.18 <sup>bc</sup>	74.39±1.13 <sup>b</sup>
AME	63.38±2.82 <sup>c</sup>	75.14±0.26 <sup>b</sup>	96.49±5.08 <sup>a</sup>	83.07±7.95 <sup>b</sup>	76.78±8.78 <sup>b</sup>
TEN	68.41±3.44 <sup>b</sup>	70.17±1.49 <sup>b</sup>	87.73±6.07 <sup>a</sup>	69.85±0.94 <sup>b</sup>	67.92±0.61 <sup>b</sup>
ALT	68.79±3.66 <sup>c</sup>	75.97±9.37 <sup>bc</sup>	90.63±3.29 <sup>a</sup>	83.79±2.16 <sup>ab</sup>	81.46±2.58 <sup>ab</sup>
ALS	64.40±1.99 <sup>b</sup>	72.28±5.09 <sup>b</sup>	82.32±8.99 <sup>a</sup>	76.08±4.34 <sup>b</sup>	79.34±5.31 <sup>b</sup>
AFB <sub>1</sub>	35.83±0.99 <sup>c</sup>	54.81±0.68 <sup>b</sup>	75.26±0.81 <sup>a</sup>	73.63±1.28 <sup>a</sup>	77.81±6.10 <sup>a</sup>
OTA	45.47±4.09 <sup>b</sup>	48.52±1.38 <sup>b</sup>	83.80±7.59 <sup>a</sup>	72.22±5.67 <sup>a</sup>	76.53±7.57 <sup>a</sup>
ZEN	58.40±6.36 <sup>c</sup>	75.73±0.92 <sup>b</sup>	97.18±11.02 <sup>a</sup>	86.47±3.09 <sup>ab</sup>	84.37±10.31 <sup>ab</sup>

**Table S8.** Significance analysis of elution kinds

Mycotoxins	The kinds of Elution solvent (Recovery±SD %)							
	A	B	C	D	E	F	G	H
TeA	81.93±3.98 <sup>b</sup>	45.03±7.73 <sup>d</sup>	79.90±0.52 <sup>b</sup>	55.31±5.38 <sup>cd</sup>	68.78±1.74 <sup>bc</sup>	72.75±6.43 <sup>b</sup>	106.28±3.42 <sup>a</sup>	66.81±8.84 <sup>bc</sup>
AOH	99.82±9.16 <sup>ab</sup>	103.53±6.22 <sup>ab</sup>	94.33±1.87 <sup>abc</sup>	93.29±6.94 <sup>bc</sup>	81.73±8.30 <sup>cd</sup>	82.12±1.25 <sup>cd</sup>	107.33±5.08 <sup>a</sup>	76.05±2.60 <sup>d</sup>
AME	98.92±6.83 <sup>a</sup>	72.39±2.97 <sup>cde</sup>	70.19±2.47 <sup>de</sup>	75.16±1.97 <sup>cd</sup>	85.18±0.73 <sup>b</sup>	78.83±6.26 <sup>bc</sup>	93.64±6.23 <sup>a</sup>	65.49±2.96 <sup>e</sup>
TEN	91.04±7.38 <sup>a</sup>	66.18±4.34 <sup>d</sup>	74.69±3.87 <sup>cd</sup>	89.22±2.46 <sup>ab</sup>	80.64±0.77 <sup>bc</sup>	78.20±5.03 <sup>c</sup>	83.33±7.55 <sup>abc</sup>	77.78±4.42 <sup>c</sup>
ALT	89.25±2.61 <sup>a</sup>	52.42±8.83 <sup>bcd</sup>	65.96±5.28 <sup>bc</sup>	60.23±5.22 <sup>bc</sup>	64.08±4.38 <sup>b</sup>	47.28±7.59 <sup>cd</sup>	90.35±5.02 <sup>a</sup>	44.5±6.07 <sup>d</sup>
ALS	86.21±3.99 <sup>a</sup>	67.46±3.54 <sup>bc</sup>	76.44±0.72 <sup>ab</sup>	76.22±4.82 <sup>ab</sup>	72.05±1.002 <sup>abc</sup>	38.36±6.47 <sup>d</sup>	86.62±2.75 <sup>a</sup>	58.69±5.44 <sup>c</sup>
AFB <sub>1</sub>	80.86±1.53 <sup>a</sup>	70.52±8.59 <sup>b</sup>	64.74±0.31 <sup>bc</sup>	61.49±2.73 <sup>c</sup>	40.19±2.51 <sup>de</sup>	35.23±0.64 <sup>e</sup>	72.19±8.54 <sup>b</sup>	45.04±0.89 <sup>d</sup>
OTA	87.69±5.48 <sup>a</sup>	71.48±6.72 <sup>bc</sup>	61.12±1.89 <sup>c</sup>	80.18±2.87 <sup>ab</sup>	62.47±2.15 <sup>bc</sup>	43.32±1.42 <sup>d</sup>	87.36±1.42 <sup>a</sup>	44.39±1.85 <sup>d</sup>
ZEN	94.24±3.43 <sup>a</sup>	69.91±1.91 <sup>b</sup>	65.53±0.51 <sup>b</sup>	72.65±4.95 <sup>b</sup>	67.76±5.72 <sup>b</sup>	66.07±0.73 <sup>b</sup>	68.23±8.63 <sup>b</sup>	53.85±7.39 <sup>c</sup>

(A) Methanol, (B) Acetonitrile, (C) Methanol/Formic acid (99/1), (D) Acetonitrile/Formic acid (99/1), (E) Methanol/Acetonitrile/Formic acid (50/49/1), (F) Methanol/Acetonitrile/Ammonium hydroxide (50/49/1), (G) Methanol/Acetonitrile/Formic acid (80/19/1), (H) Methanol/Acetonitrile/Ammonium hydroxide (80/19/1)

**Table S9.** Significance analysis of Elution Volume

	3 mL	9 mL	15 mL
TeA	88.15±7.30 <sup>a</sup>	80.53±3.95 <sup>a</sup>	80.65±7.49 <sup>a</sup>
AOH	99.69±2.73 <sup>a</sup>	84.97±2.63 <sup>a</sup>	93.91±1.66 <sup>a</sup>
AME	96.80±3.02 <sup>a</sup>	104.35±5.29 <sup>a</sup>	98.41±3.92 <sup>a</sup>
TEN	88.99±7.09 <sup>ab</sup>	82.04±3.49 <sup>b</sup>	94.90±2.21 <sup>a</sup>
ALT	83.41±3.99 <sup>a</sup>	71.26±3.24 <sup>a</sup>	67.62±7.81 <sup>a</sup>
ALS	81.39±8.74 <sup>a</sup>	86.55±4.75 <sup>a</sup>	83.93±2.73 <sup>a</sup>
AFB <sub>1</sub>	78.40±5.08 <sup>a</sup>	75.67±0.34 <sup>a</sup>	76.39±1.20 <sup>a</sup>
OTA	88.85±3.48 <sup>a</sup>	89.31±7.16 <sup>a</sup>	81.88±6.15 <sup>a</sup>
ZEN	98.6±5.71 <sup>ab</sup>	103.88±10.15 <sup>a</sup>	84.70±3.06 <sup>b</sup>

**Table S10.** Significance analysis of Elution time

Mycotoxins	Elution time (Recovery±SD %)				
	1 min	2 min	3 min	4 min	5 min
TeA	38.49±3.30 <sup>c</sup>	65.98±2.38 <sup>b</sup>	70.14±3.29 <sup>b</sup>	91.19±1.98 <sup>a</sup>	90.06±2.70 <sup>a</sup>
AOH	42.29±6.55 <sup>c</sup>	76.57±7.40 <sup>b</sup>	103.03±10.37 <sup>a</sup>	101.99±6.40 <sup>a</sup>	99.96±5.85 <sup>a</sup>
AME	48.12±2.97 <sup>c</sup>	64.14±5.67 <sup>b</sup>	99.39±7.20 <sup>a</sup>	103.62±2.06 <sup>a</sup>	100.29±5.14 <sup>a</sup>
TEN	37.85±0.93 <sup>c</sup>	63.64±0.27 <sup>b</sup>	85.58±0.87 <sup>a</sup>	86.26±0.60 <sup>a</sup>	83.34±1.44 <sup>a</sup>
ALT	41.53±4.79 <sup>c</sup>	54.18±5.08 <sup>b</sup>	82.20±2.27 <sup>a</sup>	88.02±7.98 <sup>a</sup>	83.44±6.11 <sup>a</sup>
ALS	40.69±2.85 <sup>b</sup>	65.91±6.75 <sup>a</sup>	72.07±4.50 <sup>a</sup>	80.22±9.80 <sup>a</sup>	81.76±5.85 <sup>a</sup>
AFB <sub>1</sub>	33.26±4.93 <sup>c</sup>	52.23±8.38 <sup>c</sup>	65.50±6.30 <sup>a</sup>	75.08±3.05 <sup>a</sup>	77.34±4.96 <sup>a</sup>
OTA	32.77±1.78 <sup>c</sup>	59.66±6.41 <sup>b</sup>	64.28±7.4 <sup>b</sup>	90.96±1.50 <sup>a</sup>	87.81±3.07 <sup>a</sup>
ZEN	41.35±1.54 <sup>c</sup>	51.78±3.74 <sup>bc</sup>	59.41±2.97 <sup>b</sup>	96.71±8.00 <sup>a</sup>	97.80±3.68 <sup>a</sup>

**Table S11.** Comparison of the Fe<sub>3</sub>O<sub>4</sub>@COF(TAPT-DHTA) based MSPE method developed in this study with the sample pretreatment approaches reported in the previous studies.

Mycotoxins	Matrix	Sorbent	Sample pretreatment	Analytical technique	Adsorption/ Elution time of MSPE (min)	Recovery (%)	LOD (µg kg <sup>-1</sup> )	Ref.
FB <sub>1</sub> , ZON, OTA	maize oil, rapeseed oil, soybean oil	Fe <sub>3</sub> O <sub>4</sub> @nSiO <sub>2</sub> @mSiO <sub>2</sub>	MSPE	UPLC–MS/MS	10/5	89.40-97.10	0.08-1.03	[1]
AFB <sub>1</sub> , AFB <sub>2</sub> , AFG <sub>1</sub> , AFG <sub>2</sub> , OTA, OTB	vegetable oils	PDA@Fe <sub>3</sub> O <sub>4</sub> -MWCNTs	MSPE	HPLC–FLD	10/3	70.15-89.25	0.20-0.50	[2]
AFB <sub>1</sub> , ZON	Wheat flour	Fe <sub>3</sub> O <sub>4</sub> -MWCNTs-NH <sub>2</sub>	MSPE	HPLC	25/15	88.80-96.00	0.15-0.24	[3]
AFB <sub>1</sub> , AFG <sub>1</sub> , STER, ZEN, OTA	licorice	Fe <sub>3</sub> O <sub>4</sub> @PDA/MIL-101(Cr)	MSPE	UHPLC–MS/MS	30/2	78.53-116.28	0.01–0.09	[4]
AOH, AME, TEN, TeA	jujube	MgSO <sub>4</sub> , NaCl	QuEChERS	UPLC–MS/MS		83.50-109.60	0.14-0.26	[5]
AOH, AME, TEN, TeA	tomato, fruit-based products	MgSO <sub>4</sub> , NaCl	QuEChERS	LC–MS/MS		98.80-108.90	0.25-20.00	[6]
AOH, AME, TEN, TeA, ALT	wolfberry	C18	QuEChERS	UPLC–MS/MS		73.80-111.50	0.07-0.24	[7]
9 mycotoxins	Tomato, Strawberry, Watermelon, Melon, Hawthorn	Fe <sub>3</sub> O <sub>4</sub> @COF(TAPT–DHTA)	MSPE	UHPLC–MS/MS	8/4	74.25-111.75	0.01-0.50	This work

**Table S12.** Contamination levels of 9 mycotoxins in five fruits (tomato, strawberry, watermelon, melon, hawthorn)

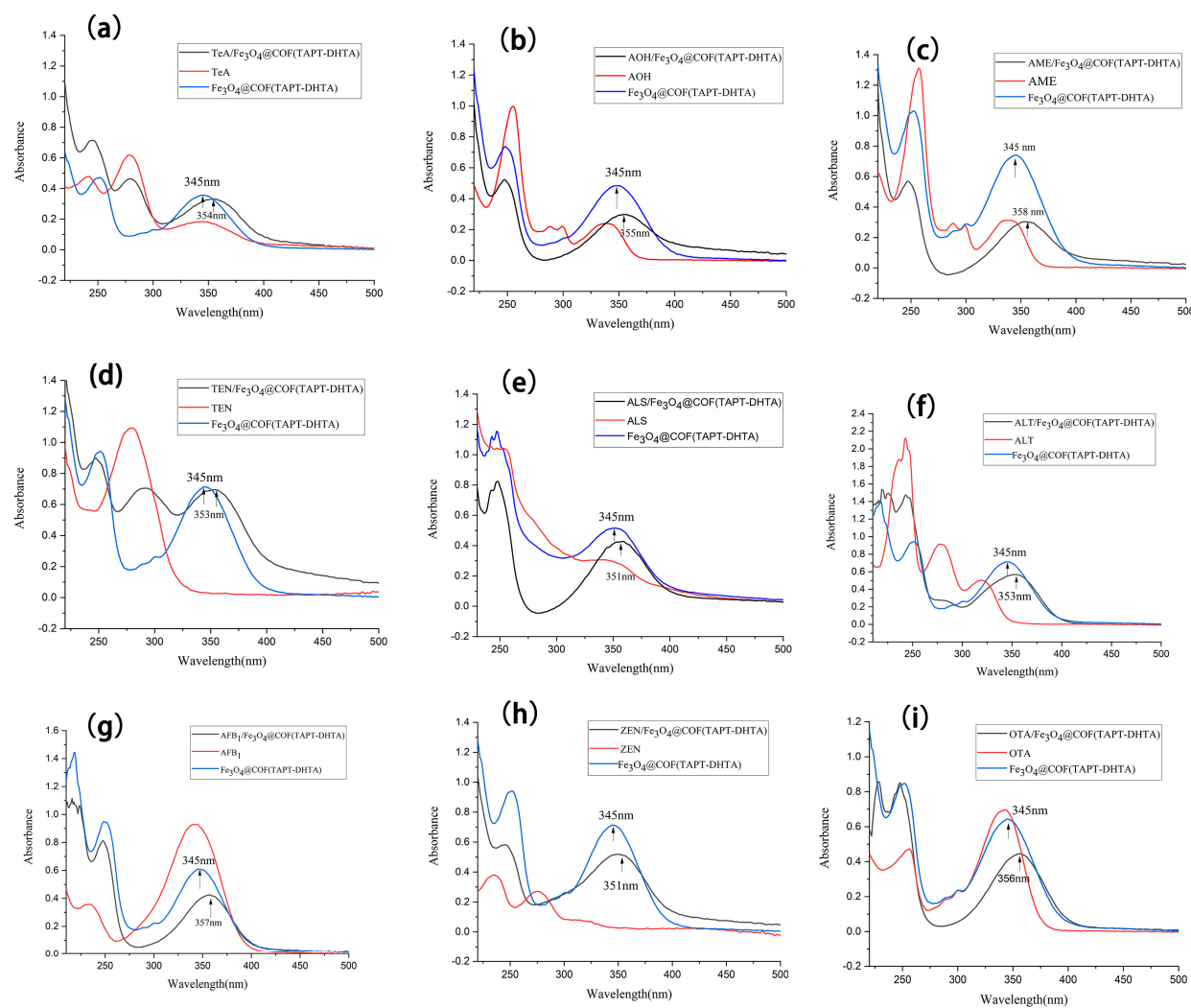
Mycotoxins	Tomato		Strawberry		Watermelon		Melon		Hawthorn	
	Positive/Total samples	Content range ( $\mu\text{g kg}^{-1}$ )	Positive/Total samples	Content range ( $\mu\text{g kg}^{-1}$ )	Positive/Total samples	Content range ( $\mu\text{g kg}^{-1}$ )	Positive/Total samples	Content range ( $\mu\text{g kg}^{-1}$ )	Positive/Total samples	Content range ( $\mu\text{g kg}^{-1}$ )
TeA	10/20	3.8-6.5	9/20	1.9-5.6	0/20	ND <sup>a</sup>	1/20	<LOQ	0/20	ND
AOH	2/20	3.05-4.0	3/20	4.9-20.0	1/20	<LOQ	0/20	ND	5/20	3.7-14.2
AME	0/20	ND	0/20	ND	0/20	ND	1/20	1.4	6/20	10.9-16.8
TEN	1/20	18.2	0/20	ND	0/20	ND	0/20	ND	3/20	0.6-1.3
ALT	8/20	2.2-44.5	11/20	3.4-54.8	5/20	29.5-56.3	10/20	43.4-123.7	9/20	38.8-190.4
ALS	1/20	1.88	3/20	<LOQ	0/20	ND	4/20	1.3-5.9	2/20	4.3-8.1
AFB <sub>1</sub>	0/20	ND	0/20	ND	0/20	ND	0/20	ND	0/20	ND
OTA	0/20	ND	0/20	ND	0/20	ND	0/20	ND	0/20	ND
ZEN	0/20	ND	0/20	ND	0/20	ND	0/20	ND	0/20	ND

<sup>a</sup>: means not detected

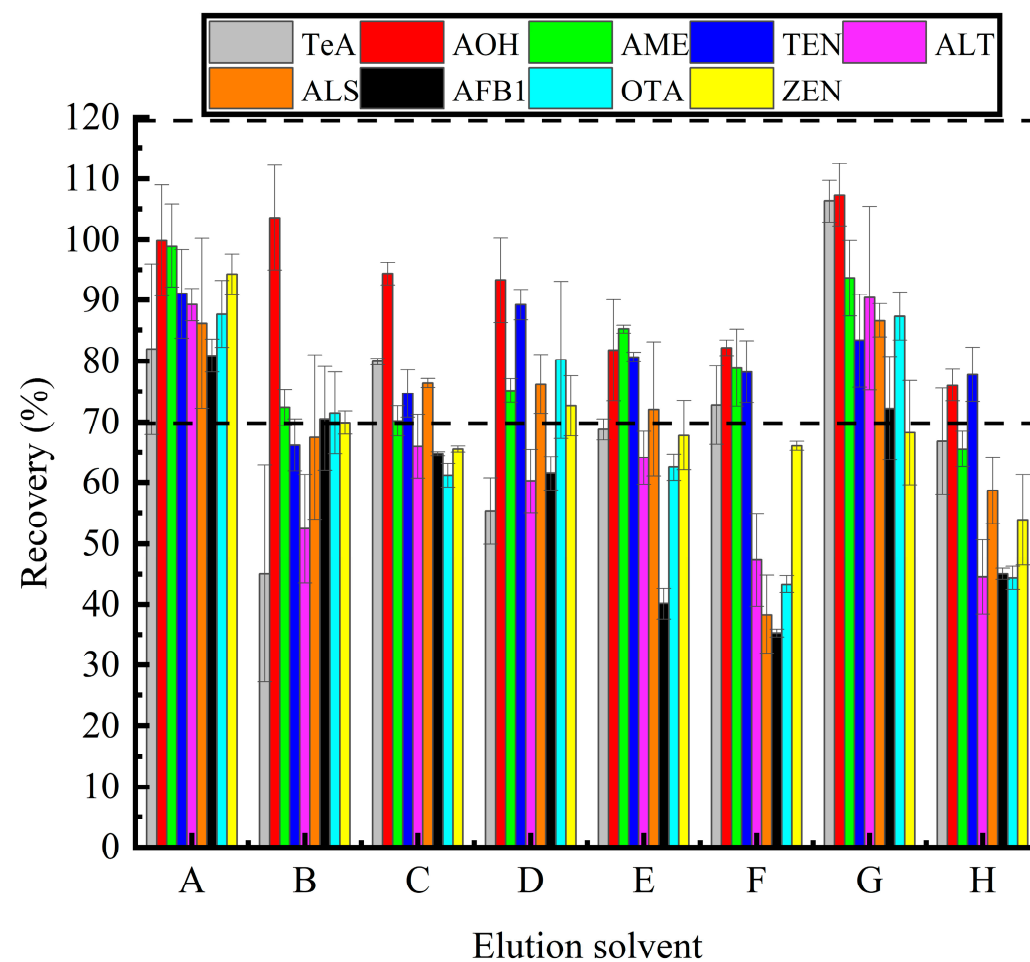
Table S13. Comparison between the developed UHPLC–MS/MS method and the reference methods by using tomato sample No. 7,14 and 20 ( $\mu\text{g kg}^{-1}$ )

	Samples	TeA	AOH	AME	ALT	AFB <sub>1</sub>	OTA	TEN	ALS	ZEN
Current method	7		3.05±0.08 <sup>a</sup>		9.09±0.19 <sup>a</sup>					
	14				7.65±0.27 <sup>a</sup>			18.20±0.26 <sup>a</sup>		
	20				13.79±0.75 <sup>a</sup>				1.88±0.12 <sup>a</sup>	
Reference method*	7		2.89±0.18 <sup>a</sup>		9.28±0.97 <sup>a</sup>					
	14				8.39±0.53 <sup>a</sup>			17.09±1.14 <sup>a</sup>		
	20				13.62±3.06 <sup>a</sup>				2.01±0.53 <sup>a</sup>	

\*Reference method: SN/T 4259-2015



**Figure S1.** UV-Vis spectra of targeted mycotoxins, Fe<sub>3</sub>O<sub>4</sub>@COF(TAPT-DHTA) and mycotoxin/Fe<sub>3</sub>O<sub>4</sub>@COF(TAPT-DHTA)



**Figure S2.** Comparison of the purification efficiency of 9 mycotoxins in the spiked tomato sample by 8 candidate elution solutions, (A) Methanol, (B) Acetonitrile, (C) Methanol/Formic acid (99/1), (D) Acetonitrile/Formic acid (99/1), (E) Methanol/Acetonitrile/Formic acid (50/49/1), (F) Methanol/Acetonitrile/Ammonium hydroxide (50/49/1), (G) Methanol/Acetonitrile/Formic acid (80/19/1), (H) Methanol/Acetonitrile/Ammonium hydroxide (80/19/1)

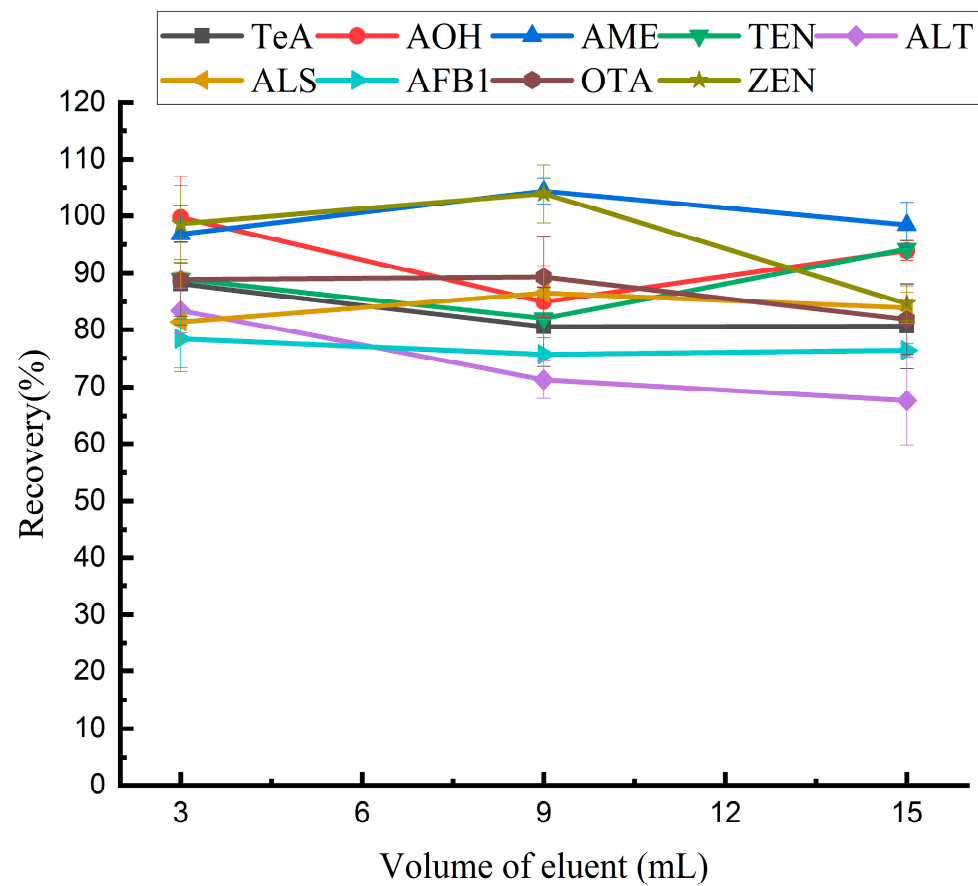
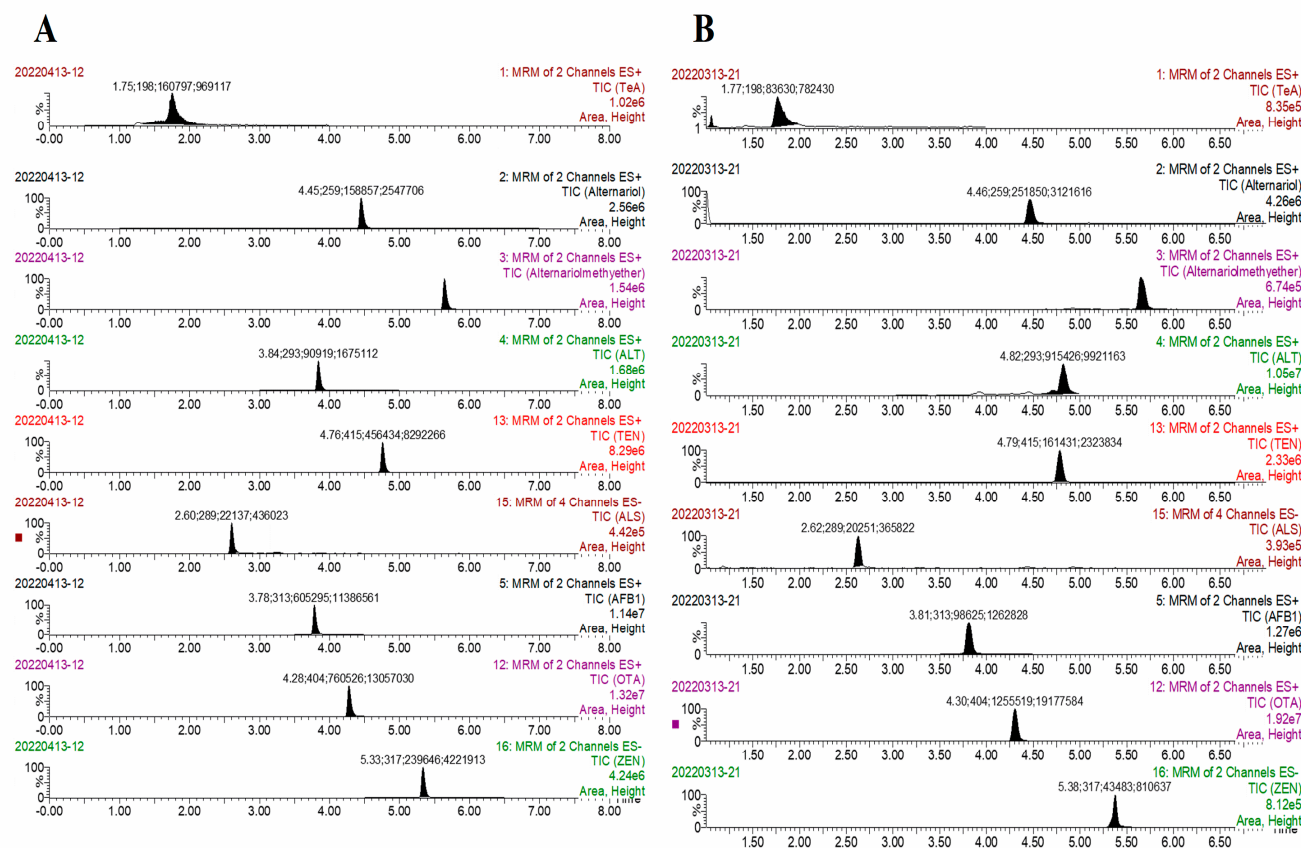


Figure S3. Effects of eluent volume on Fe<sub>3</sub>O<sub>4</sub>@COF (TAPT-DHTA) MSPE process





**Figure S4.** MRM chromatography of 9 mycotoxins in (A) solvent standard solution and (B) matrix standard solution ( $100 \mu\text{g kg}^{-1}$ ). The retention time of peak corresponding to each toxin were as follow: TeA (1.75), AOH (4.45), AME (5.65), ALT (3.64), TEN (4.76), ALS (2.62), AFB<sub>1</sub> (3.78), OTA (4.28), ZEN (5.33)

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