Supplementary Material

Sensitive detection of synthetic cannabinoids in human blood using magnetic polydopamine molecular imprinted polymer nanocomposites

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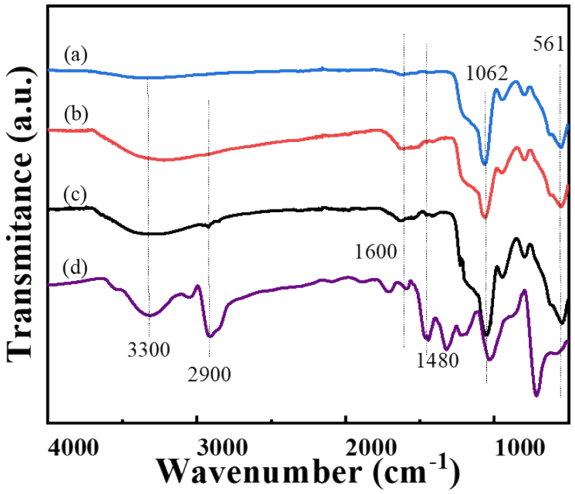

Figure S1. FT-IR spectra of (a) Fe_3O_4@SiO_2 NPs (b) PDA@Fe_3O_4 NIP, (c) PDA@Fe_3O_4 MIP with 9CH embedded and (d) 9CH.

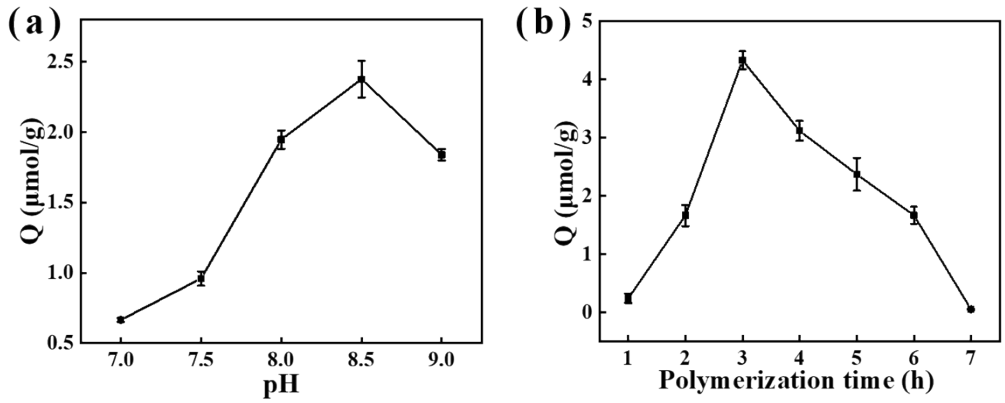

Figure S2. Optimization of (a) pH and (b) polymerization time for the synthesis of PDA@Fe_3O_4 MIP

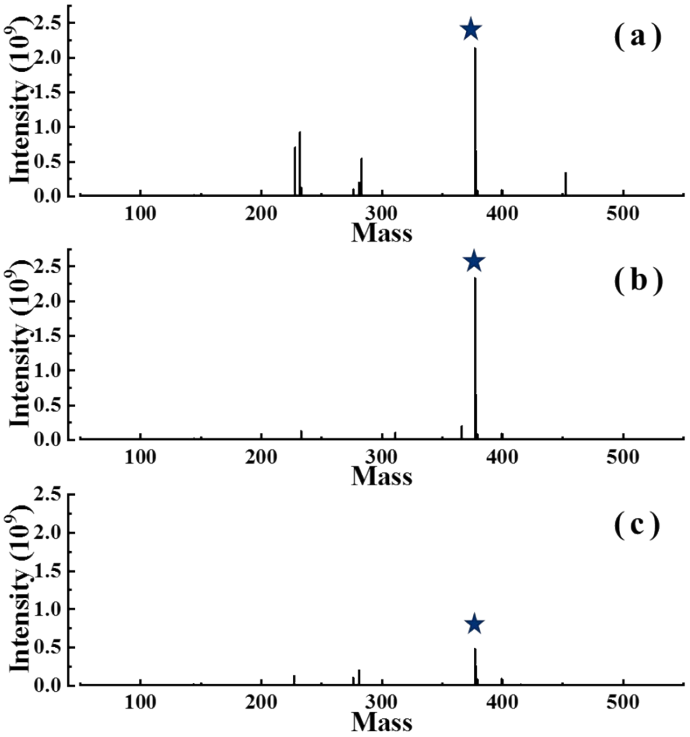

Figure S3. Mass spectrometry is used to analyze the content of 5F-PB-22 in human blood. (a) without MIP pretreatment, (b) extracted by PDA@Fe_3O_4 MIP, and(c) extracted by PDA@Fe_3O_4 NIP.

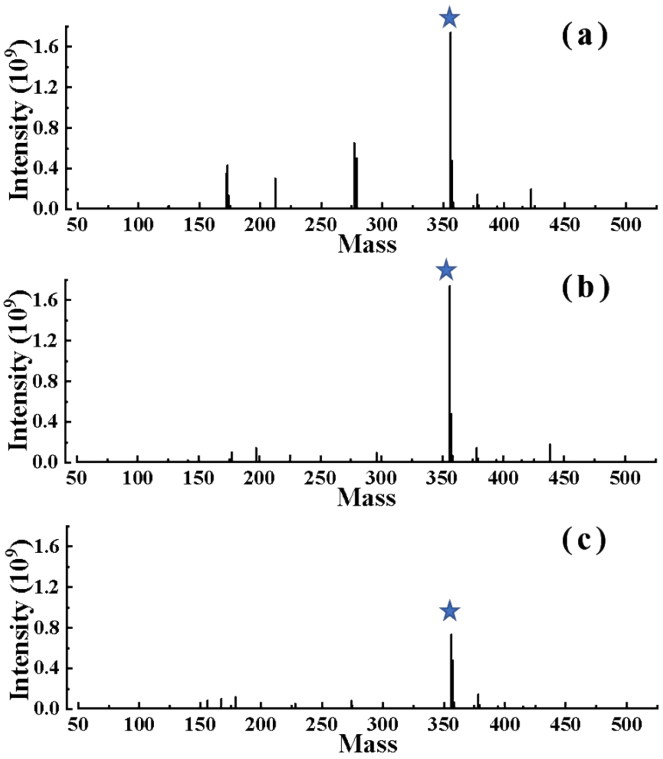

Figure S4. Mass spectrometry is used to analyze the content of JWH-122 in human blood. (a) without MIP pretreatment, (b) extracted by PDA@Fe_3O_4 MIP, and(c) extracted by PDA@Fe_3O_4 NIP.

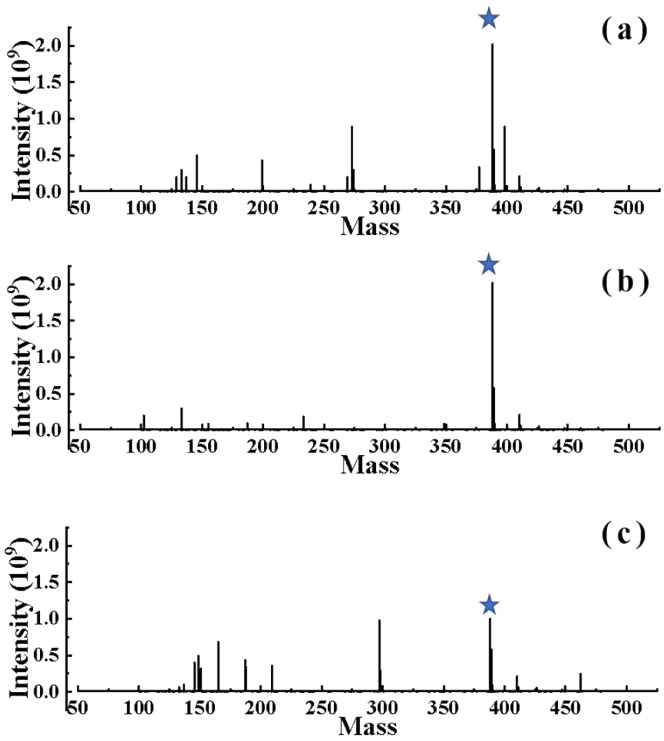

Figure S5. Mass spectrometry is used to analyze the content of EAM-2201 in human blood. (a) without MIP pretreatment, (b) extracted by PDA@Fe_3O_4 MIP, and(c) extracted by PDA@Fe_3O_4 NIP.

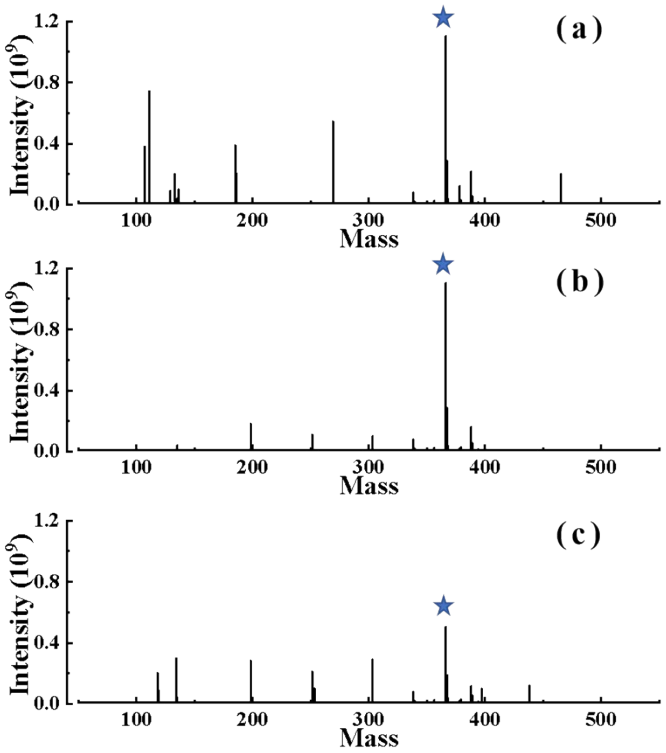

Figure S6. Mass spectrometry is used to analyze the content of APINACA in human blood. (a) without MIP pretreatment, (b) extracted by PDA@Fe_3O_4 MIP, and(c) extracted by PDA@Fe_3O_4 NIP.

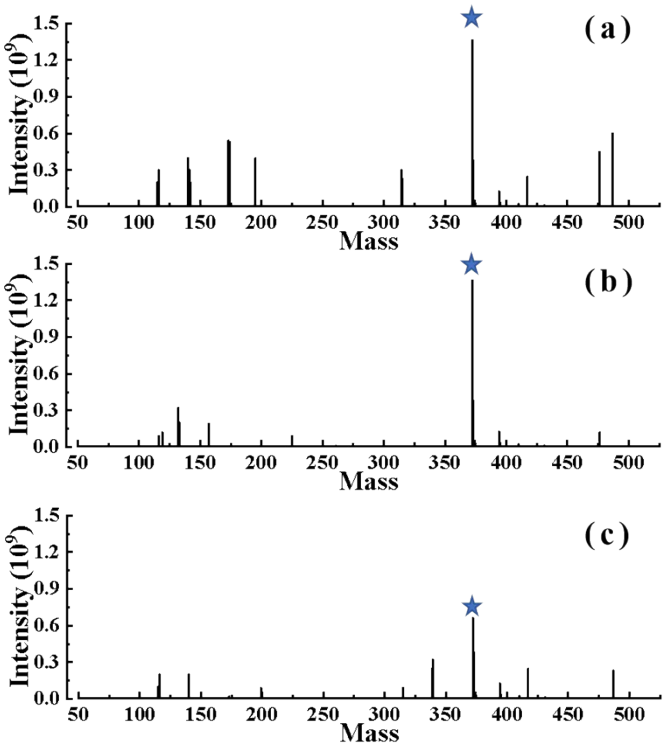

Figure S7. Mass spectrometry is used to analyze the content of JWH-081 in human blood. (a) without MIP pretreatment, (b) extracted by PDA@Fe_3O_4 MIP, and(c) extracted by PDA@Fe_3O_4 NIP.

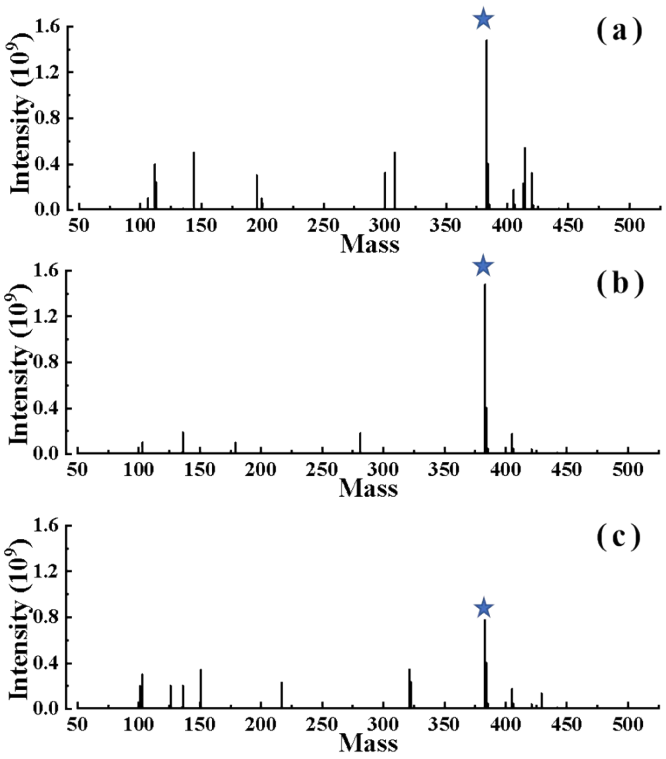

Figure S8. Mass spectrometry is used to analyze the content of STS-135 in human blood. (a) without MIP pretreatment, (b) extracted by PDA@Fe_3O_4 MIP, and(c) extracted by PDA@Fe_3O_4 NIP.

Table S1: Conditions for liquid chromatography

HPLC parameters	
Columns	Agilent Eclipse plus C18 (3 x 100 mm x 2.1 μm)
Eluent	A: Methanol B:5 mmol Ammonium formate /0.1% Methanoic acid
Injection Volume	10 μL
Flow Rate	500 μL/mL
Column temperature	40 ℃

Table S2: Conditions for mass spectrometry

MS parameters	
Polarity	Positive
Ionization source	Electrospray Ionization
Sweep gas flow rate	2 arb
Spray voltage	3.5 kV
Sheath gas flow rate	45 arb
Aux gas flow rate	10 arb
Aux gas heater temp	400 ℃
Capillary temp	320 ℃
Resolution	70000
Automatic gain control (AGC) target	2e6
Collision energy（CE）	40 eV
Scan range	50 to 400 m/z
Maximum IT	100 ms

Table S3. Mass spectrometric characterization parameters of six synthetic cannabinoids

Compounds	RT (min)	Precursor ion $[M+H]^+$(m/z)	Fragmentation ions (m/z)
JWH-122	10.37	356.2010	214.1227，169.0649
JWH-081	9.82	372.1954	214.1227，185.0597
EAM2201	5.70	388.2069	232.1130，183.0804
5F-PB-22	8.15	377.1662	232.1133，144.0444
STS-135	15.26	383.2486	232.1133，135.1169
APINACA	8.34	366.2540	135.1168，107.0855

Table S4. Optimization of the ratio of Fe_3O_4, DA and 9CH

Entry	Fe_3O_4 (mg)	DA (mg)	9CH (mg)	Q （μmol·g^{-1}）
1	10	5	10	4.33
2	10	7	10	5.74
3	10	10	10	4.12
4	10	15	10	5.34
5	10	7	10	4.21
6	10	7	20	5.55
7	10	7	30	6.26
8	10	7	40	6.07

Other synthesis conditions: polymerization time = 3 h, polymerization of Tris Buffer (10 mL, pH = 8.5) solution.
The concentration of each SC is 1 μg/mL for the adsorption capacity evaluation.