Supplementary data

Magnetic zinc oxide nanoflower-assisted ionic liquid-based nanofluid dispersive liquid-liquid microextraction for the rapid determination of acaricides in tea infusions

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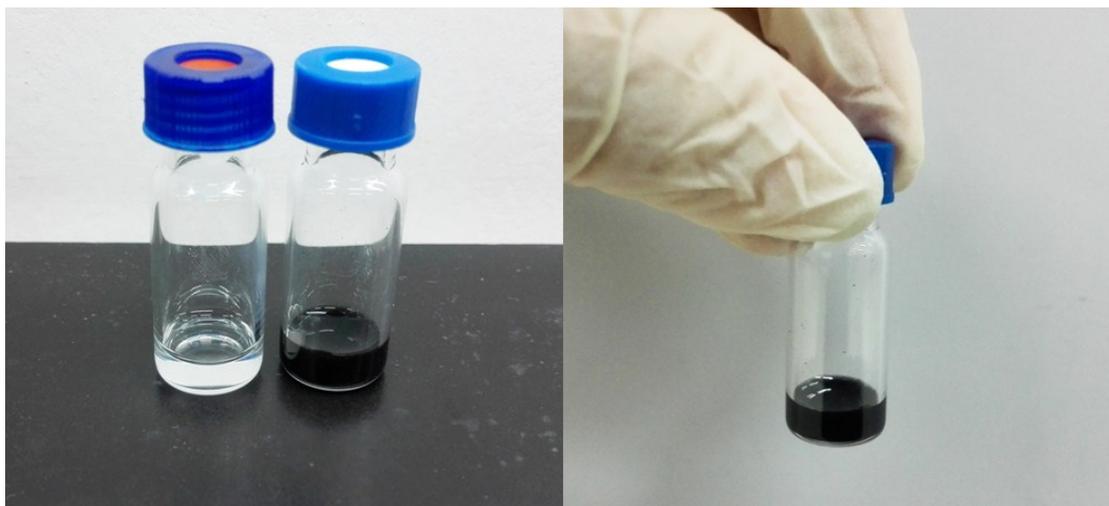
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Fig S1. Photograph of the ZnO@Fe$_3$O$_4$ nanofluid

Standard order	Factors			Average recovery (%)
	Ratio of nanoparticles	Mass of Nanofluid（mg）	Amount of magnetic sorbent（mg)	
1	0.1%	20	10	43.9
2	0.1%	30	15	49.9
3	0.1%	40	20	58.1
4	0.1%	50	25	53.4
5	0.1%	60	30	60.3
6	0.2%	20	15	53.9
7	0.2%	30	20	56.3
8	0.2%	40	25	70.5
9	0.2%	50	30	67.4
10	0.2%	60	10	65.4
11	0.5%	20	20	66.8
12	0.5%	30	25	80.6
13	0.5%	40	30	83.5
14	0.5%	50	10	88.3
15	0.5%	60	15	87.6
16	1%	20	25	79.3
17	1%	30	30	88.9
18	1%	40	10	92.2
19	1%	50	15	100.2
20	1%	60	20	100.0
21	1.2%	20	30	73.3

22	1.2%	30	10	78.2
23	1.2%	40	15	86.1
24	1.2%	50	20	90.3
25	1.2%	60	25	87.6
K_1	53.13	63.47	73.61	
K_2	62.69	70.78	75.54	
K_3	81.37	78.07	74.31	
K_4	92.14	79.93	74.28	
K_5	83.12	80.19	74.70	
R	39.01	16.72	1.93	

Table S1. Results for the orthogonal experiments
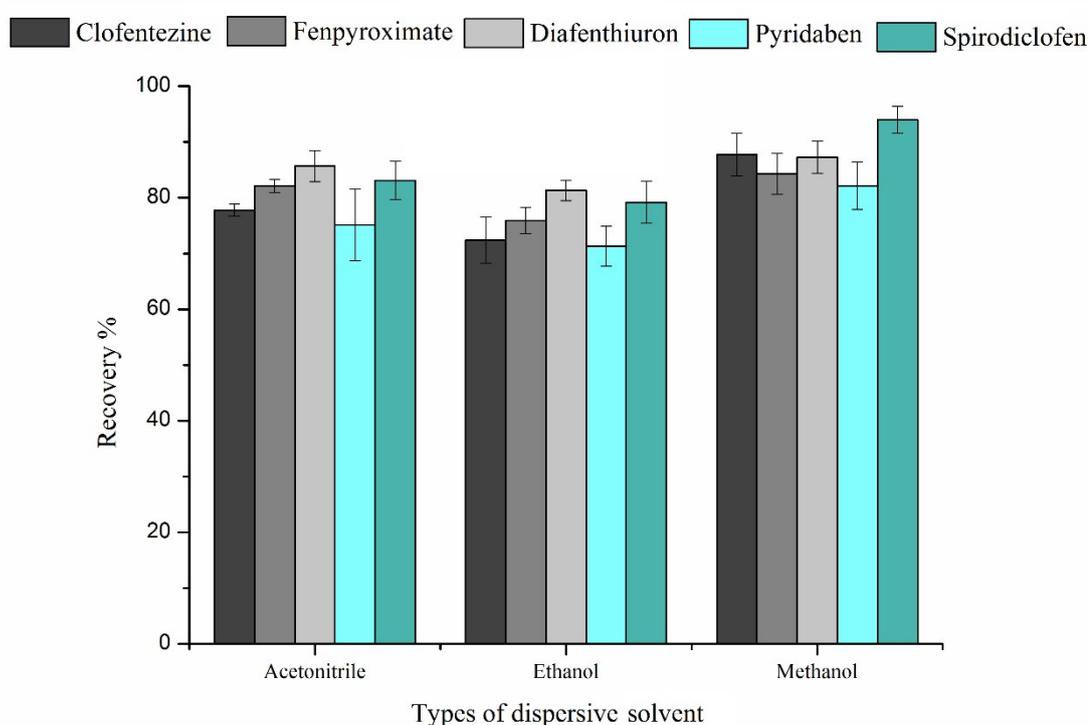
Fig S2. Effects of the types of dispersive solvent on the recoveries. The extraction conditions were as follows: extractant: 50mg [OMIMM]NTF$_2$ based nanofluid (1%); magnetic adsorbent, 15mg; vortex time, 2 min; dispersive volume, 200 µL; no salt addition, concentration level, 50 µg L^{-1}; error bars, standard deviation (n=3).
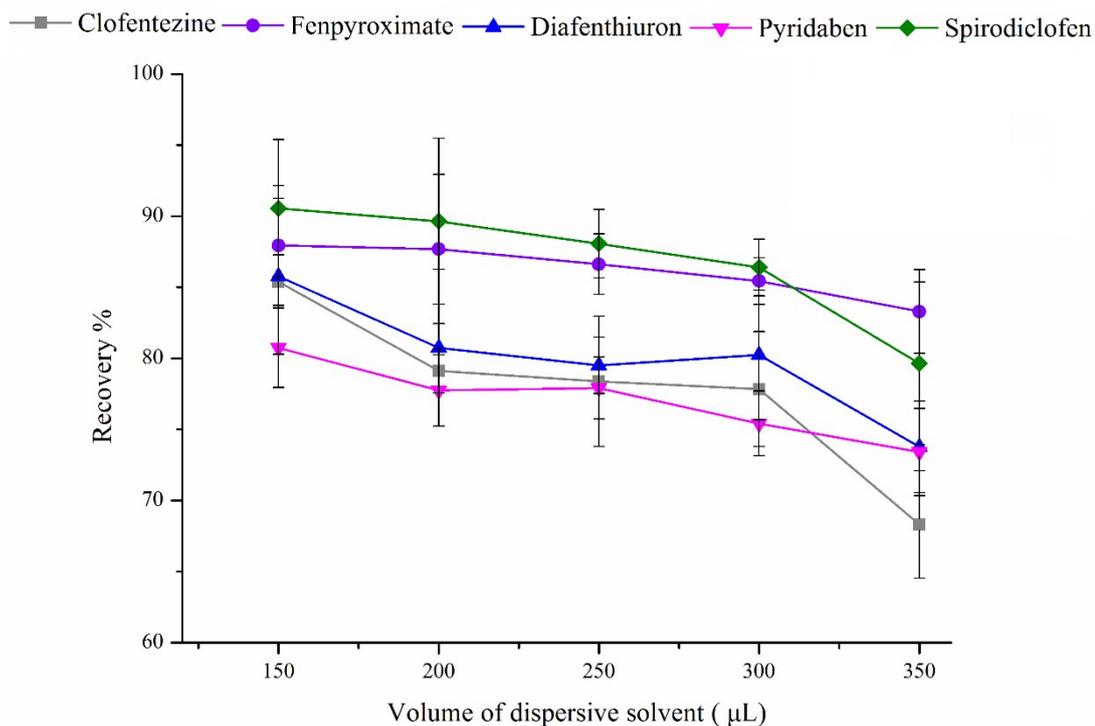
Fig S3. Effects of the volume of dispersive solvent on the recoveries. The extraction conditions were as follows: extractant: 50mg [OMIMM]NTF$_2$ based nanofluid (1%); magnetic adsorbent, 15mg; vortex time, 2 min; dispersive solution, methanol; no salt addition, concentration level, 50 μg L^{-1}; error bars, standard deviation (n=3).
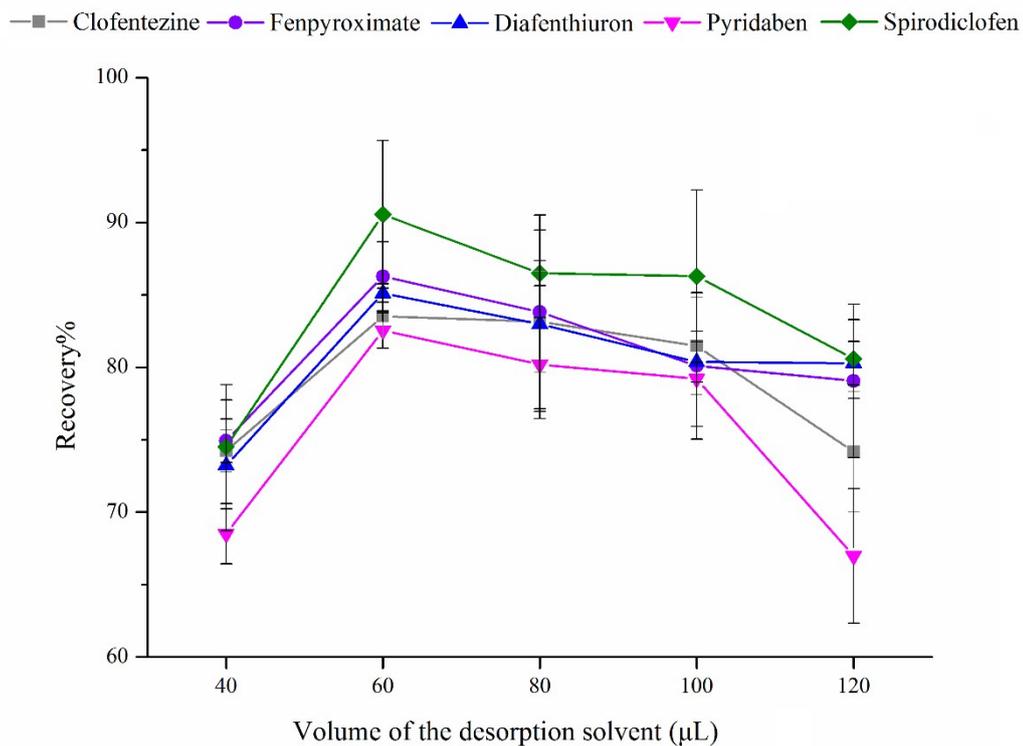
Fig S4. Effects of the volume of desorption solvent on the recoveries. The extraction conditions were as follows: extractant: 50mg [OMIMM]NTF$_2$ based nanofluid (1%); magnetic adsorbent, 15mg; vortex time, 2 min; dispersive solvent, 150μL methanol; desorption solvent, acetonitrile; no salt addition; concentration level, 50 μg L^{-1}; error bars, standard deviation (n=3).
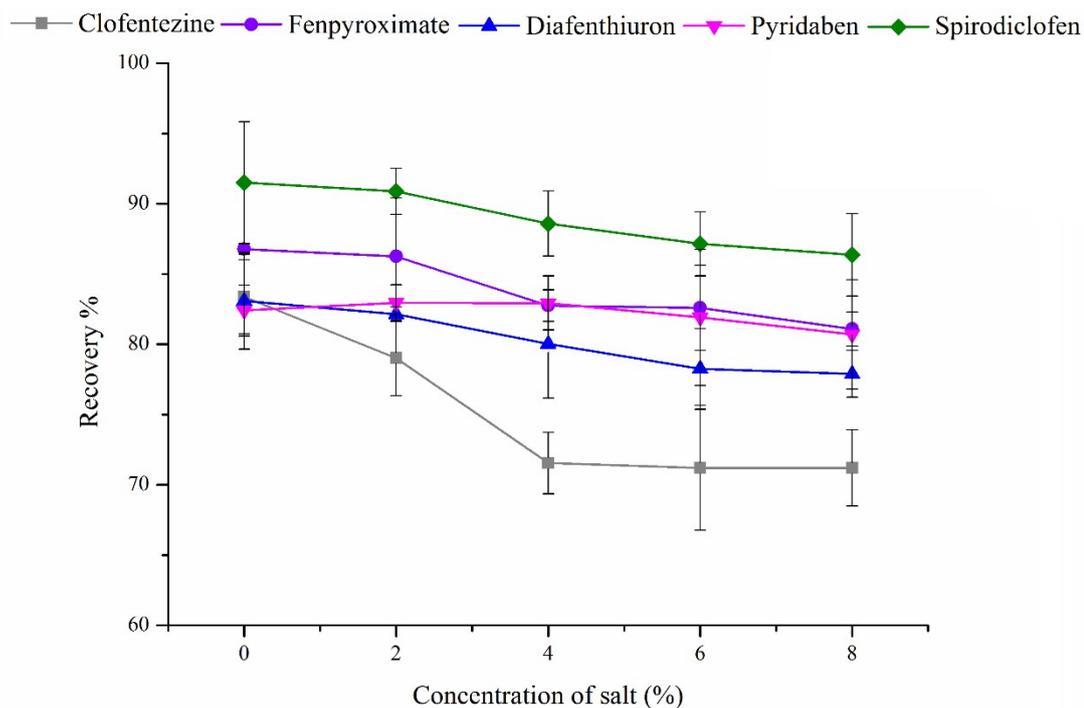
Fig S5. Effects of the ionic strength on the recoveries. The extraction conditions were as follows: extractant: 50mg [OMIMM]NTF$_2$ based nanofluid (1%); magnetic adsorbent, 15mg; vortex time, 2 min; dispersive solution, 150μL methanol; no salt addition; concentration level, 50 μg L^{-1}; error bars, standard deviation (n=3).