Electronic Supporting information files for

Spectrofluorimetric determination of zearalenone using dispersive liquid-liquid microextraction coupled to micro-solid phase extraction onto magnetic nanoparticles

Mahdi Hashemi *, Zohreh Taherimaslak, Sara Parvizi and Mohammad Torkejokar

Collage of Chemistry, Bu-Ali Sina University, Hamedan, Iran

* Corresponding author. Tel.: +98 81 38282807; Fax: +98 81 38257407.
E-mail addresses: mhashemi@basu.ac.ir (Mahdi Hashemi),
1) Effect of disperse solvent volume

**Fig. S1** Effect of disperse solvent volume. Conditions: disperse solvent type, MeCN 80 % containing 5 µg L\(^{-1}\) of ZEN; extraction solvent volume and type, 310 µL of 1-Heptanol; water volume, 15 mL; equilibration time, 120 s; adsorbent amount, 80 mg; adsorption time, 5 min; desorption time, 5 min, desorption solvent volume and type, 1 mL of MeCN; reconstituting solvent, 300 µL of diethyl ether; without salt addition. Error bars represent the standard deviation for three experiments.
2. Effect of extraction solvent volume

Fig. S2. Effect of the extraction solvent volume. Conditions: dispersive solvent volume and type, 3 mL of MeCN 80 % containing 5 µg L⁻¹ of ZEN; extraction solvent type, 1-Heptanol; water volume, 15 mL; equilibration time, 120 s; adsorbent amount, 80 mg; adsorption time, 5 min; desorption time, 5 min, desorption solvent volume and type, 1 mL of MeCN; reconstituting solvent, 300 µL of diethyl ether; without salt addition. Error bars represent the standard deviation for three experiments.
3. Effect of salt addition

**Fig. S3.** Effect of salt addition. Conditions: dispersive solvent volume and type, 3 mL of MeCN 80 % containing 5 µg L⁻¹ of ZEN; extraction solvent volume and type, 320 µL of 1-Heptanol; water volume, 15 Ml; equilibration time, 120 s; adsorbent amount, 80 mg; adsorption time, 5 min; desorption time, 5min, desorption solvent volume and type, 1 mL of MeCN; reconstituting solvent, 300 µL of diethyl ether..Error bars represent the standard deviation for three experiments.
4. Effect of Water volume

**Fig. S4.** Effect of the water volume. Conditions: dispersive solvent volume and type, 3 mL of MeCN 80 % containing 5 µg L$^{-1}$ of ZEN; extraction solvent volume and type, 320 µL of 1-Heptanol; equilibration time, 120 s; adsorbent amount, 80 mg; adsorption time, 5 min; desorption time, 5 min, desorption solvent volume and type, 1 mL of MeCN; reconstituting solvent, 300 µL of diethyl ether; without salt addition. Error bars represent the standard deviation for three experiments.
5. Effect of equilibration time

Fig. S5. Effect of the equilibration time. Conditions: dispersive solvent volume and type, 3 mL of MeCN 80% containing 5 µg L\(^{-1}\) of ZEN; extraction solvent volume and type, 320 µL of 1-Heptanol; water volume, 15 mL; adsorbent amount, 80 mg; adsorption time, 5 min; desorption time, 5 min, desorption solvent volume and type, 1 mL of MeCN; reconstituting solvent, 300 µL of diethyl ether; without salt addition Error bars represent the standard deviation for three experiments.
6. Effect of adsorbent amount

**Fig. S6.** Effect of the adsorbent amount. Conditions: dispersive solvent volume and type, 3 mL of MeCN 80 % containing 5 µg L⁻¹ of ZEN; extraction solvent volume and type, 320 µL of 1-Heptanol; water volume, 15 mL; equilibration time, 60 s; adsorption time, 5 min; desorption time, 5 min, desorption solvent volume and type, 1 mL of MeCN; reconstituting solvent, 300 µL of diethyl ether; without salt addition. Error bars represent the standard deviation for three experiments.
7. Effect of adsorption time

![Graph showing fluorescence intensity versus adsorption time](image)

**Fig. S7.** Effect of the adsorption time. Conditions: dispersive solvent volume and type, 3 mL of MeCN 80 % containing 5 µg L⁻¹ of ZEN; extraction solvent volume and type, 320 µL of 1-Heptanol; water volume, 15 mL; equilibration time, 60 s; adsorbent amount, 50 mg; desorption time, 5 min, desorption solvent volume and type, 1 mL of MeCN; reconstituting solvent, 300 µL of diethyl ether; without salt addition Error bars represent the standard deviation for three experiments.
8. Effect of desorption solvent volume

**Fig. S8.** Effect of desorption solvent volume. Conditions: dispersive solvent volume and type, 3 mL of MeCN 80 % containing 5 µg L\(^{-1}\) of ZEN; extraction solvent volume and type, 320 µL of 1-Heptanol; water volume, 15 mL; equilibration time, 60 s; adsorbent amount, 50 mg; adsorption time, 3 min; desorption time, 5 min; desorption solvent type, MeCN; reconstituting solvent, 300 µL of diethyl ether; without salt addition Error bars represent the standard deviation for three experiments.
9. Effect of desorption time

![Graph showing the effect of desorption time on fluorescence intensity.]

**Fig. S9.** Effect of desorption time. Conditions: dispersive solvent volume and type, 3 mL of MeCN 80 % containing 5 µg L$^{-1}$ of ZEN; extraction solvent volume and type, 320 μL of 1-Heptanol; water volume, 15 mL; equilibration time, 60 s; adsorbent amount, 50 mg; adsorption time, 3 min; desorption solvent volume and type, 1 mL of MeCN; reconstituting solvent, 300 μL of diethyl ether; without salt addition. Error bars represent the standard deviation for three experiments.
10. Effect of reconstituting solvent

**Fig. S10.** Effect of reconstituting solvent. Conditions: dispersive solvent volume and type, 3 mL of MeCN 80 % containing 5 µg L⁻¹ of ZEN; extraction solvent volume and type, 320 µL of 1-Heptanol; water volume, 15 mL; equilibration time, 60 s; adsorbent amount, 50 mg; adsorption time, 3 min; desorption time, 4 min; desorption solvent volume and type, 1 mL of MeCN; without salt addition. Error bars represent the standard deviation for three experiments.