

## Supplementary

**Dispersive micro solid phase extraction of glibenclamide from plasma, urine, and wastewater using magnetic molecularly imprinted polymer followed by its determination by high-performance liquid chromatography-photodiode array detector**

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### 2.3. Synthesis of MMIP as a sorbent

#### 2.3.1. Synthesis of magnetic iron nanoparticles ( $Fe_3O_4$ )

Magnetic nanoparticles were synthesized by a previously reported procedure<sup>1,2</sup>. 50 mL of iron (III) chloride (0.2 M) was added to 50 mL of iron (II) sulfate (0.1 M) and stirred for 10 minutes. Then, 50 mL of 3 mol L<sup>-1</sup> sodium hydroxide was slowly added and the mixture was sonicated for 5 minutes. In the end, 100 mg of trisodium citrate was added to the solution and the mixture was stirred for another 30 minutes. The synthesized black magnetic nanoparticles were finally collected by a neodymium magnet and washed with water and ethanol.  $Fe_3O_4$  nanoparticles were dried in an oven under a nitrogen atmosphere.

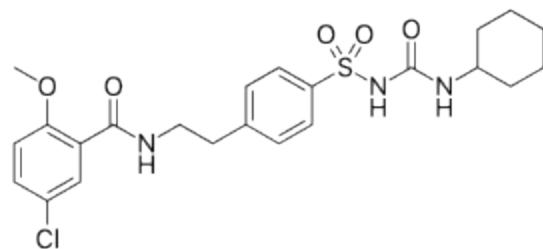
#### 2.3.2. Synthesis of $SiO_2@Fe_3O_4$ nanoparticles and $SiO_2$ -MPS@ $Fe_3O_4$

For the synthesis of  $SiO_2@Fe_3O_4$  nanoparticles, and  $SiO_2$ -MPS@ $Fe_3O_4$  the previously reported method was employed<sup>1,2,3</sup>. Thus, 400 mg of the synthesized  $Fe_3O_4$  was dispersed in a mixture of 10 mL of distilled water and 40 mL of ethanol by ultrasonic irradiation for 5 minutes. 4 mL of ammonia solution and 2 mL of TEOS were added sequentially under a nitrogen atmosphere to the mixture. The mixture was stirred for 24 hours at room temperature. Finally, the magnetic  $SiO_2@Fe_3O_4$  nanoparticles were separated, washed with distilled water, and dried for 5 h, at 60 °C in an oven.

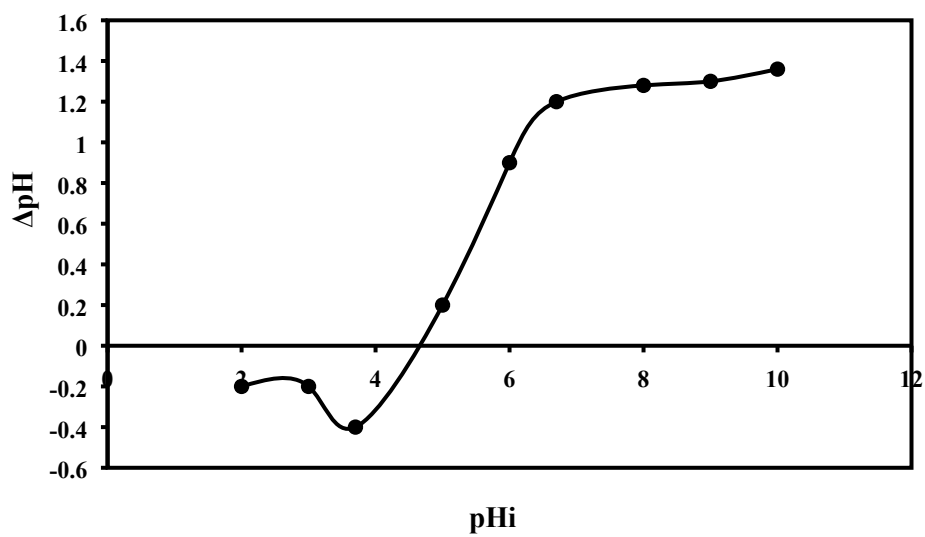
Then, 200 mg of the prepared  $SiO_2@Fe_3O_4$  was dispersed in the mixture of 10 mL of distilled water and 40 mL of ethanol by sonication for 10 minutes, the mixture was strongly stirred, and 2.5 mL of MPS was droply added in a 20-minute time interval. Next, 20 mL of ammonia solution was added and the mixture was refluxed for 24 h. Finally, the magnetic  $SiO_2$ -MPS@ $Fe_3O_4$  was collected, washed several times with ethanol, and dried.

### 2.3.3. Synthesis of MIP on the SiO<sub>2</sub>-MPS@Fe<sub>3</sub>O<sub>4</sub> surface

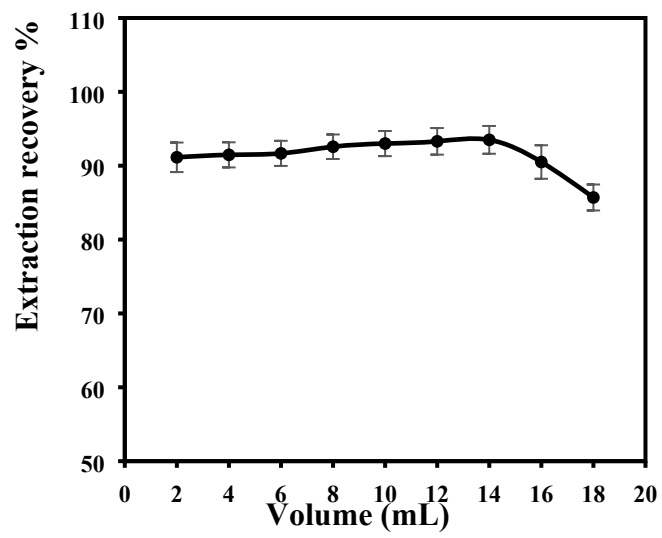
The synthesis of MIP on the SiO<sub>2</sub>-MPS@Fe<sub>3</sub>O<sub>4</sub> surface utilizing dual monomers of itaconic acid and allylamine with a mole ratio of 1:1 was done according to the previously reported works with some modifications<sup>1, 4-6</sup>. Thus, 150 mg of SiO<sub>2</sub>-MPS@Fe<sub>3</sub>O<sub>4</sub> was dispersed in 35 mL of tetrahydrofuran with 5 minutes of sonication. Then, 1 mmol of allylamine monomer along with 1 mmol of itaconic acid monomer was added to 0.5 mmol of GLB solution in 40 mL of tetrahydrofuran, the mixture was added to the dispersed SiO<sub>2</sub>-MPS@Fe<sub>3</sub>O<sub>4</sub> and stirred for 2 h at room temperature. In the next step, 50 mg of the AIBN initiator and 11 mmol of EGDMA crosslinker were added to the mixture and stirred under the N<sub>2</sub> atmosphere, for 15 minutes followed by refluxing for 24 h. Finally, the retained template molecules in the synthesized polymer were eluted by its soxhlation in the mixture of methanol and acetic acid (8:2 v/v) at 70 °C for 24 h. The complete removal of the GLB was confirmed by absorbance measurements. The resulting sorbent was then washed and oven-dried. The non-molecularly imprinted polymer (NIP) was synthesized with the given method but in the absence of GLB.



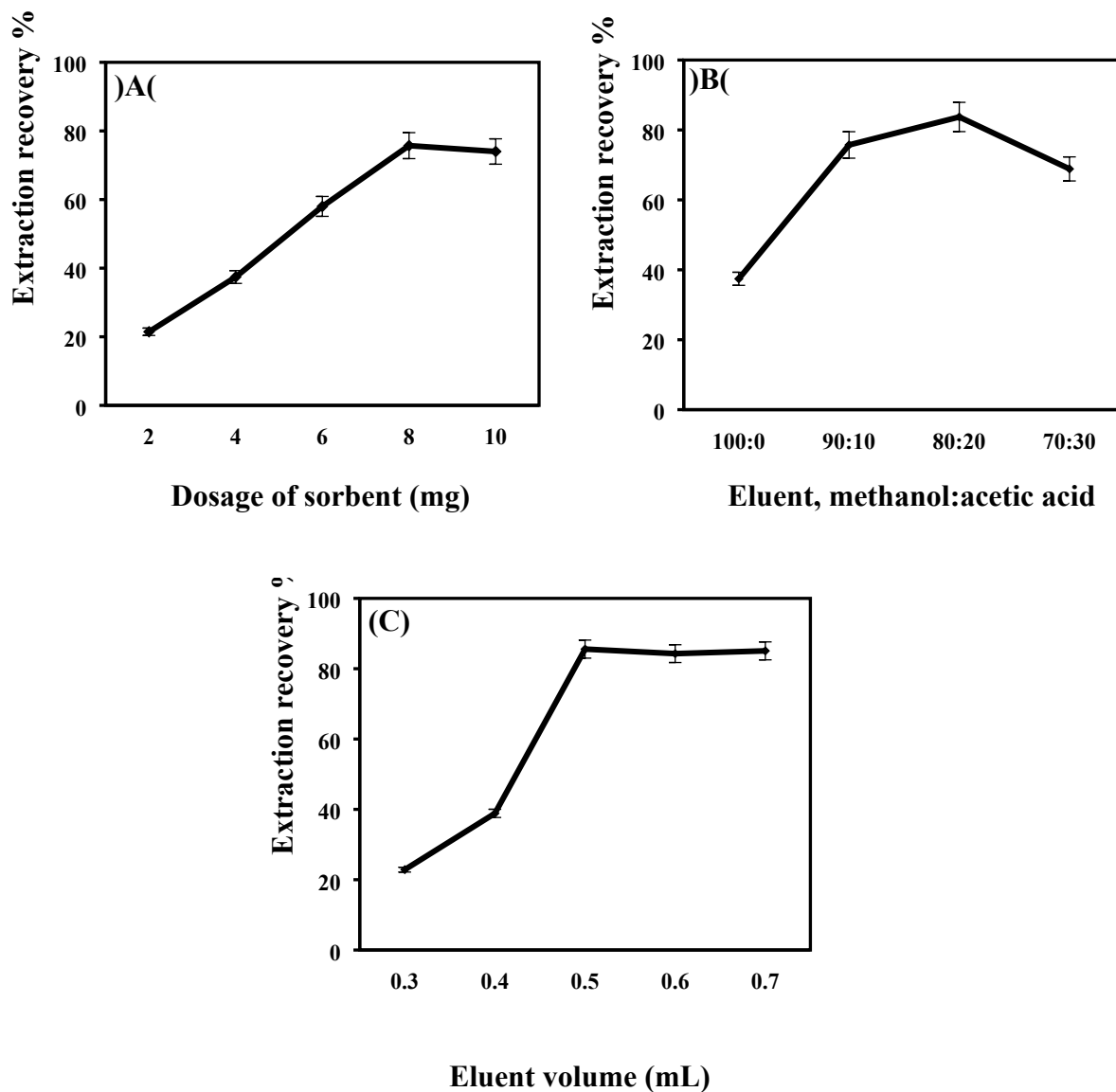
**Fig. S1.** Chemical structure of glibenclamide.



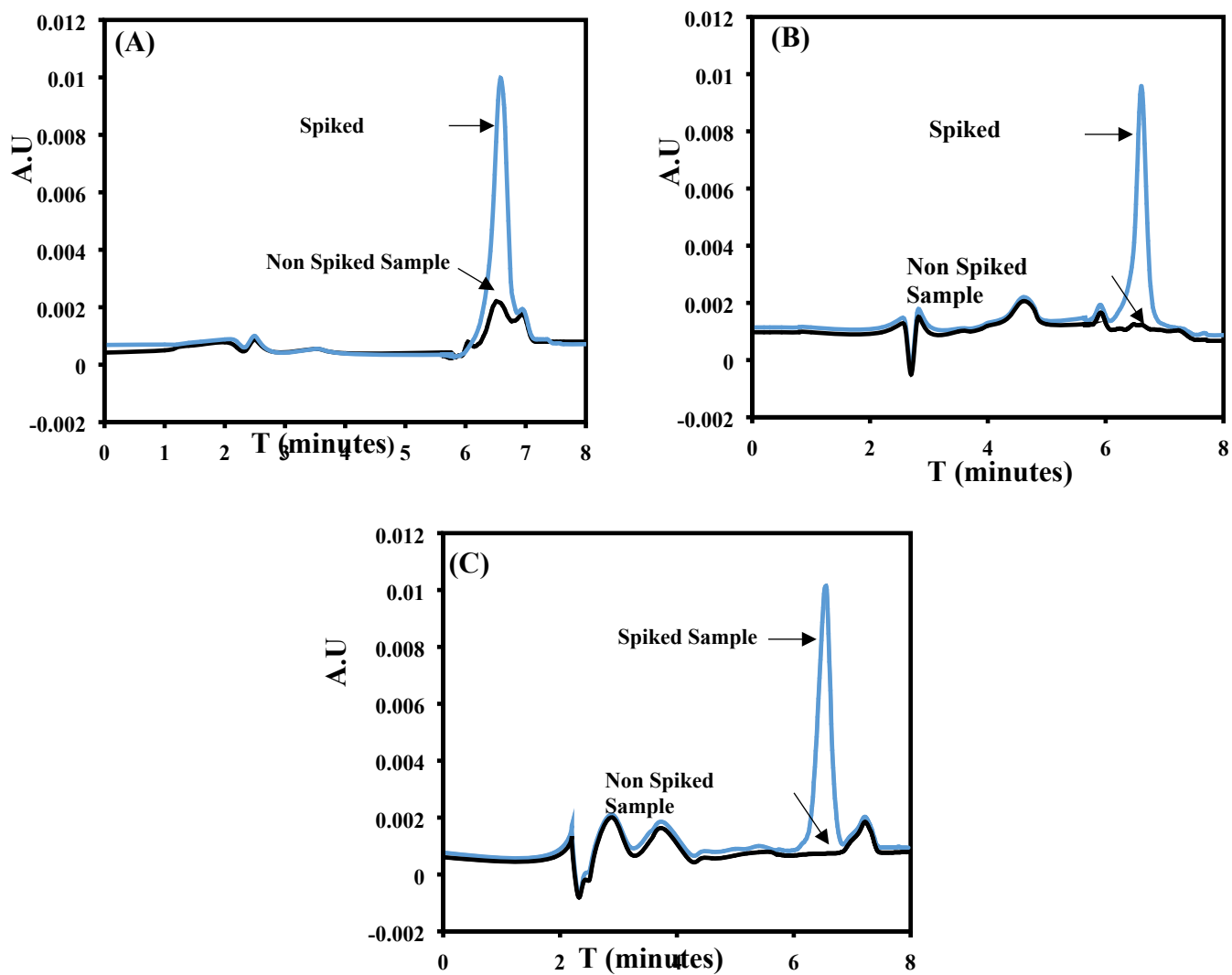
**Fig. S2.** Point of zero charge plot of MMIP.



**Fig. S3.** Effect of the sample volume.



**Fig. S4.** Effect of MMIP mass (A), eluent (B), and volume of eluent on the recovery of glibenclamide (C). Conditions: sorption time = 10 min, desorption time = 10 min, solution pH = 6, temperature = 25 °C, the concentration of GB 250  $\mu\text{g L}^{-1}$ , and sample volume 10 mL.



**Fig. S5.** HPLC/PDA chromatogram of (A) pharmaceutical wastewater, (B) urine, and (C) plasma; before and after spiking with  $25 \mu\text{g L}^{-1}$  of GLB.

**Table S1.** BET surface area and porosity of the MMIP and MNIP polymers.

Polymer	Surface area (m <sup>2</sup> g <sup>-1</sup> )	Pore volume (cm <sup>3</sup> g <sup>-1</sup> )	Diameter (nm)
MMIP	116.85	0.4579	15.673
MNIP	67.644	0.2925	12.299

**References:**

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