Supplementary file

**A novel silica supported chitosan/glutaraldehyde as an efficient sorbent in solid phase extraction coupling with HPLC for the determination of Penicillin G from water and wastewater samples**

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Fig. S1. Schematic illustration of the synthesis for the Si/Cs/GA

Table S1. N2 adsorption-desorption isotherms, pore size distribution and BET surface areas of samples.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Samples | Surface area(m2/g) | Average pore diameter(nm) | Pore volume(cm3/g) | Pores structure |
| CS | 223.66 | 3.49 | 1.069 | Mesopore |
| Si@Cs  | 224.27 | 3.46 | 1.074 | Mesopore |
| Si @CS-G (1:1) | 298.5 | 3.4 | 1.168 | Mesopore |
| Si @CS-G (1:2) | 301.45 | 3.38 | 1.172 | Mesopore |
| Si @CS-G (1:3) | **313.54** | **3.35** | **1.179** | **Mesopore** |
| Si @CS-G (1:4) | 291.43 | 3.41 | 1.171 | Mesopore |
| Si @CS-G (1:5) | 278.32 | 3.43 | 1.169 | Mesopore |

Fig S2. Effect of desorption time on PG extraction efficiency



Fig S3. Isotherm study the PG adsorption onto Cs (A) and Si@Cs-G (B) adsorbents.



Fig S4. Aromatic structure of PG