Electronic Supplementary Material (ESI) for Analyst.

Supplementary Information

Digital image colorimetric detection of ceftazidime based on azo compound formation on polyethyleneimine modified cotton sponge

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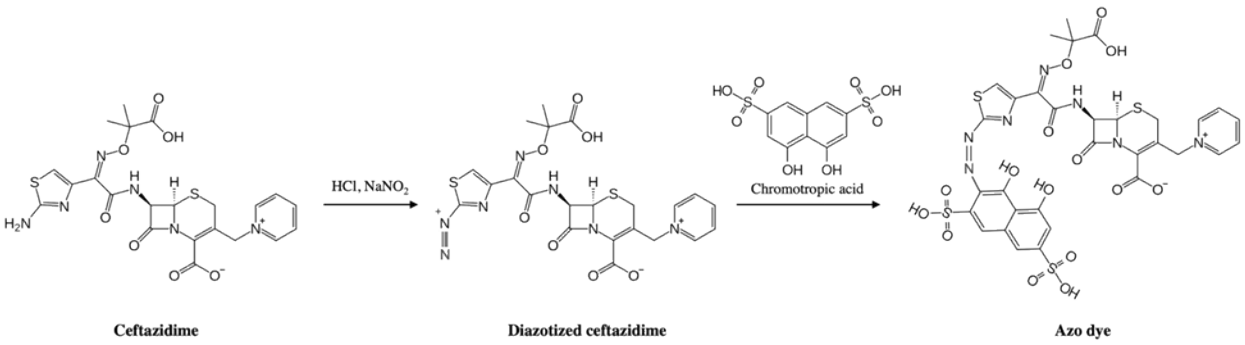

Fig. S1 A proposed reaction for ceftazidime detection based on azo dye formation using chromotropic acid as the coupling reagent.

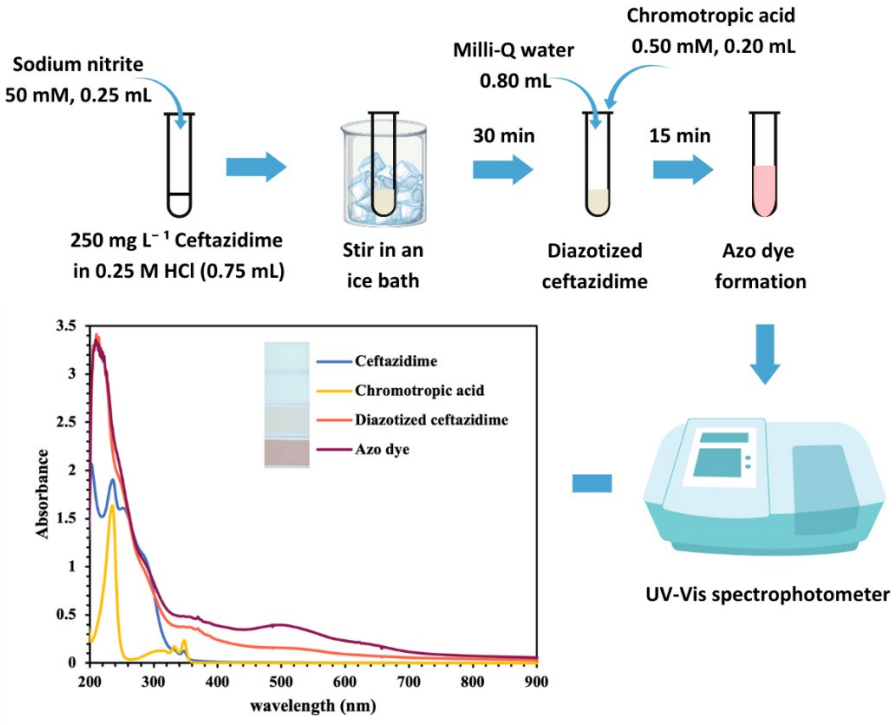

Fig.S2 Schematic of colorimetric detection of ceftazidime in solution and absorption spectra of ceftazidime (125 mg L^{-1}), chromotropic acid (25 μM), diazotized ceftazidime, and the azo dye product prepared in 0.125 M HCl. (inset: photo of the solutions)

1. Fabrication of cotton sponge

To fabricate a cotton sponge with high porosity, the quantity of cotton fibers used is particularly crucial and should be optimized. Various amounts of neat cotton fiber (1, 1.5, 2, 3, 4 wt%) were used to fabricate cotton sponges. By using 1 wt% cotton fiber, the gelation of cellulose took a long time and it hardly produced aerogels. On the contrary, the solution containing 4 wt% cotton was highly viscous and not homogeneous to regulate the shape. Using 1.5 – 3 wt% cotton fiber resulted in aerogels with higher porosity and lower density. In this study, 2 wt% cotton fiber was selected as the obtained cotton sponge was durable for further surface modification. The method was adopted for the fabrication of APTES-sponges.

Fig. S3 Color of materials after performing ninhydrin test.

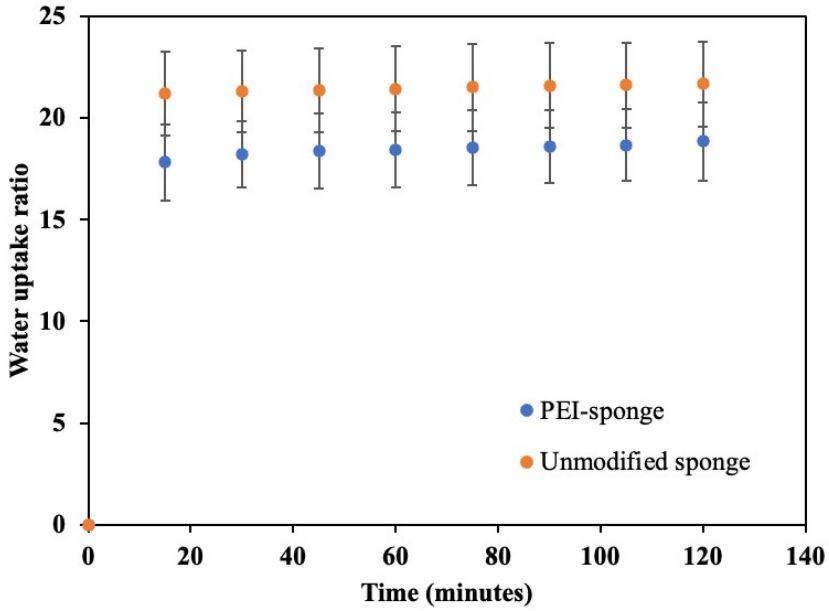

Fig.S4 Water uptake of the unmodified sponge and PEI-sponge observed at 0-120 minutes.

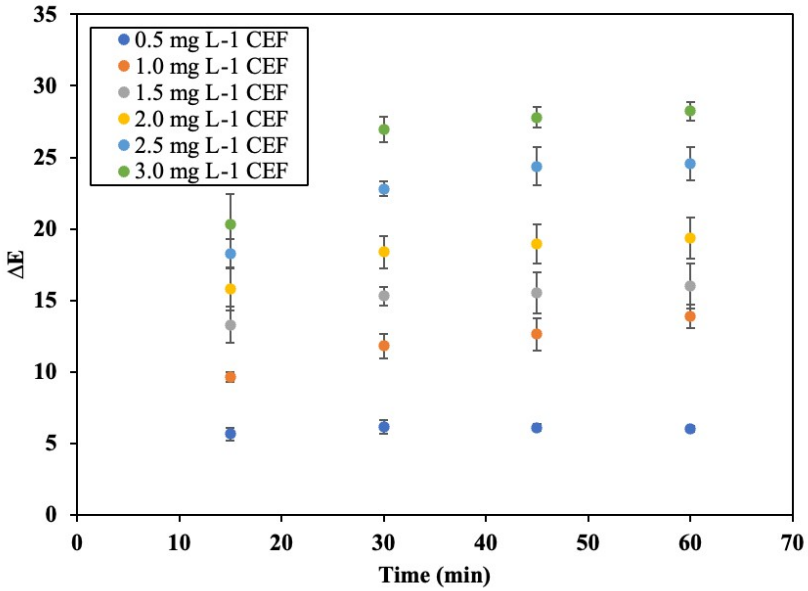

Fig.S5 Effect of reaction time on the detection of ceftazidime using the obtained PEI-sponges (reagent containing 0.5 M HCl, 30 mM sodium nitrite, and 25 μM chromotropic acid).

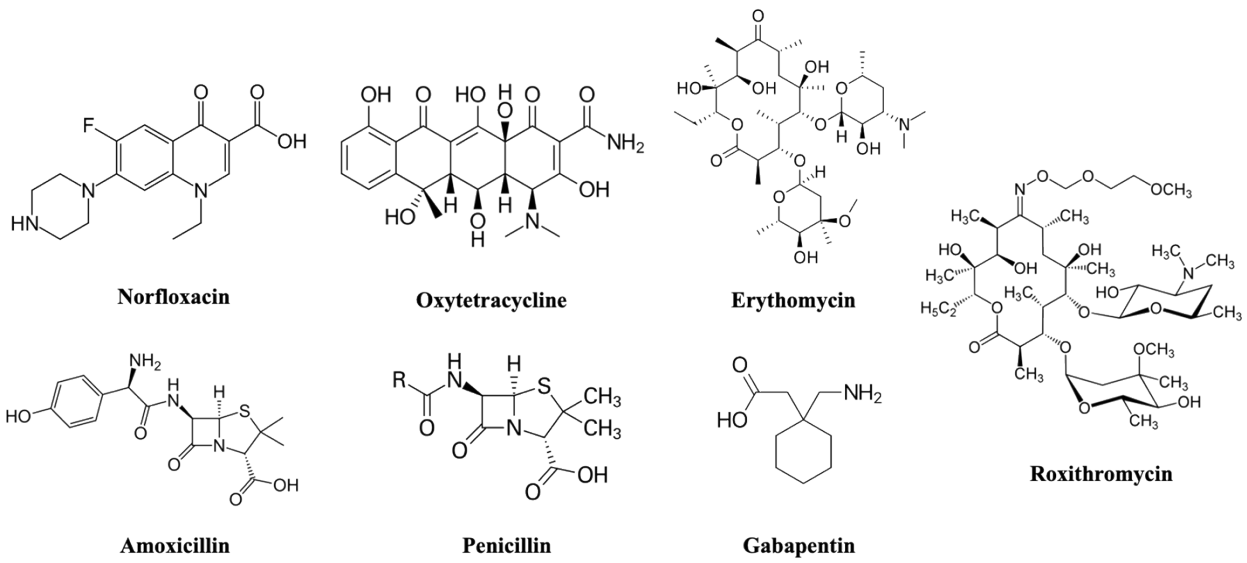

Fig. S6 Structure of studied drugs.

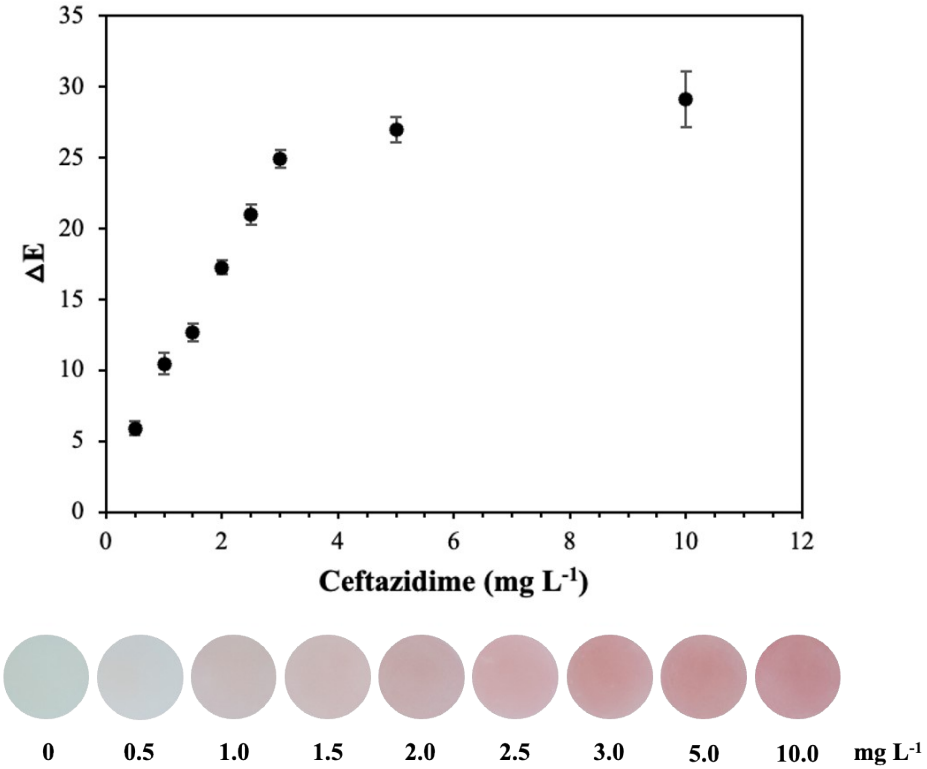

Fig. S7 The relationship between ΔE intensity and ceftazidime concentration in a range from 0.5 to 10 mg L^{-1} and the photo of the obtained materials.