

1 **Supporting information**

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4 **Aptasensing of ciprofloxacin residue using graphene oxide modified by gold nanoparticle**
5 **and branched polyethyleneimine**

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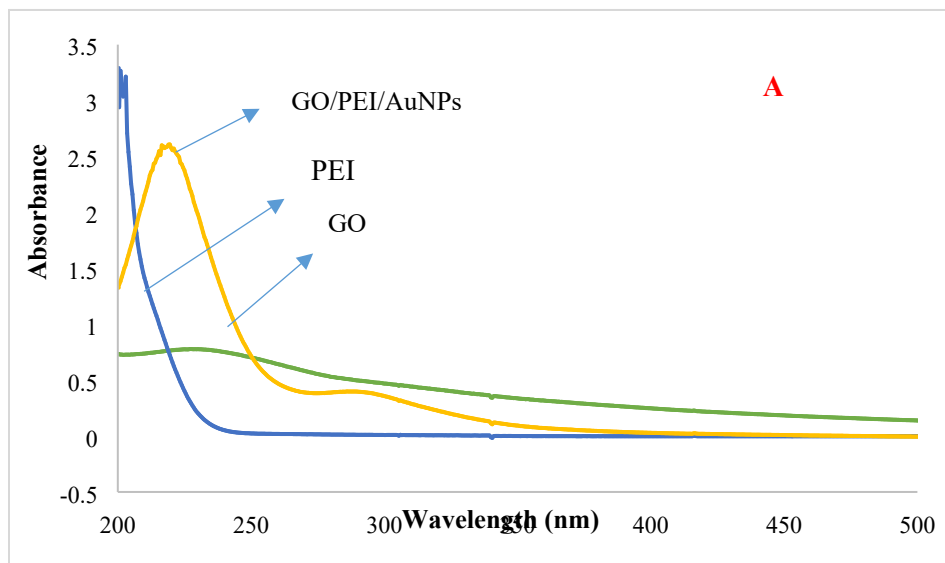
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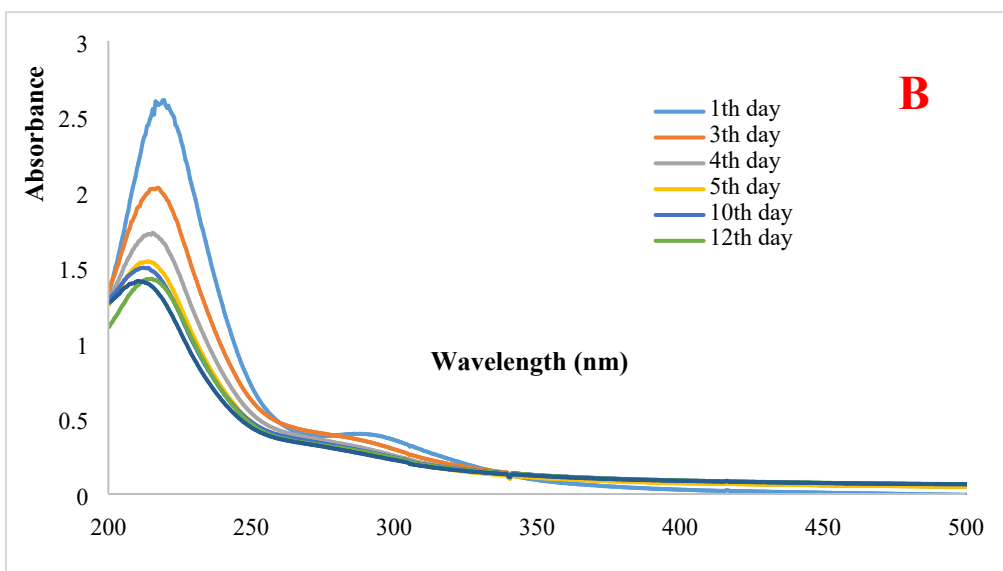
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33 **Fig. S1 A)** UV-Vis absorbance of the GO, PEI, and GO-PEI-AuNPs nanocomposite. **B)** UV-Vis of GO-
34 PEI-AuNPs nanocomposite in various time of storage (1-12 days).

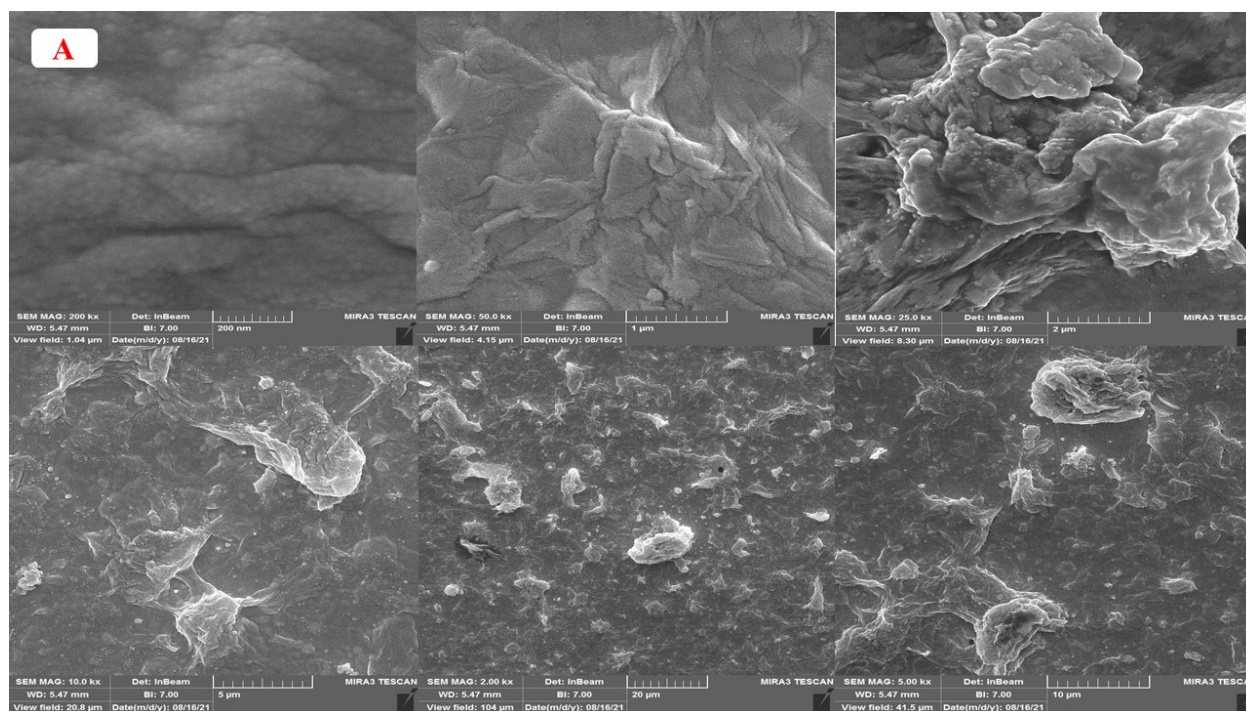
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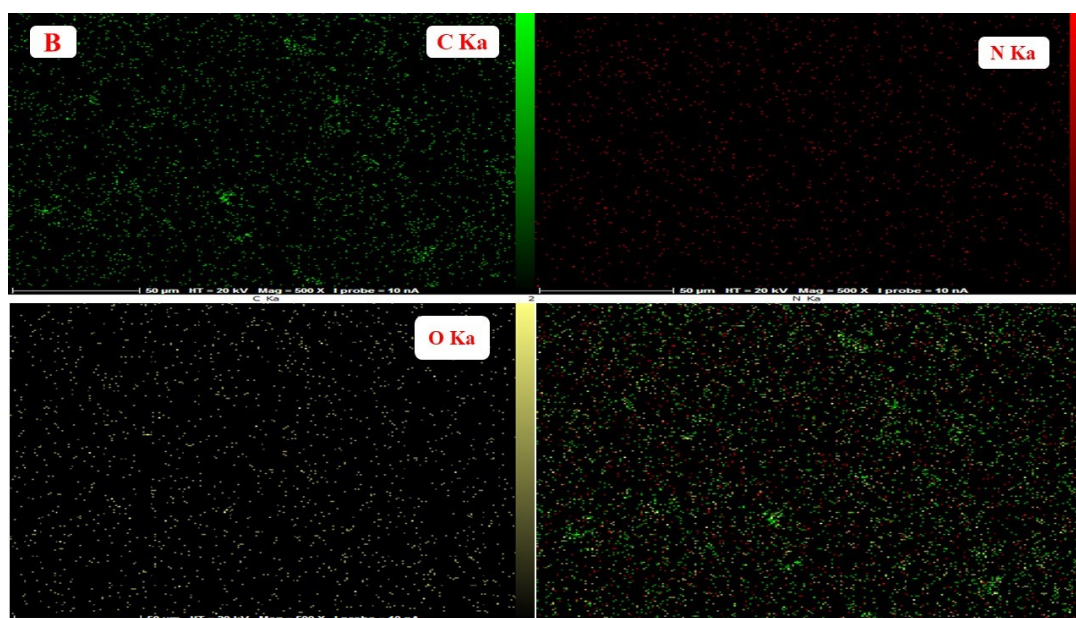
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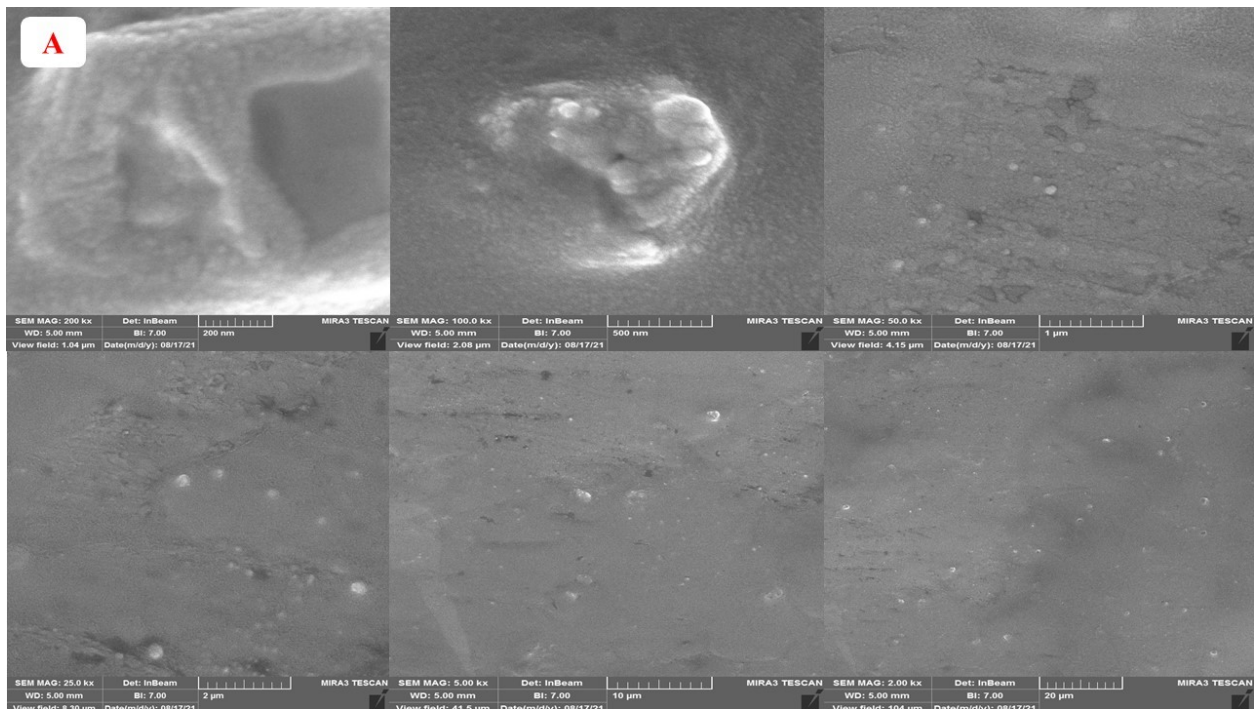


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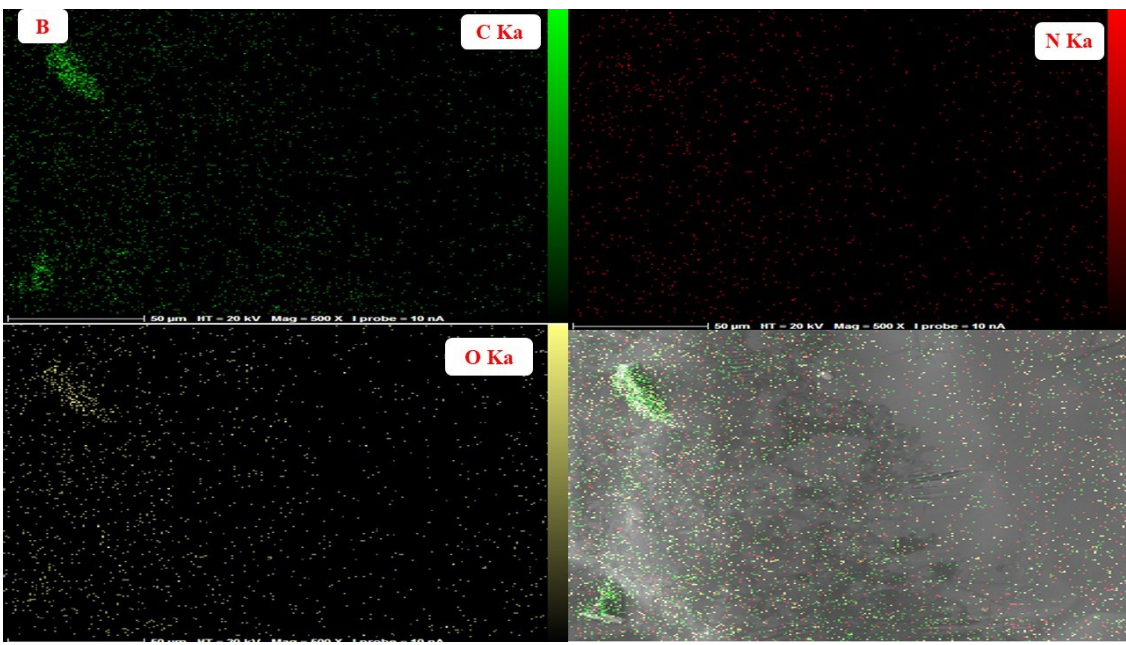
43 Fig. S2. A, B. FE-SEM with MAP images of GO-PEI-AuNPs/AuE surface with different magnifications.

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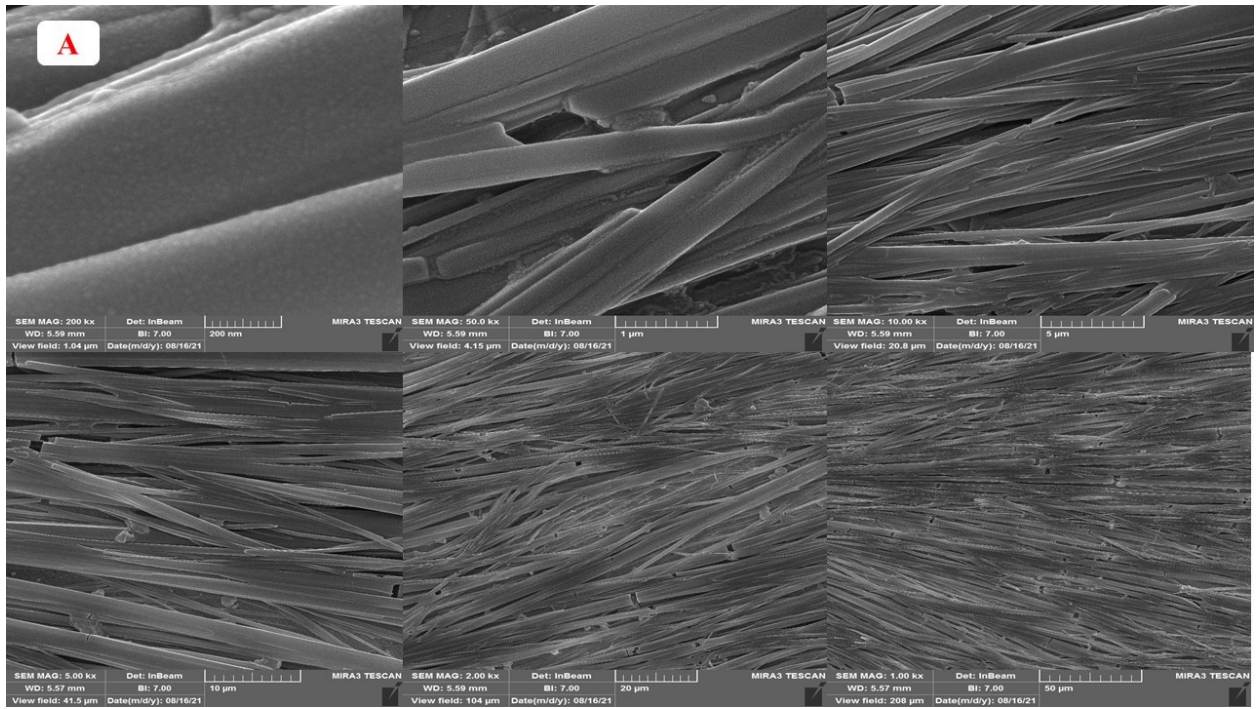


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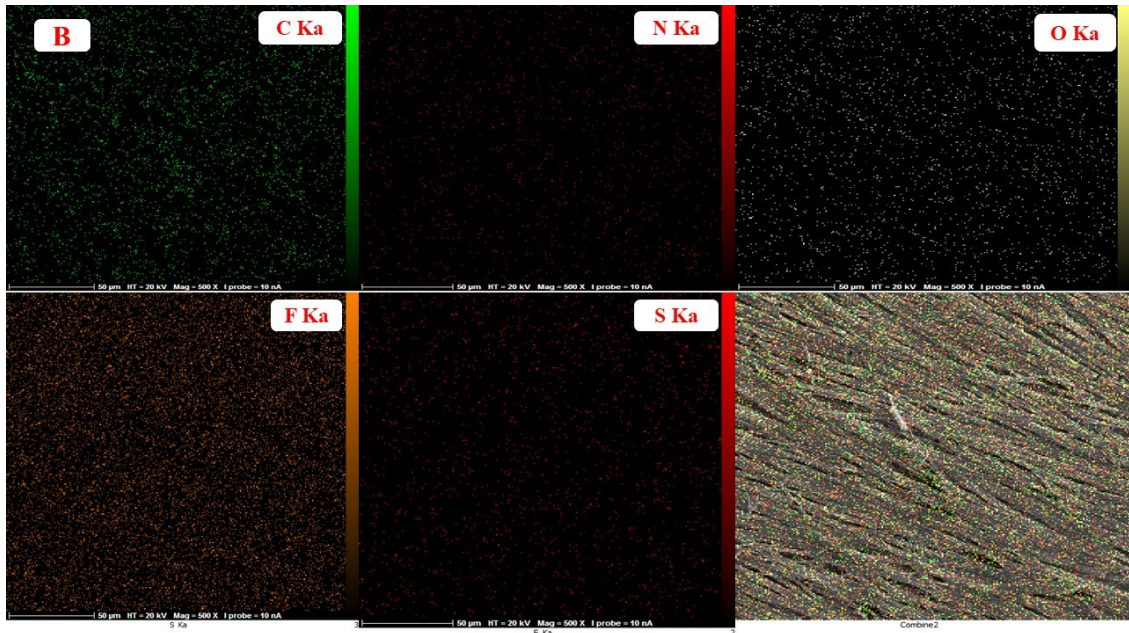
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Fig. S3, A, B. FE-SEM with MAP images of Apt/GO-PEI-AuNPs/AuE with various magnifications.



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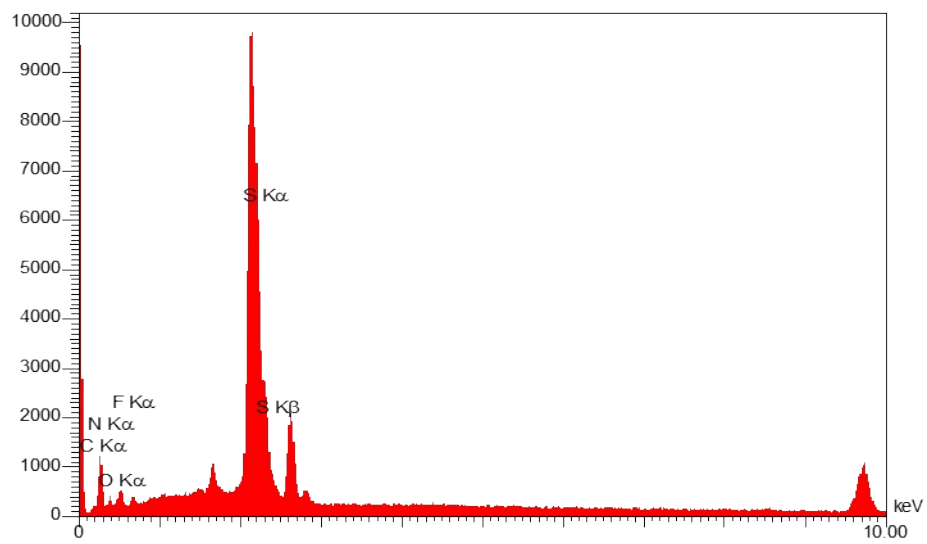
56 **Fig. S4, A, B.** FE-SEM with MAP images of CFX/Apt/GO-PEI-AuNPs/AuE with various magnifications.

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63 **Fig. S5.** EDS result of CFX/MCH/Apt/GO-PEI-AuNPs/AuE

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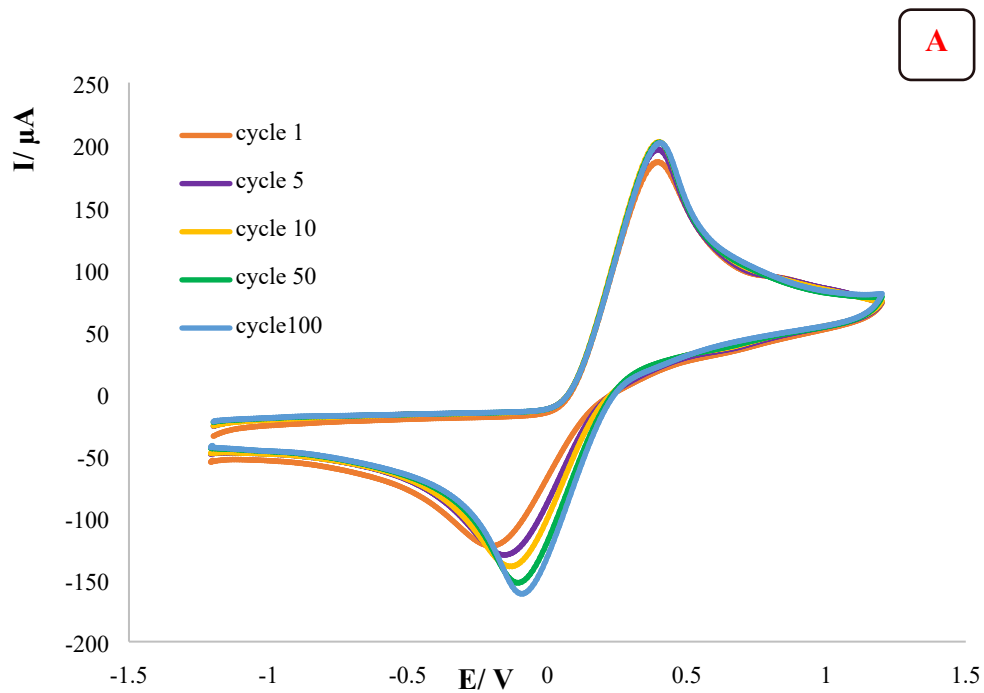
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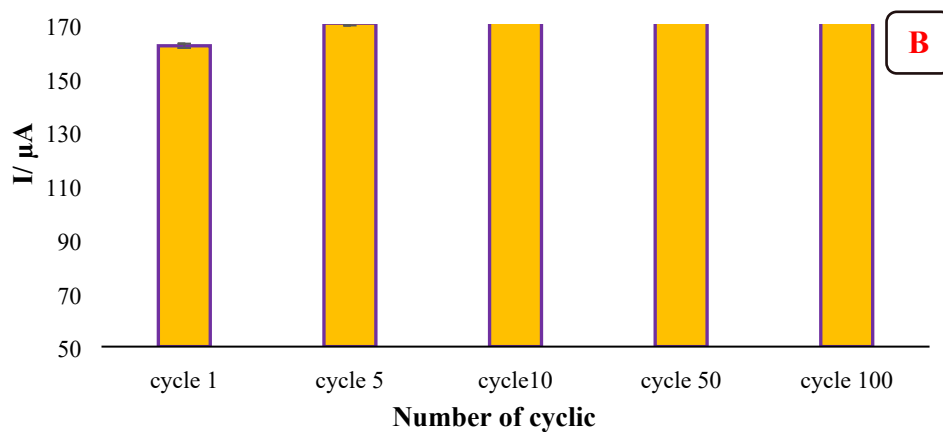
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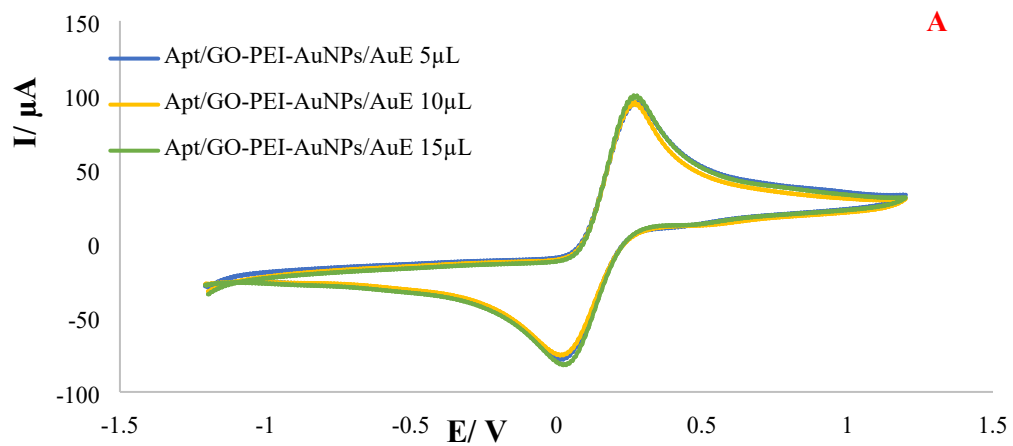
79 **Fig. S5. (A)** CVs of GO-PEI-AuNPs/AuE in the potential range of -1.2 to +1.2V and sweep rate of 100

80 mV/s in various cycles 1, 5, 10, 50, 100 cycles in 0.01 M of $K_3Fe(CN)_6$ (0.1M KCl) solution, **B)**

81 Histograms of peak current versus number of cyclic.

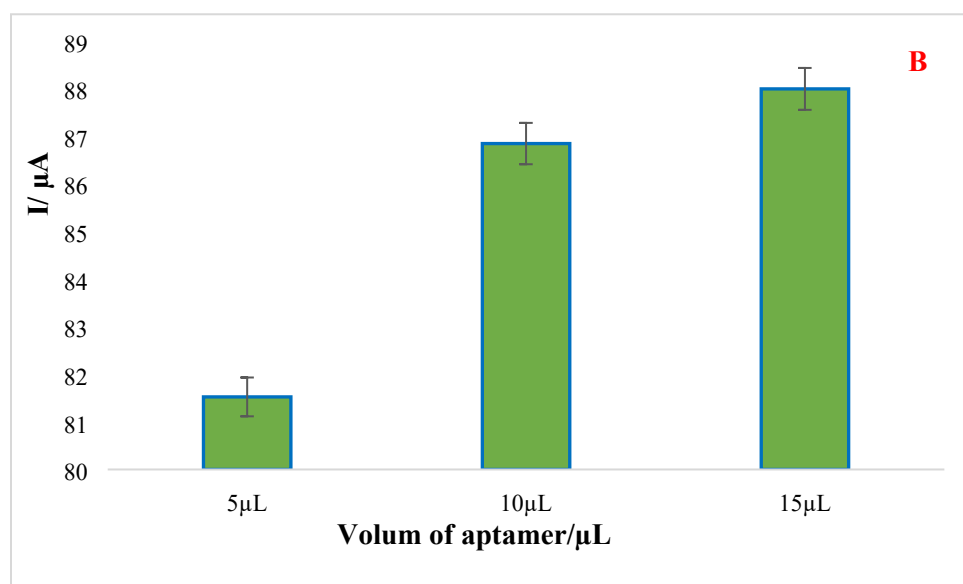
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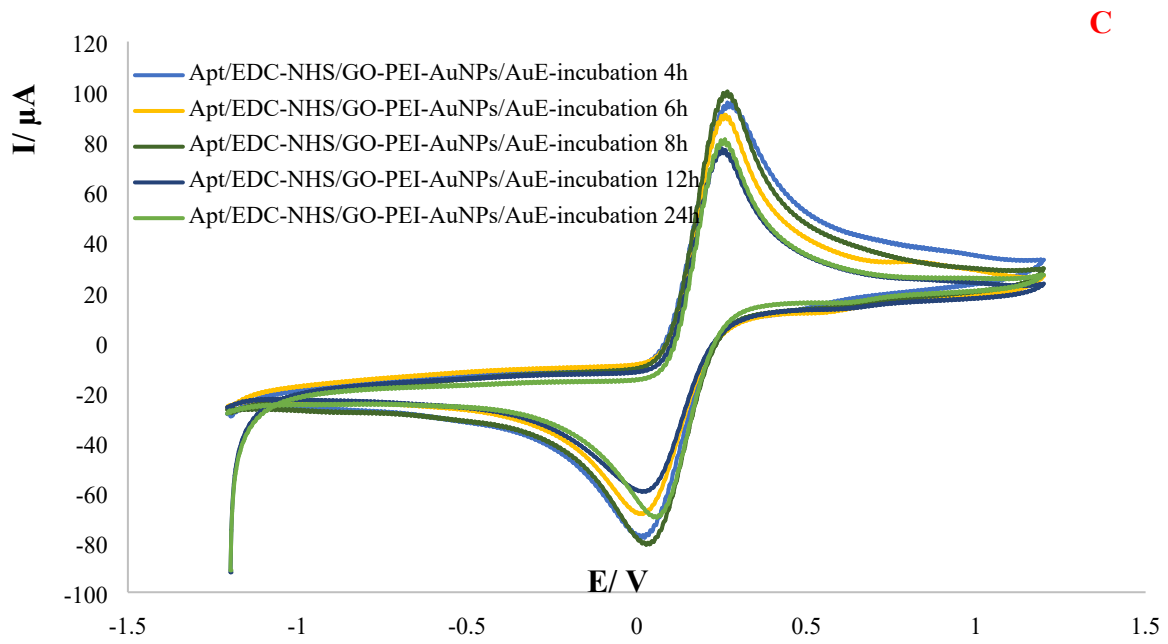
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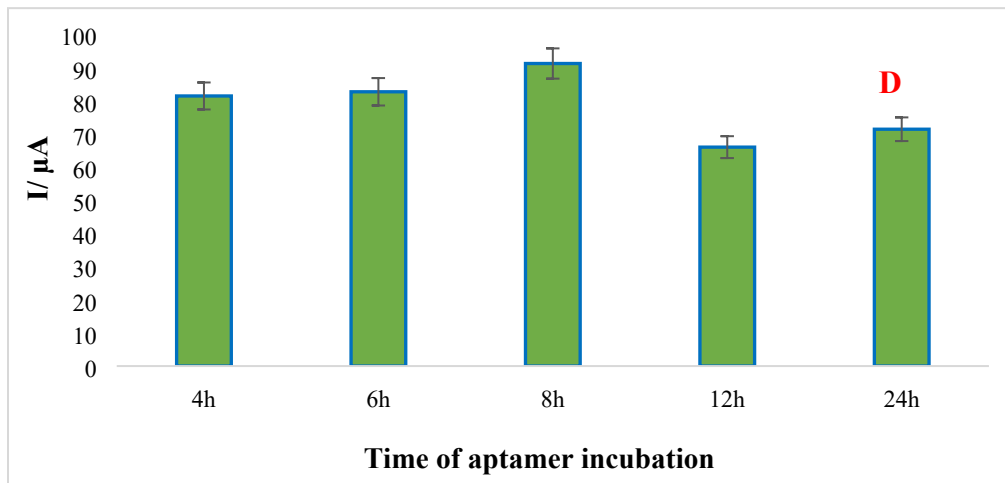
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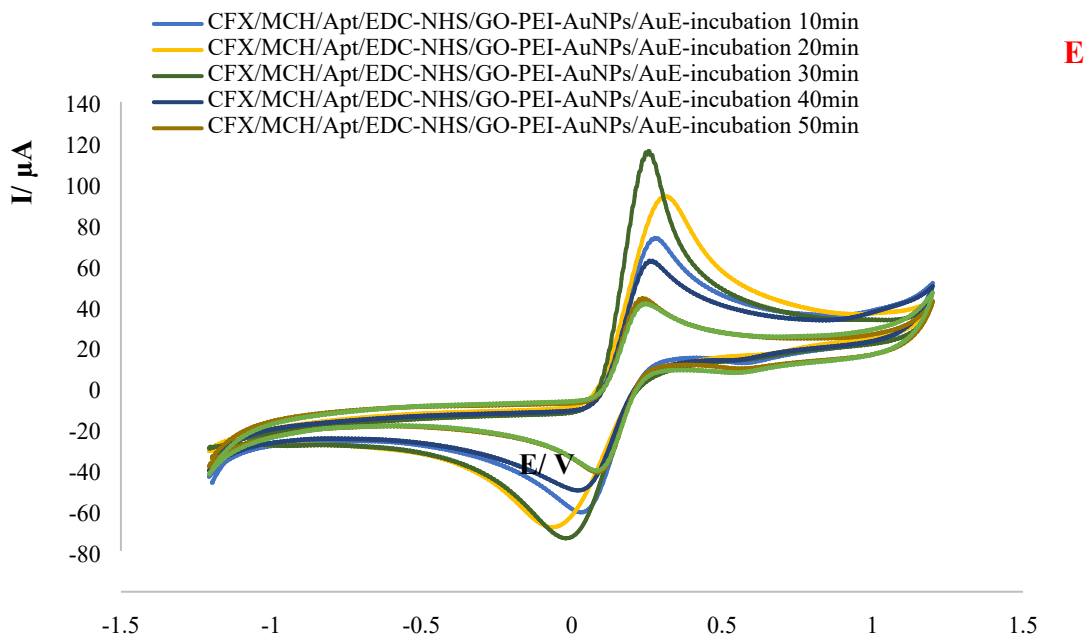


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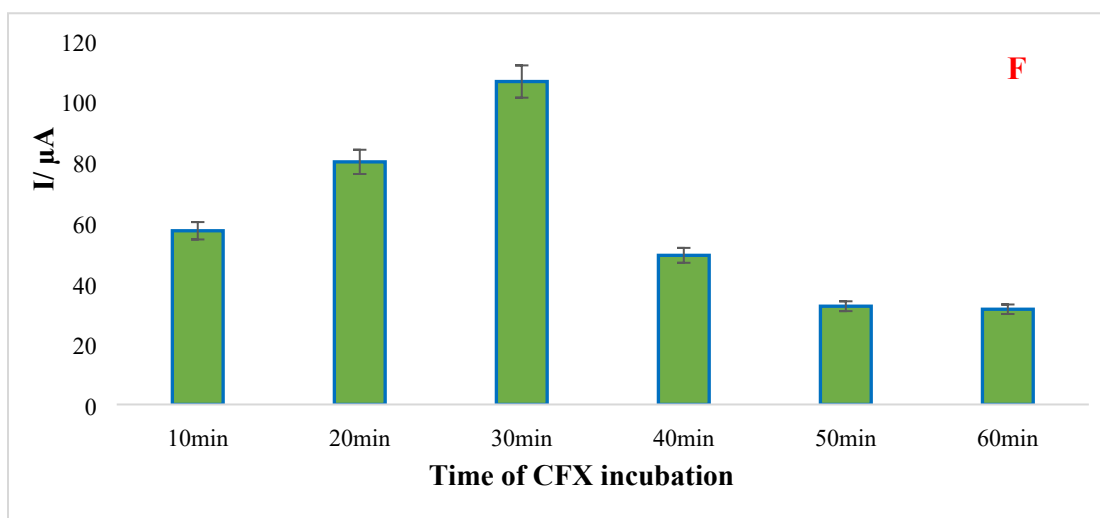
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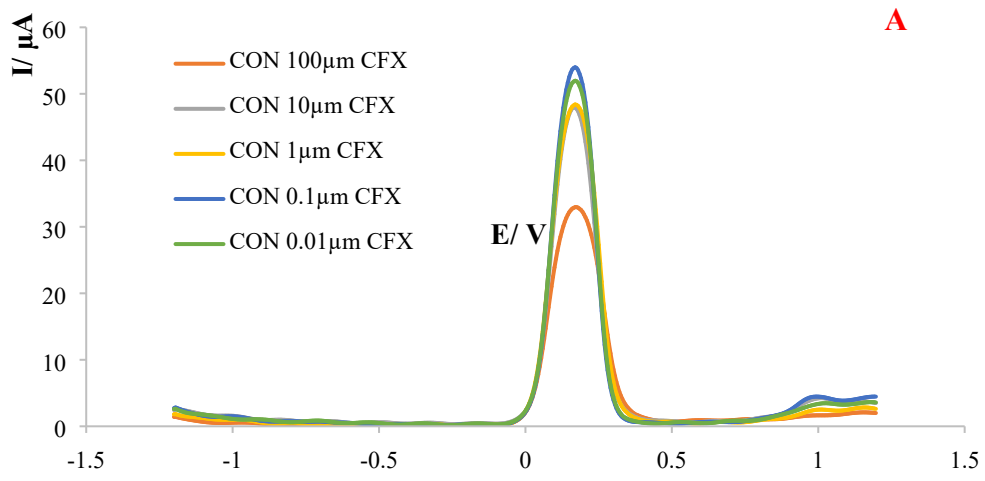


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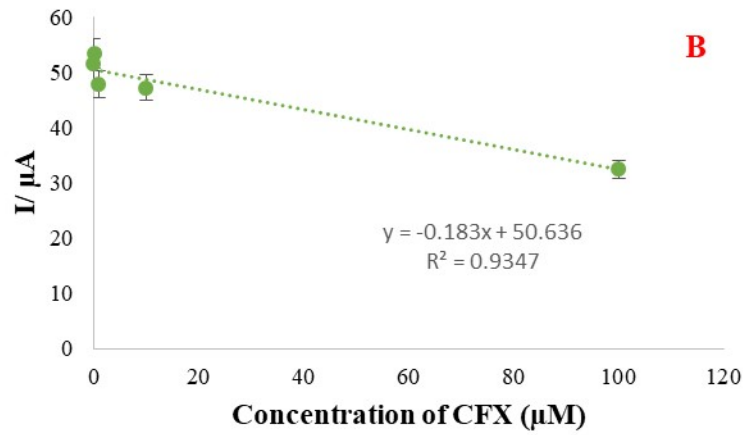


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100 **Fig. S6.** **A)** CVs of GO-PEI-AuNPs/AuE after attachment of aptamer with various volume of aptamer (5,
 101 10, and 15μL) **B)** Histogram of peak current versus aptamer volume. **C)** CVs of Apt/GO-PEI-AuNPs/AuE
 102 in different incubation time of aptamer (4, 6, 8, 12, and 24 h), **D)** Histogram of peak current based on
 103 incubation time of aptamer on the surface of GO-PEI AuNPs/AuE. **E)** CVs of MCH/Apt/GO-PEI-
 104 AuNPs/AuE in diverse time (10, 20, 30, 40, 50 and 60 min) after CFX incubation, **F)** Histogram of peak
 105 current versus incubation time of CFX on the modified AuE surface.



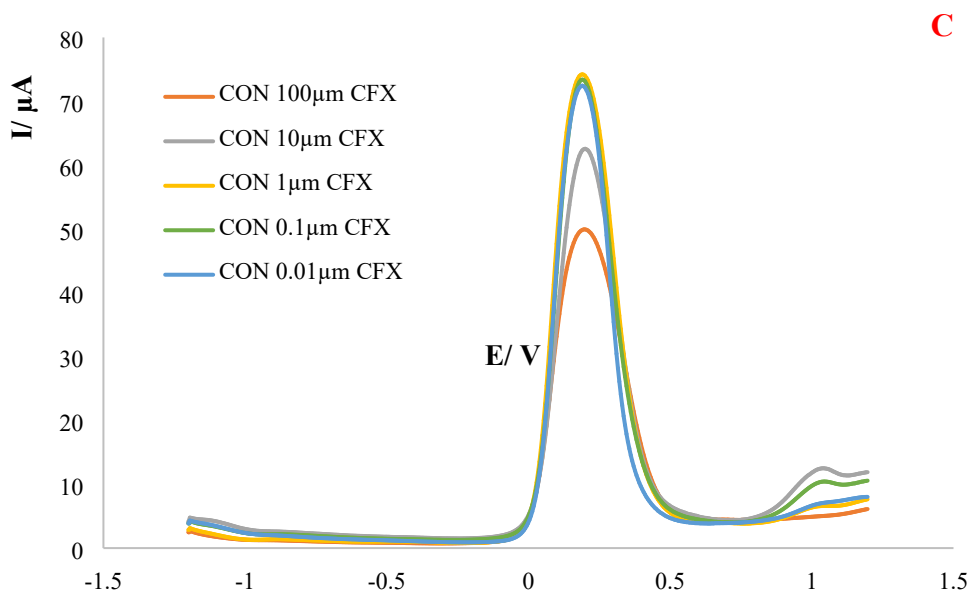
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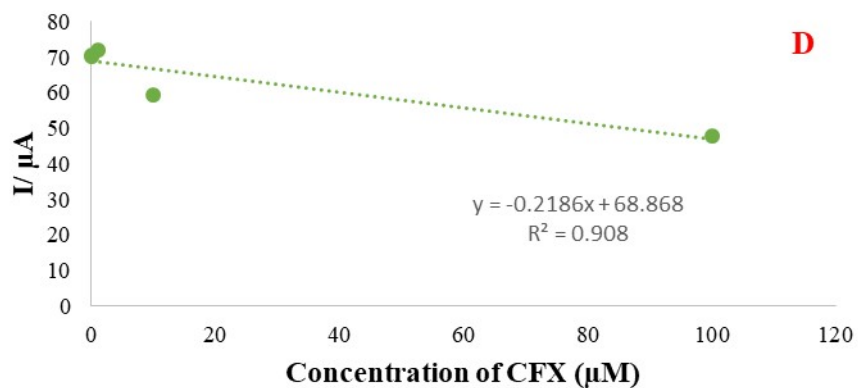


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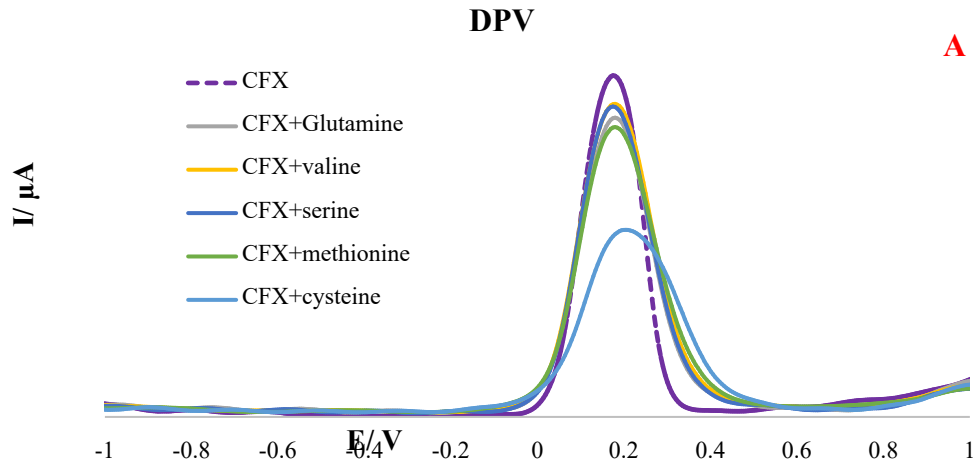
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115 **Fig. S7.** (A, C) DPVs and SWVs of MCH/Apt/EDC-NHS/GO-PEI-AuNPs/AuE proposed aptamer assay
 116 in the CFX presence (100, 10, 1, 0.1, 0.01 μM) on potential range of -1.2 to +1.2 V. Supporting electrolyte
 117 is 0.01 M of $K_3Fe(CN)_6$ (0.1M KCl). (B, D) DPV and SWV calibration curve of CFX determination in
 118 different concentration.

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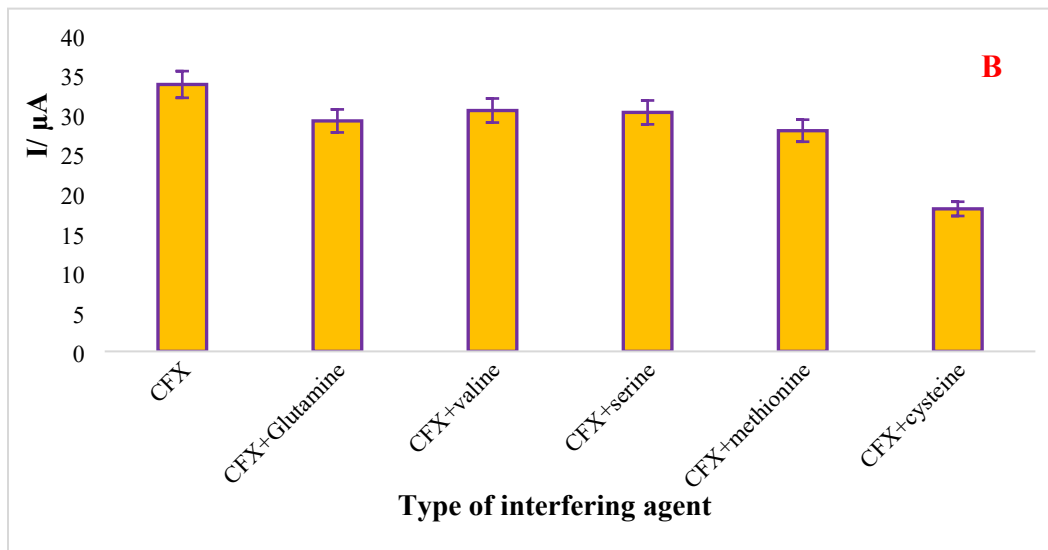
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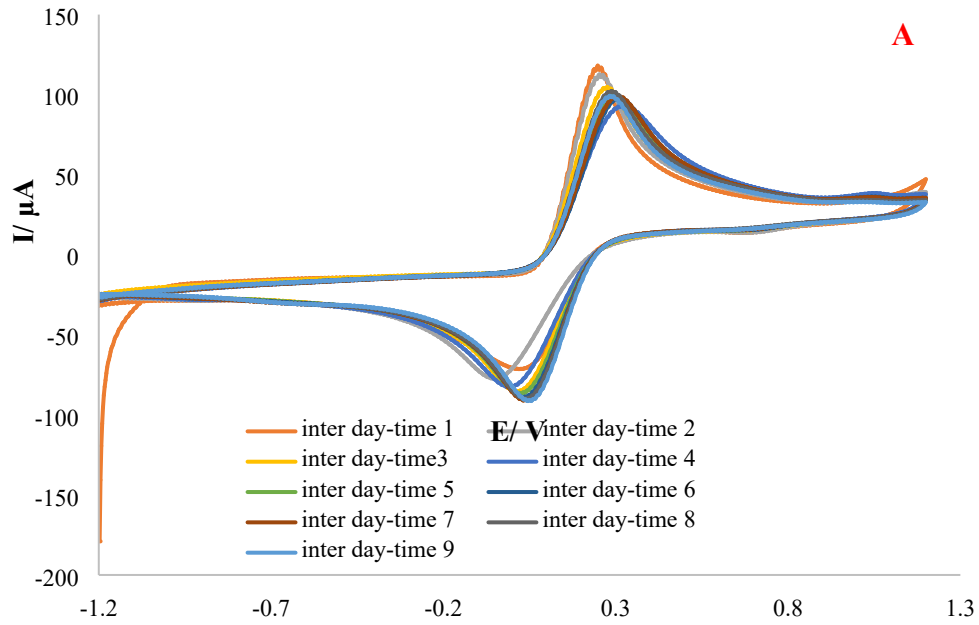
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126 **Fig. S8.** (A) DPVs of MCH/Apt/GO-PEI-AuNPs/AuE established aptasensor in the existence of some
127 interfering species (serine, valine, cysteine, methionine, and glutamine) in the solution of 0.01 M of
128 $K_3Fe(CN)_6$ (0.1M KCl). (B) Histogram of peak current versus various kind of interfering agent.

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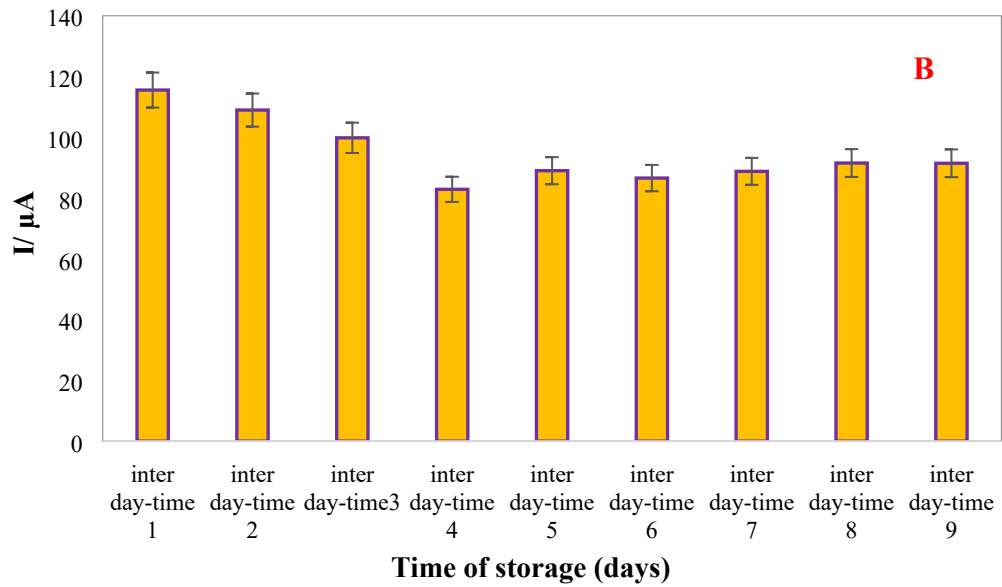
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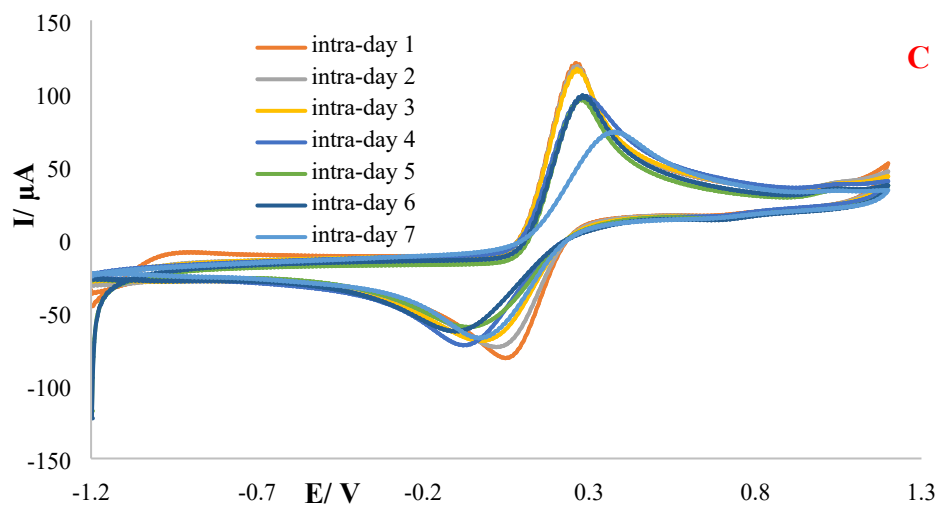
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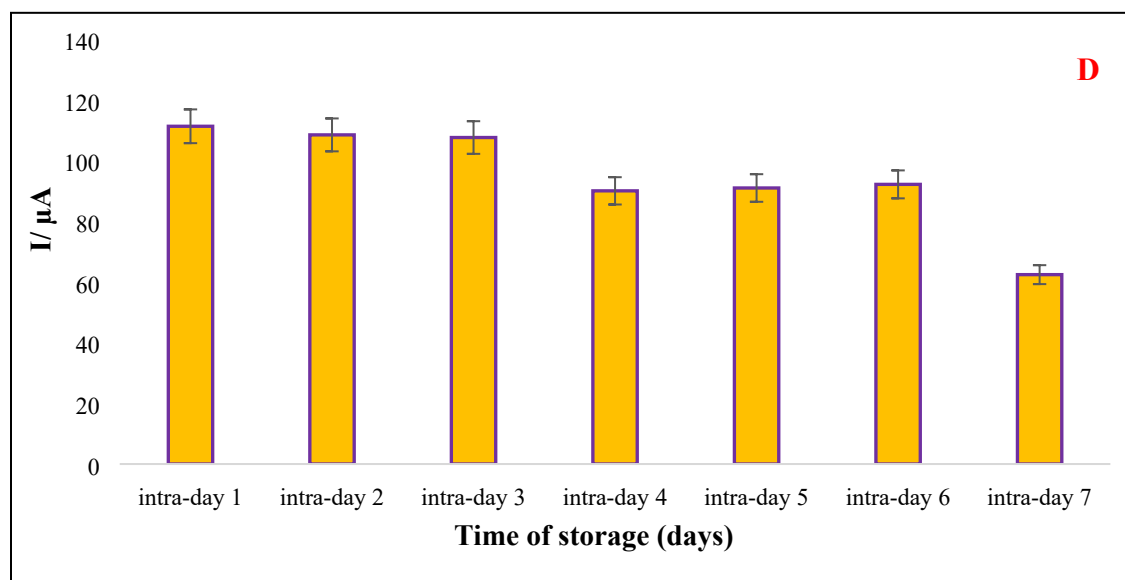
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144 **Fig. S9.** (A, C) The CVs of Apt/EDC-NHS/GO-PEI-AuNPs/AuE suggested probe to study the inter and
 145 intra-day stability in 0.01 M of $K_3Fe(CN)_6$ (0.1M KCl) solution. (B, D) Histogram of peak current based
 146 on different storage time via CV technique. (SD-2.06, n=3).

