

Supporting Information

Cytidine rich hydrogel as the electrochemical signal amplification strategy for microRNAs detection

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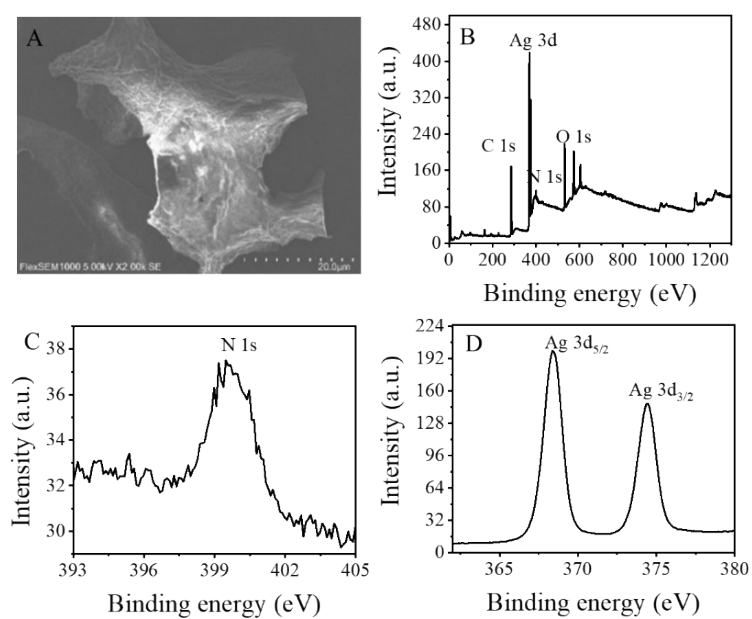


Fig. S1. The SEM and the XPS spectra of C-Ag (I)-C hydrogel.

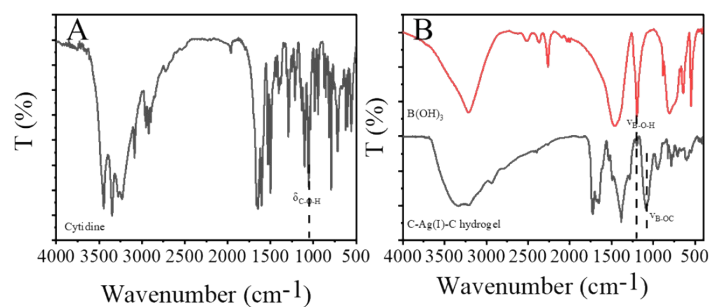


Fig. S2. FTIR spectra of cytidine (A), boric acid and C-Ag(I)-C hydrogel (B).

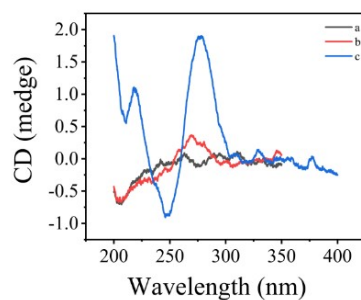


Fig. S3. The CD response of different DNA structures. The CD response of miRNA -21 (a) and LNA (b); three-way conjunction (c).

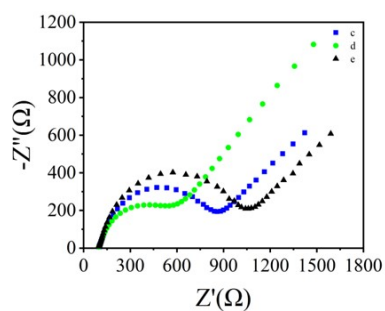


Fig.S4. The EIS responses of the LNA and MCH modified gold electrode (c) and C-Ag (I)-C hydrogel (d), the three-way conjunction modified gold electrode (e).

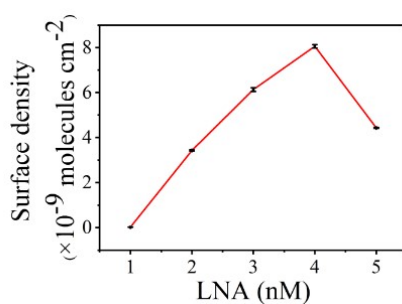


Fig. S5. The optimization of experimental conditions about the concentration of LNA.

Table S1. Comparison of this electrochemical biosensor with other methods of miRNAs detection

Detection method	Signal amplification strategy	Linear range	LOD	Reference
Electrochemistry	catalytic hairpin assembly (CHA)	0.2 fM ~ 0.2 nM	0.1 fM	1
Electrochemiluminescence and Electrochemical Impedance Spectroscopy	hybridization chain reaction (HCR)	5 fM ~ 5000 fM	2 fM	2
Electrochemistry	strand displacement reaction (SDR)	1.0 fM ~ 2 pM	0.0145 fM	3
Fluorescence	quantitative real-time polymerase chain reaction (qRT-PCR)	10 fM ~ 10 nM	3.74 fM	4
Electrochemistry	rolling circle-quantitative PCR (RC-qPCR)	1 fM ~ 100 pM	0.5 fM	5
Electrochemistry	rolling circle amplification (RCA)	10 fM ~10 nM	2.75 fM	6
Electrochemistry	Ag hydrogel	1 fM ~ 100 pM	0.117 fM	Our Work

Table S2. Recovery of the microRNA -21 of this electrochemical biosensor in Bovine Serum

Serum sample	Add (pM)	Found (pM)	Recovery (%)	RSD (%)
1	5	5.12	102.5	1.60
2	25	24.76	99.06	3.91
3	50	50.77	101.55	6.94

Reference

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