Electronic Supplementary Material (ESI) for Analyst.

Target-Driven Assembly of DNAzyme Probes for Simultaneous Electrochemical Detection of Multiplex MicroRNAs

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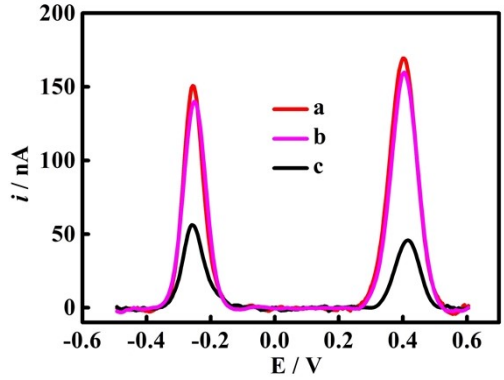

Fig. S1 Typical SWV responses of the biosensor: (a) partzyme 21a+21b+141a+141b+Mg^{2+}; (b) partzyme 21a+21b+141a+141b+ miRNA-141+miRNA-21; (c) partzyme 21a+21b+141a+141b+ miRNA-141+ miRNA-21+Mg^{2+}.

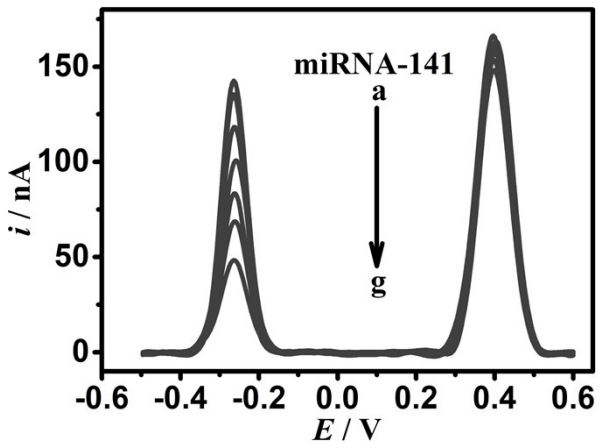

Fig. S2 SWV responses of the biosensor for miRNA-141 detection, from top to bottom (arrow): (a) 0 pM, (b) 50 pM, (c) 100 pM, (d) 500 pM, (e) 1 nM, (f) 5 nM, and (g) 10 nM.

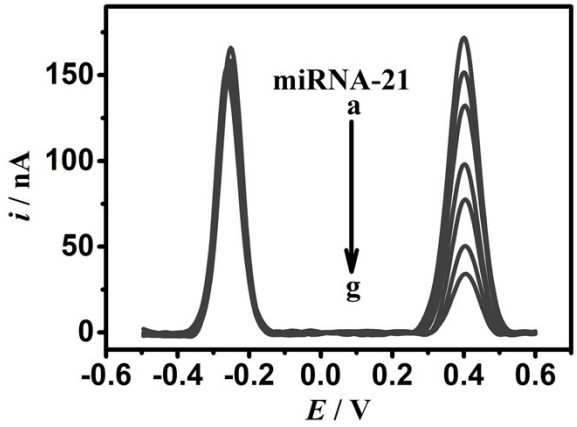

Fig. S3 SWV responses of the biosensor for miRNA-21 detection, from top to bottom (arrow): (a) 0 pM, (b) 50 pM, (c) 100 pM, (d) 500 pM, (e) 1 nM, (f) 5 nM, and (g) 10 nM.

Table S1. Sequences of the oligonucleotides (in 5' to 3'direction)

oligonucleotide	Sequence (5'-3')
MB-HP-141	SH-TTT TTC TAC ACT TTT ATG AGC AT/rA/ GGA CGT ACT TTT GTG TAG-MB
Fc-HP-21	SH-TTT TTC TAC ACT TTT TGA CTG AT/rA/ GGA ATG ACT TTT GTG TAG-Fc
MNAzyme-141A	CCA TCT TTA CCC GGT CGA AAT GCT CAT AA
MNAzyme-141B	AAG TAC GTC TCC GAG CAG ACA GTG TTA
MNAzyme-21A	TCA ACA TCA GTC GGT CGA AAT CAG TCA AA
MNAzyme-21B	AAG TCA TTC TCC GAG CCT GAT AAG CTA
miRNA-141	UAA CAC UGU CUG GUA AAG AUG G
miRNA-21	UAG CUU AUC AGA CUG AUG UUG A
miRNA-155	UUA AUG CUA AUC GUG AUA GGGGU
Let-7a	UGA GGU AGU AGG UUG UAU AGU U

Table S2. Comparison of different methods for the detection of multiplex miRNA

Detection miRNAs	Detection Method	Linear range	Detection limit	Ref.
miR21/miR1246	DNA hexahedron probes	0-100 nM	1.04 nM, 0.79 nM	1
miR373/miR96	MnO_2 nanosheet based FRET	5-50 nM/3-50 nM	0.59 nM, 0.706 nM	2
miR-21/miR-27a/miR-375	DNA three-way junction	5-140 nM/2-100 nM/7-70 nM	462 pM, 301 pM, 154 pM.	3
miR141/miR155	silver nanoclusters	0-1 nM	6.1 pM and 8.7 pM	4
miR-21/miR141	Graphene oxide/silver nanoclusters	0.31-100 nM/0.53 nM-100 nM	0.31 nM, 0.53 nM	5
miR-21/ miR-122/miR-222	Luminex xMAP platform	2.5 pM to 5 nM	2 pM	6

miR-21/miR-141	Generic Neutravidin Biosensor	0.5−1000 pM /50−1000 pM	0.3 pM and 10 pM	[7]
miR-21/miR-141	Target-Driven Assembly of DNAzyme Probes	50 pM-10 nM	24.90 pM, 11.63 pM	This work

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