Supporting Information

Free-enzyme and triple-amplified electrochemical sensing of 8-hydroxy-2′-deoxyguanosine by three kinds of short pDNA-driven catalyzed hairpin assembly following with hybridization chain reaction

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Table S1. The sequences of oligonucleotides used in the experiment

Oligo Name	Sequence (5' to 3')
Apt	GCG GGC GAT CGG CGG GGG GTG CGT GCG CTC TGT GCC AGG GGG TGG GAC AGA TCA TAT GGG GGT GCT-NH_2
P1	CAC CCC CCG CCG ATC GTA GTG TCG TCT TCA
P2	CCT GGC ACA GAG CGC GTA GTG TCG TCT TCA
P3	ATA TGA TCT GTC CCA GTA GTG TCG TCT TCA
HP1	SH-TTT TTT GAA GAC GAC ACT ACC ATG CAT CGT CTT CA
HP2	ATT AAT GTG TGA TGT TGA AGA CGA TGC ATG GTA GTG TCG TCT TCA
HP3	ACA TCA CAC ATT AAT AAC CTA GTG TTC AAG
HP4	ATT AAT GTG TGA TGT CTT GAA CAC TAG GTT

Note: The sequences with same colors are complementary. The underline equences in P1, P2 and P3 are complementary with that in HP1.

Table S2. Comparison of various methods for 8-OH-dG detection.

Method	LOD	Linear range	Reference
Electrochemistry	0.1 μM	0.7 μM – 35 μM	[1]
Electrochemistry	3 nM	20 nM – 3 μM	[2]
Electrochemistry	0.025 nM	0.7 nM – 2 μM, 2-22μM	[3]
HPLC−MS	0.5 nM	-	[4]
CE−ECD	2.6 nM	0.01−1.5 μM	[5]
ECL immunosensor	0.3 nM	0.7-700 nM	[6]
colorimetric aptasensor	141 pM	0.466 - 247 nM	[7]
CD spectra	33 pM	0.05 nM – 2 nM	[8]
Electroaptasensor	2.7 pM	10 pM - 100 μM	[9]
ECL aptasensor	38.8 aM	50 aM - 1 fM	[10]
Electroaptasensor	**24.34 fM**	**100 fM-10 nM**	**Present work**

Table S3. Determination of 8-OH-dG in urine samples.

Samples	Spiked (pM)	Found* (pM)	Recovery (%)	RSD (%)
1	0	116.3	—	4.34
	10	126.5	102	3.28
	100	207.5	91.2	3.75
2	0	123.2	—	4.13
	10	133.3	101	4.25
	100	217.3	94.1	3.57

* 8-OH-dG concentration found in the 1:5 diluted urines.

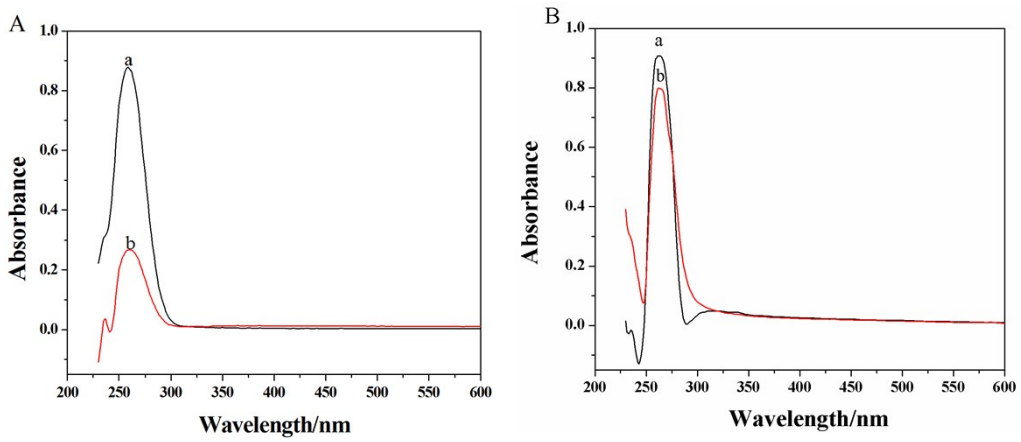

Fig. S1. UV-vis absorption of amino-modified (A) and without amino-modified aptamer (B) in the supernatant before (a) and after (b) reaction with MBs.

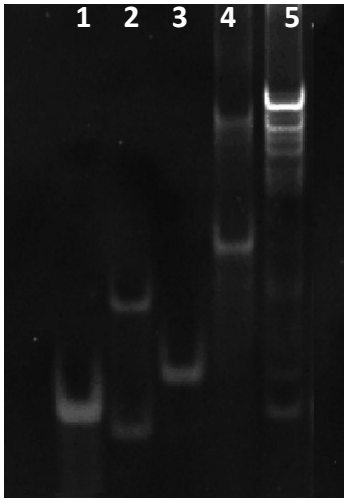

Fig. S2. PAGE gel of different samples. lane 1: 5 μM P1; lane 2: 5 μM P2; lane 3: 5 μM P3; Lane 4: 5 μM aptamers; lane 5: 5 μM aptamers hybridized with P1, P2, and P3 at 37 °C for 2 h.

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