Electronic Supplementary Material (ESI) for Analyst.

Supporting information

Colorimetric discriminatory array for detection and discrimination of antioxidants based on $HAuCl_4$/3,3',5,5'-tetramethylbenzidine

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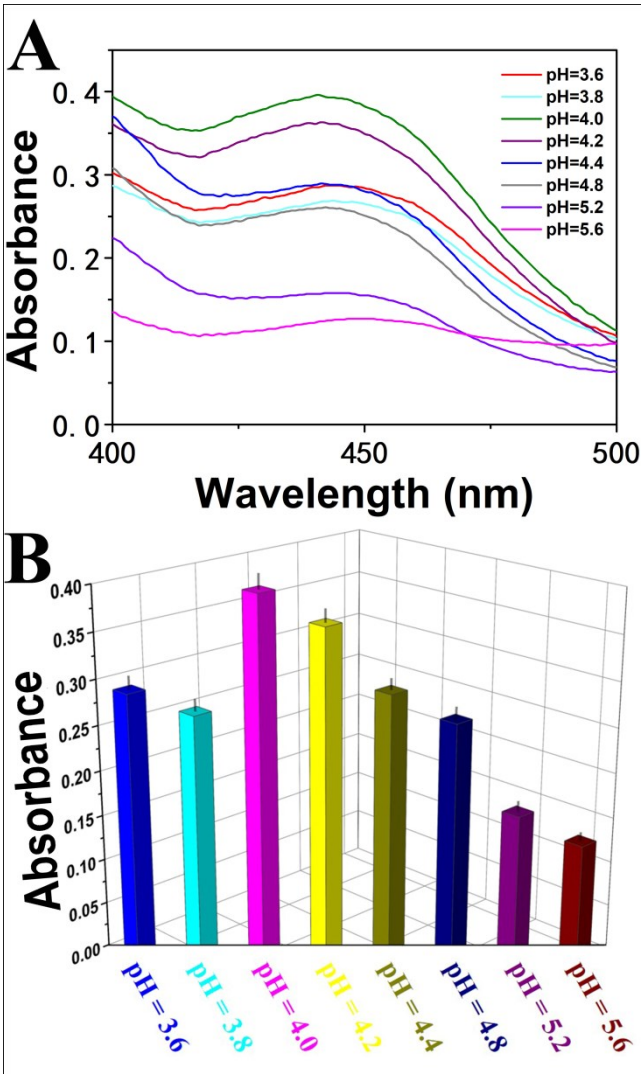

Fig. S1 UV-vis absorption spectra of oxTMB in the presence of acetate-sodium acetate buffer solution with different pHs. The effect of pH on the absorbance of oxTMB. $HAuCl_4$ concentration: 0.08 mM, TMB concentration: 0.1 mM.

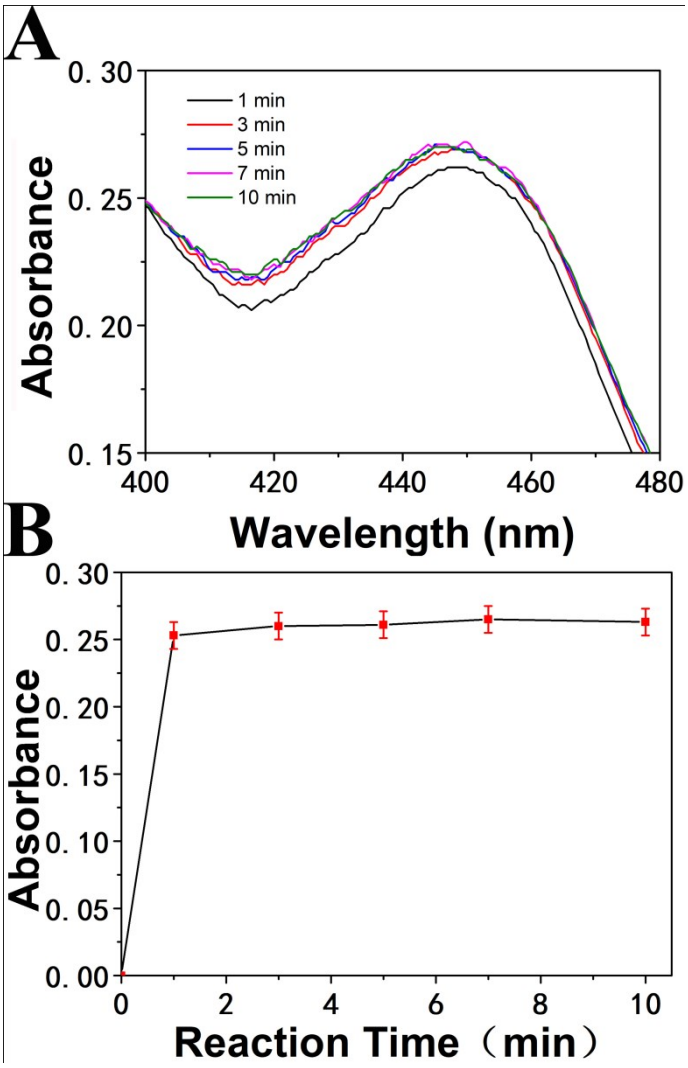

Fig. S2 UV-vis absorption spectra of oxTMB under different reaction time. The effect of reaction time on the absorbance of oxTMB. $HAuCl_4$ concentration: 0.08 mM, TMB concentration: 0.1 mM.

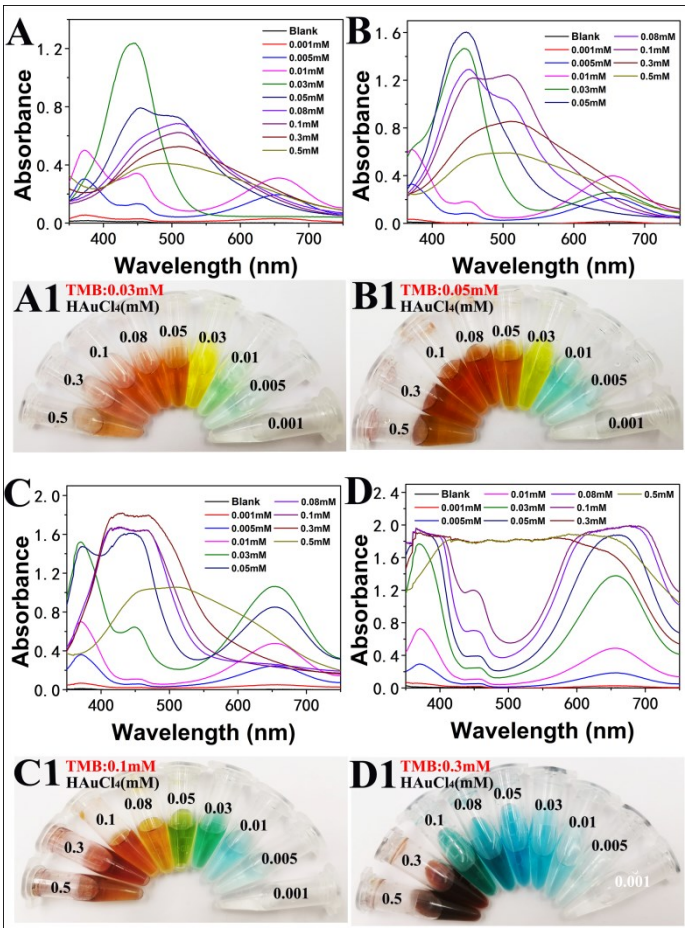

Fig. S3 UV-vis absorption spectra of TMB in the presence of different concentrations of $HAuCl_4$ and (A) 0.03 mM TMB, (B) 0.05 mM TMB, (C) 0.1 mM TMB, and (D) 0.3 mM TMB. (A1-D1) The photographs corresponding to (A-D).

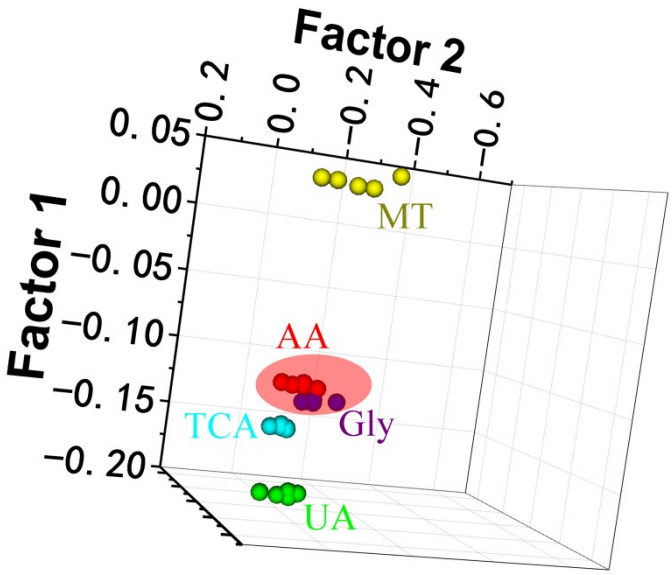

Fig. S4 Canonical score plots for the discrimination of five different antioxidants at 0.8 nM by the sensor array.

Table S1 The training matrix of the colorimetric response patterns against 5 antioxidants by using this sensor assayat the concentration of 200 nM.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
AA	0.0068	-0.1625
AA	0.008	-0.1632
AA	0.0084	-0.1528
AA	0.0082	-0.1499
AA	0.0083	-0.1518
MT	0.0169	0.3327
MT	0.0174	0.3201
MT	0.0166	0.3229
MT	0.0156	0.3225
MT	0.0146	0.3194
UA	0.0043	0.0129
UA	0.0048	0.0101
UA	0.0053	0.0171
UA	0.0049	0.0157
UA	0.0044	0.0134
TCA	0.0268	0.008
TCA	0.0278	0.0041
TCA	0.0279	0.0106
TCA	0.0278	0.009
TCA	0.0275	0.0071
Gly	0.0062	-0.0428
Gly	0.0072	-0.0448
Gly	0.0074	-0.0453
Gly	0.0072	-0.0463
Gly	0.0066	-0.0459

Table S2 The training matrix of the colorimetric response patterns against5 antioxidants by using this sensor assayat the concentration of 120 nM.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
AA	-0.197	0
AA	-0.194	-0.08
AA	-0.198	-0.086
AA	-0.197	-0.028
AA	-0.199	-0.12
MT	-0.05	-0.148
MT	-0.051	-0.237
MT	-0.05	-0.115
MT	-0.053	-0.228
MT	-0.052	-0.287
UA	-0.313	-0.077
UA	-0.315	-0.038
UA	-0.311	-0.077
UA	-0.313	-0.093
UA	-0.313	-0.077
TCA	-0.297	-0.111
TCA	-0.297	-0.061
TCA	-0.297	-0.125
TCA	-0.295	-0.088
TCA	-0.299	-0.125
Gly	-0.225	-0.111
Gly	-0.223	-0.093
Gly	-0.225	-0.086
Gly	-0.225	-0.145
Gly	-0.226	-0.136

Table S3 The training matrix of the colorimetric response patterns against 5 antioxidants by using this sensor assayat the concentration of 60 nM.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
AA	-0.153	0
AA	-0.15	0
AA	-0.154	-0.059
AA	-0.154	0
AA	-0.154	-0.159
MT	-0.003	-0.115
MT	-0.002	-0.176
MT	-0.002	-0.042
MT	-0.005	-0.176
MT	-0.005	-0.166
UA	-0.246	-0.058
UA	-0.246	0
UA	-0.246	-0.04
UA	-0.246	-0.055
UA	-0.248	-0.052
TCA	-0.215	-0.065
TCA	-0.215	-0.025
TCA	-0.215	-0.091
TCA	-0.213	-0.052
TCA	-0.217	-0.092
Gly	-0.172	-0.086
Gly	-0.172	-0.145
Gly	-0.173	-0.086
Gly	-0.171	-0.145
Gly	-0.174	-0.031

Table S4 The training matrix of the colorimetric response patterns against 5 antioxidants by using this sensor assayat the concentration of 20 nM.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
AA	-0.113	0.028
AA	-0.112	-0.028
AA	-0.114	0
AA	-0.114	-0.028
AA	-0.115	-0.065
MT	0.029	0
MT	0.027	-0.138
MT	0.029	-0.042
MT	0.027	-0.096
MT	0.038	-0.204
UA	-0.189	-0.052
UA	-0.191	0
UA	-0.188	-0.027
UA	-0.19	0.045
UA	-0.192	-0.03
TCA	-0.144	0.014
TCA	-0.144	0.042
TCA	-0.144	0
TCA	-0.142	0.015
TCA	-0.145	-1E-3
Gly	-0.123	-0.059
Gly	-0.123	-0.12
Gly	-0.125	-0.059
Gly	-0.123	-0.12
Gly	-0.125	-0.031

Table S5 The training matrix of the colorimetric response patterns against 5 antioxidants by using this sensor assayat the concentration of 1 nM.

Antioxidants	$A_i–A_0$(0.03 mM $HAuCl_4$)	$A_i–A_0$(0.08mM $HAuCl_4$)
AA	0.023	-0.2795
AA	0.0231	-0.277
AA	0.0218	-0.3057
AA	0.022	-0.3022
AA	0.022	-0.282
MT	0.0466	0.1497
MT	0.0454	0.1499
MT	0.0435	0.1472
MT	0.0408	0.146
MT	0.0393	0.1446
UA	0.0297	-0.156
UA	0.0299	-0.1568
UA	0.0287	-0.159
UA	0.0298	-0.1615
UA	0.0292	-0.1627
TCA	0.0369	-0.0766
TCA	0.0352	-0.0734
TCA	0.0365	-0.0775
TCA	0.0363	-0.0803
TCA	0.0355	-0.0798
Gly	0.0633	0.009
Gly	0.0625	0.0099
Gly	0.0618	0.0083
Gly	0.0622	0.0095
Gly	0.061	0.0112

Table S6 The training matrix ofthe colorimetric response patterns against AA at different concentrations by using this sensor assay.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
1 nM	-0.005	0
1 nM	-0.005	0
1 nM	-0.005	0
1 nM	-0.004	-0.035
1 nM	-0.002	0.025
5 nM	-0.017	0
5 nM	-0.018	0
5 nM	-0.02	-0.033
5 nM	-0.018	-0.035
5 nM	-0.016	-0.033
10 nM	-0.037	0
10 nM	-0.037	-0.068
10 nM	-0.04	-0.033
10 nM	-0.037	-0.035
10 nM	-0.035	0
20 nM	-0.065	-0.033
20 nM	-0.067	-0.035
20 nM	-0.068	0
20 nM	-0.065	0
20 nM	-0.064	-0.033
40 nM	-0.083	-0.033
40 nM	-0.084	-0.035
40 nM	-0.086	-0.033
40 nM	-0.084	-0.035
40 nM	-0.082	0
80 nM	-0.121	-0.062

80 nM	-0.121	-0.068
80 nM	-0.123	-0.062
80 nM	-0.12	-0.068
80 nM	-0.12	-0.062
120 nM	-0.154	-0.103
120 nM	-0.156	-0.097
120 nM	-0.157	-0.103
120 nM	-0.154	-0.068
120 nM	-0.155	-0.062
200 nM	-0.244	-0.141
200 nM	-0.246	-0.163
200 nM	-0.248	-0.141
200 nM	-0.245	-0.163
200 nM	-0.245	-0.128

Table S7 The training matrix ofthe colorimetric response patterns against MT at different concentrations by using this sensor assay.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
1 nM	-0.012	0
1 nM	-0.01	-0.138
1 nM	-0.011	-0.042
1 nM	-0.011	-0.096
1 nM	-0.009	-0.204
5 nM	-0.032	-0.08
5 nM	-0.032	-0.138
5 nM	-0.032	-0.08
5 nM	-0.032	-0.138
5 nM	-0.03	-0.204
10 nM	-0.055	-0.115
10 nM	-0.055	-0.176
10 nM	-0.053	-0.042
10 nM	-0.056	-0.176
10 nM	-0.054	-0.166
20 nM	-0.085	-0.115
20 nM	-0.083	-0.138
20 nM	-0.084	-0.115
20 nM	-0.083	-0.138
20 nM	-0.084	-0.256
40 nM	-0.115	-0.148
40 nM	-0.113	-0.237
40 nM	-0.114	-0.115
40 nM	-0.113	-0.228
40 nM	-0.115	-0.287
80 nM	-0.151	-0.163

80 nM	-0.151	-0.211
80 nM	-0.152	-0.132
80 nM	-0.153	-0.259
80 nM	-0.153	-0.256
120 nM	-0.184	-0.177
120 nM	-0.184	-0.287
120 nM	-0.184	-0.163
120 nM	-0.186	-0.273
120 nM	-0.184	-0.287
200 nM	-0.241	-0.163
200 nM	-0.241	-0.211
200 nM	-0.24	-0.132
200 nM	-0.242	-0.259
200 nM	-0.242	-0.256

Table S8 The training matrix ofthe colorimetric response patterns against UA at different concentrations by using this sensor assay.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
1 nM	-0.118	0
1 nM	-0.118	0
1 nM	-0.117	0.028
1 nM	-0.117	-0.028
1 nM	-0.116	0.028
5 nM	-0.135	0
5 nM	-0.137	0.055
5 nM	-0.136	0
5 nM	-0.136	-0.028
5 nM	-0.137	0.028
10 nM	-0.163	0
10 nM	-0.164	0
10 nM	-0.165	0.028
10 nM	-0.164	-0.055
10 nM	-0.163	0
20 nM	-0.189	-0.052
20 nM	-0.191	0
20 nM	-0.188	-0.027
20 nM	-0.19	0.045
20 nM	-0.192	-0.03
40 nM	-0.214	-0.027
40 nM	-0.216	0.013
40 nM	-0.215	-0.027
40 nM	-0.215	-0.042
40 nM	-0.217	-0.04
80 nM	-0.268	-0.065

80 nM	-0.27	-0.025
80 nM	-0.265	-0.04
80 nM	-0.267	-0.093
80 nM	-0.269	-0.065
120 nM	-0.313	-0.077
120 nM	-0.315	-0.038
120 nM	-0.311	-0.077
120 nM	-0.313	-0.093
120 nM	-0.313	-0.077
200 nM	-0.386	-0.088
200 nM	-0.388	-0.061
200 nM	-0.386	-0.065
200 nM	-0.388	-0.116
200 nM	-0.389	-0.088

Table S9 The training matrix ofthe colorimetric response patterns against TCA at different concentrations by using this sensor assay.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
1 nM	-0.035	0.129
1 nM	-0.037	0.12
1 nM	-0.036	0.115
1 nM	-0.036	0.093
1 nM	-0.036	0.079
5 nM	-0.055	0.059
5 nM	-0.055	0.085
5 nM	-0.055	0.045
5 nM	-0.055	0.056
5 nM	-0.056	0.043
10 nM	-0.079	0.129
10 nM	-0.079	0.156
10 nM	-0.079	0.045
10 nM	-0.079	-0.007
10 nM	-0.078	0.115
20 nM	-0.144	0.014
20 nM	-0.144	0.042
20 nM	-0.144	0
20 nM	-0.142	0.015
20 nM	-0.145	-1E-3
40 nM	-0.181	-0.014
40 nM	-0.181	0.014
40 nM	-0.179	-0.028
40 nM	-0.177	-0.015
40 nM	-0.179	-0.03
80 nM	-0.241	-0.077

80 nM	-0.241	-0.061
80 nM	-0.239	-0.091
80 nM	-0.24	-0.088
80 nM	-0.243	-0.102
120 nM	-0.297	-0.111
120 nM	-0.297	-0.061
120 nM	-0.297	-0.125
120 nM	-0.295	-0.088
120 nM	-0.299	-0.125
200 nM	-0.419	-0.19
200 nM	-0.419	-0.145
200 nM	-0.419	-0.204
200 nM	-0.417	-0.172
200 nM	-0.421	-0.166

Table S10 The training matrix ofthe colorimetric response patterns against Gly at different concentrations by using this sensor assay.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
1 nM	-0.042	-0.031
1 nM	-0.042	-0.093
1 nM	-0.042	0
1 nM	-0.04	-0.093
1 nM	-0.042	-0.059
5 nM	-0.083	-0.059
5 nM	-0.083	-0.065
5 nM	-0.084	-0.086
5 nM	-0.083	-0.034
5 nM	-0.083	-0.086
10 nM	-0.141	-0.031
10 nM	-0.142	-0.093
10 nM	-0.142	-0.031
10 nM	-0.141	-0.12
10 nM	-0.142	-0.059
20 nM	-0.19	-0.111
20 nM	-0.19	-0.12
20 nM	-0.19	-0.059
20 nM	-0.19	-0.12
20 nM	-0.19	-0.031
40 nM	-0.225	-0.111
40 nM	-0.223	-0.093
40 nM	-0.225	-0.086
40 nM	-0.225	-0.145
40 nM	-0.226	-0.136
80 nM	-0.284	-0.136

80 nM	-0.282	-0.145
80 nM	-0.285	-0.136
80 nM	-0.284	-0.145
80 nM	-0.286	-0.086
120 nM	-0.042	-0.031
120 nM	-0.042	-0.093
120 nM	-0.042	0
120 nM	-0.04	-0.093
120 nM	-0.042	-0.059
200 nM	-0.083	-0.059
200 nM	-0.083	-0.065
200 nM	-0.084	-0.086
200 nM	-0.083	-0.034
200 nM	-0.083	-0.086

Table S11 The training matrix ofthe colorimetric response patterns against the mixture of 2/3 and 4 kinds of antioxidantsat 1 nM by using this sensor assay.

Antioxidants	$A_i–A_0$(0.03mM $HAuCl_4$)	$A_i–A_0$(0.08mM $HAuCl_4$)
AA:MT=3:1	-0.0014	-0.106
AA:MT=3:1	-0.0028	-0.1065
AA:MT=3:1	-0.0011	-0.104
AA:MT=3:1	-0.002	-0.102
AA:MT=3:1	-0.0008	-0.0994
AA:MT=2:2	0.0156	-0.1876
AA:MT=2:2	0.0144	-0.1844
AA:MT=2:2	0.0159	-0.1869
AA:MT=2:2	0.0155	-0.1821
AA:MT=2:2	0.0169	-0.1871
AA:MT=1:3	-0.0113	-0.2582
AA:MT=1:3	-0.0124	-0.2592
AA:MT=1:3	-0.0107	-0.2616
AA:MT=1:3	-0.0103	-0.2609
AA:MT=1:3	-0.0088	-0.2658
AA:TCA=3:1	-0.007	-0.0445
AA:TCA=3:1	-0.0096	-0.0413
AA:TCA=3:1	-0.0086	-0.0381
AA:TCA=3:1	-0.0095	-0.032
AA:TCA=3:1	-0.0086	-0.0325
AA:TCA=2:2	0.0038	-0.0213
AA:TCA=2:2	0.0019	-0.021
AA:TCA=2:2	0.0029	-0.0203
AA:TCA=2:2	0.0021	-0.0143
AA:TCA=2:2	0.0027	-0.0183

AA:TCA=1:3	0.0041	-0.0496
AA:TCA=1:3	0.0038	-0.0488
AA:TCA=1:3	0.0055	-0.047
AA:TCA=1:3	0.0095	-0.041
AA:TCA=1:3	0.0123	-0.0427
UA:Gly=3:1	0.0032	0.0201
UA:Gly=3:1	0.0007	0.0144
UA:Gly=3:1	0.0016	0.018
UA:Gly=3:1	0.0013	0.0224
UA:Gly=3:1	0.002	0.025
UA:Gly=2:2	0.0037	-0.036
UA:Gly=2:2	0.0003	-0.0397
UA:Gly=2:2	0.0007	-0.036
UA:Gly=2:2	0.0006	-0.0316
UA:Gly=2:2	0.001	-0.0293
AA:MT:UA=1:2:2	0.0189	-0.1635
AA:MT:UA=1:2:2	0.0205	-0.1643
AA:MT:UA=1:2:2	0.0207	-0.1643
AA:MT:UA=1:2:2	0.0222	-0.1645
AA:MT:UA=1:2:2	0.0231	-0.1645
AA:MT:UA=1:3:1	-0.0047	-0.2152
AA:MT:UA=1:3:1	-0.0023	-0.2165
AA:MT:UA=1:3:1	-0.0022	-0.2271
AA:MT:UA=1:3:1	-2E-4	-0.2296
AA:MT:UA=1:3:1	4E-4	-0.231
AA:MT:UA=2:2:1	3E-4	-0.2097
AA:MT:UA=2:2:1	-6E-4	-0.2101
AA:MT:UA=2:2:1	-3E-4	-0.2102
AA:MT:UA=2:2:1	1E-3	-0.2106

AA:MT:UA=2:2:1	0.002	-0.2106
AA:MT:UA=2:1:2	-1E-4	-0.1324
AA:MT:UA=2:1:2	-1E-4	-0.1335
AA:MT:UA=2:1:2	-5E-4	-0.1342
AA:MT:UA=2:1:2	1E-3	-0.1372
AA:MT:UA=2:1:2	0.0018	-0.1346
AA:MT:UA=3:1:1	0.0223	-0.1427
AA:MT:UA=3:1:1	0.0226	-0.1449
AA:MT:UA=3:1:1	0.0218	-0.1499
AA:MT:UA=3:1:1	0.0227	-0.1551
AA:MT:UA=3:1:1	0.024	-0.1558
AA:MT:UA=1:1:3	0.0039	-0.1573
AA:MT:UA=1:1:3	0.0036	-0.1573
AA:MT:UA=1:1:3	0.0022	-0.1585
AA:MT:UA=1:1:3	0.0051	-0.1606
AA:MT:UA=1:1:3	0.0052	-0.1656
AA:MT:UA:TCA=2:1:1:1	0.0024	-0.1451
AA:MT:UA:TCA=2:1:1:1	0.0022	-0.1442
AA:MT:UA:TCA=2:1:1:1	0.0023	-0.1416
AA:MT:UA:TCA=2:1:1:1	0.0039	-0.1441
AA:MT:UA:TCA=2:1:1:1	0.0042	-0.1414
AA:MT:UA:TCA=1:2:1:1	-0.0035	-0.2565
AA:MT:UA:TCA=1:2:1:1	-0.002	-0.2604
AA:MT:UA:TCA=1:2:1:1	-0.0012	-0.2607
AA:MT:UA:TCA=1:2:1:1	7E-4	-0.263
AA:MT:UA:TCA=1:2:1:1	0.0015	-0.2648
AA:MT:UA:TCA=1:1:2:1	-0.0043	-0.1488
AA:MT:UA:TCA=1:1:2:1	-0.0034	-0.1543
AA:MT:UA:TCA=1:1:2:1	-0.0026	-0.1585

AA:MT:UA:TCA=1:1:2:1	-1E-3	-0.1593
AA:MT:UA:TCA=1:1:2:1	-4E-4	-0.1625
AA:MT:UA:TCA=1:1:1:2	0.0026	-0.1
AA:MT:UA:TCA=1:1:1:2	0.0047	-0.104
AA:MT:UA:TCA=1:1:1:2	0.0051	-0.1061
AA:MT:UA:TCA=1:1:1:2	0.0067	-0.1069
AA:MT:UA:TCA=1:1:1:2	0.0067	-0.1075

Table S12 The training matrix ofthe colorimetric response patterns against the 14 antioxidants at different concentrations by using this sensor assay.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
AA(200nM)	-0.244	-0.141
AA(200nM)	-0.246	-0.163
AA(200nM)	-0.248	-0.141
AA(200nM)	-0.245	-0.163
AA(200nM)	-0.245	-0.128
MT(1nM)	-0.012	0
MT(1nM)	-0.01	-0.138
MT(1nM)	-0.011	-0.042
MT(1nM)	-0.011	-0.096
MT(1nM)	-0.009	-0.204
MT(10nM)	-0.055	-0.115
MT(10nM)	-0.055	-0.176
MT(10nM)	-0.053	-0.042
MT(10nM)	-0.056	-0.176
MT(10nM)	-0.054	-0.166
MT(20nM)	-0.085	-0.115
MT(20nM)	-0.083	-0.138
MT(20nM)	-0.084	-0.115
MT(20nM)	-0.083	-0.138
MT(20nM)	-0.084	-0.256
MT(40nM)	-0.115	-0.148
MT(40nM)	-0.113	-0.237
MT(40nM)	-0.114	-0.115
MT(40nM)	-0.113	-0.228
MT(40nM)	-0.115	-0.287
UA(5nM)	-0.135	0

UA(5nM)	-0.137	0.055
UA(5nM)	-0.136	0
UA(5nM)	-0.136	-0.028
UA(5nM)	-0.137	0.028
UA(10nM)	-0.163	0
UA(10nM)	-0.164	0
UA(10nM)	-0.165	0.028
UA(10nM)	-0.164	-0.055
UA(10nM)	-0.163	0
UA(80nM)	-0.268	-0.065
UA(80nM)	-0.27	-0.025
UA(80nM)	-0.265	-0.04
UA(80nM)	-0.267	-0.093
UA(80nM)	-0.269	-0.065
UA(120nM)	-0.313	-0.077
UA(120nM)	-0.315	-0.038
UA(120nM)	-0.311	-0.077
UA(120nM)	-0.313	-0.093
UA(120nM)	-0.313	-0.077
UA(200nM)	-0.386	-0.088
UA(200nM)	-0.388	-0.061
UA(200nM)	-0.386	-0.065
UA(200nM)	-0.388	-0.116
UA(200nM)	-0.389	-0.088
TCA(200nM)	-0.419	-0.19
TCA(200nM)	-0.419	-0.145
TCA(200nM)	-0.419	-0.204
TCA(200nM)	-0.417	-0.172
TCA(200nM)	-0.421	-0.166

Gly(80nM)	-0.19	-0.111
Gly(80nM)	-0.19	-0.12
Gly(80nM)	-0.19	-0.059
Gly(80nM)	-0.19	-0.12
Gly(80nM)	-0.19	-0.031
Gly(120nM)	-0.225	-0.111
Gly(120nM)	-0.223	-0.093
Gly(120nM)	-0.225	-0.086
Gly(120nM)	-0.225	-0.145
Gly(120nM)	-0.226	-0.136
Gly(200nM)	-0.284	-0.136
Gly(200nM)	-0.282	-0.145
Gly(200nM)	-0.285	-0.136
Gly(200nM)	-0.284	-0.145
Gly(200nM)	-0.286	-0.086

Table S13 The training matrix of the colorimetric response patterns againstthe 5 analytesat 10 nM with LIA, DA, PDA, GSH, and Cys at100 nM as potential interferencesusing this sensor assay.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
AA	0.023	-0.2795
AA	0.0231	-0.277
AA	0.0218	-0.3057
AA	0.022	-0.3022
AA	0.022	-0.282
MT	0.0466	0.1497
MT	0.0454	0.1499
MT	0.0435	0.1472
MT	0.0408	0.146
MT	0.0393	0.1446
UA	0.0297	-0.156
UA	0.0299	-0.1568
UA	0.0287	-0.159
UA	0.0298	-0.1615
UA	0.0292	-0.1627
TCA	0.0369	-0.0766
TCA	0.0352	-0.0734
TCA	0.0365	-0.0775
TCA	0.0363	-0.0803
TCA	0.0355	-0.0798
Gly	0.0633	0.009
Gly	0.0625	0.0099
Gly	0.0618	0.0083
Gly	0.0622	0.0095
Gly	0.061	0.0112
LIA	-0.0064	-0.7023
LIA	-0.0062	-0.7035
LIA	-0.006	-0.7125
LIA	-0.0053	-0.7218
LIA	-0.0025	-0.7284
DA	-0.237	-0.6805
DA	-0.2374	-0.6823
DA	-0.2384	-0.6958
DA	-0.2397	-0.7028
DA	-0.2393	-0.7087
PDA	-0.1965	-0.5276
PDA	-0.1961	-0.5336
PDA	-0.1987	-0.5466
PDA	-0.1998	-0.5566

PDA	-0.1998	-0.5621
GSH	0.0033	-0.0078
GSH	0.0033	0.0015
GSH	0.0026	-0.0015
GSH	0.003	0
GSH	0.0045	-0.0014
Cys	-0.013	0.0087
Cys	-0.0142	0.0146
Cys	-0.0146	0.014
Cys	-0.0151	0.0168
Cys	-0.0128	0.0169

Table S14 The training matrix ofthe colorimetric response patterns against the 5 antioxidants at 1 nM in serum samples by using this sensor assay.

Antioxidants	A_i–A_0(0.03mM $HAuCl_4$)	A_i–A_0(0.08mM $HAuCl_4$)
AA	-0.0084	-0.1318
AA	-0.0176	-0.1271
AA	-0.0191	-0.1265
AA	-0.0119	-0.1312
AA	-0.0167	-0.1262
MT	0.0018	-0.1456
MT	-0.0068	-0.1399
MT	-0.0043	-0.1392
MT	0.0021	-0.1393
MT	-1E-4	-0.1376
UA	-0.0028	-0.0504
UA	-0.0143	-0.0463
UA	-0.0124	-0.0492
UA	-0.0061	-0.0505
UA	-5E-4	-0.0491
TCA	6E-4	-0.1032
TCA	-0.0085	-0.101
TCA	-0.0058	-0.1019
TCA	2E-4	-0.1029
TCA	-0.0019	-0.102
Gly	-0.0084	-0.1318
Gly	-0.0176	-0.1271
Gly	-0.0191	-0.1265
Gly	-0.0119	-0.1312
Gly	-0.0167	-0.1262