Supporting Information

for

Sensitive electrochemical sensors for simultaneous determination of ascorbic acid, dopamine, and uric acid based on Au@Pd–reduced graphene oxide nanocomposites

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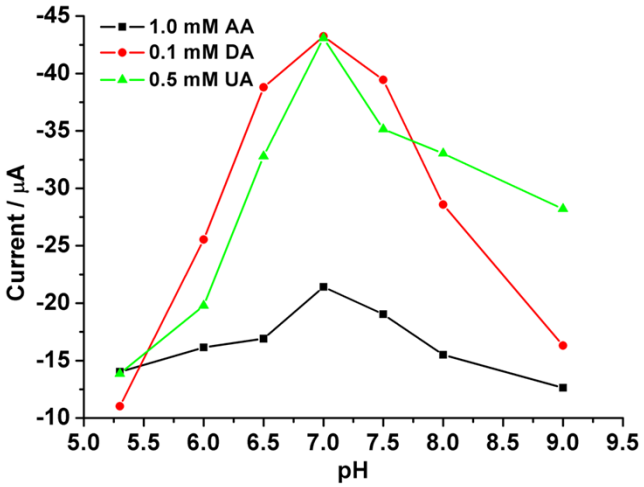

Fig. S1 Optimization of pH for the detection of 1.0 mM AA, 0.1 mM DA, and 0.5 mM UA by the DPV method in 0.1 M PBS solutions at a scan rate of 0.1 V s^{-1}.

Table S1 Summary of various nanomaterial-based electrochemical sensors for AA, DA, and UA.

analyte	modified electrode	linear range (μM)	detection limit (μM)	sensitivity (μA μM^{-1} cm^{-2})	R^2	RSD (%)	reference
AA	Au@Pd–RGO/GCE	0.1–1000	0.02	0.31	0.9980	2.62	this work
	Pd–CNFs/CPE	50–4000	15	–	0.9976	3.51	[S1]
	Fe_3O_4@Au–GA/GCE	4–400	0.3	–	0.9987	–	[S2]
	N-PCNPs/GCE	80–2000	0.74	–	0.998	2.7	[S3]
	TNCs/GCE	80–1400	14 ± 0.56	0.17	0.998	3.1	[S4]
	EMGON5-1/CPE	0–1000	1.54	78.63	0.9987	1.15	[S5]
DA	Au@Pd–RGO/GCE	0.01–100	0.002	6.08	0.9984	1.78	this work
	Pd–CNFs/CPE	0.5–160	0.2	–	0.9988	2.37	[S1]
	Fe_3O_4@Au–GA/GCE	0.5–50	0.02	–	0.9982	–	[S2]
	N-PCNPs/GCE	0.5–30	0.011	–	0.997	2.5	[S3]
	TNCs/GCE	0.4–60	0.28 ± 0.02	57.02	0.994	1.8	[S4]
	DNW film	0.5–500	0.36	0.659	0.9857	–	[S6]
UA	Au@Pd–RGO/GCE	0.02–500	0.005	1.22	0.9991	2.46	this work
	Pd–CNFs/CPE	2–200	0.7	–	0.9996	3.24	[S1]
	Fe_3O_4@Au–GA/GCE	1–300	0.05	–	0.9956	–	[S2]
	N-PCNPs/GCE	4–50	0.021	–	0.993	3.2	[S3]
	TNCs/GCE	10–70	1.6 ± 0.05	8.56	0.990	2.3	[S4]

CNFs, carbon nanofibers
CPE, carbon paste electrode
GA, graphene
N-PCNPs, nitrogen doped porous carbon nanopolyhedra
TNCs, templated nanoporous carbons
EMGON, electroactive mesoporous gold-organosilica nanocomposites
DNW, nitrogen incorporated diamond nanowire

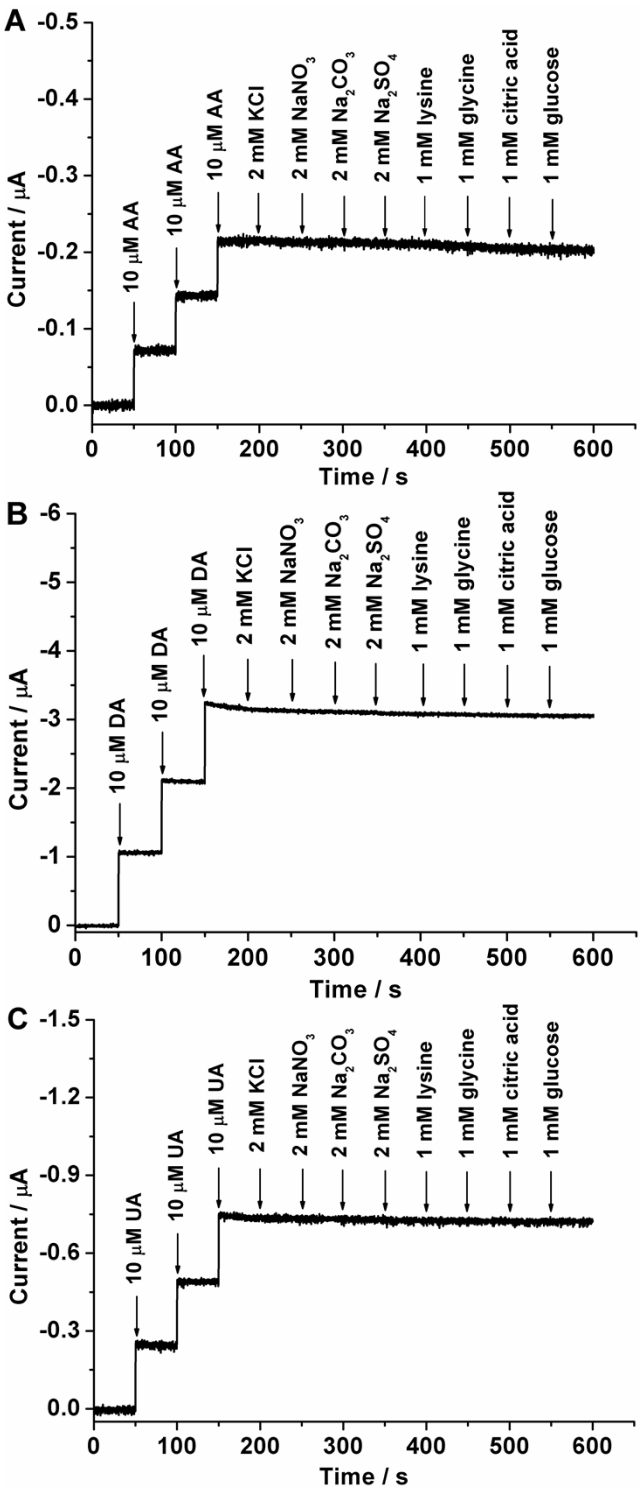

Fig. S2 Amperometric responses of Au@Pd–RGO/GCE upon successive addition of (A) 10 μM AA, (B) 10 μM DA, (C) 10 μM UA, and other chemicals to 0.1 M PBS (pH 7.0). Applied potential of 0.03, 0.2, and 0.37 V for AA, DA, and UA, respectively.

Table S2 Results for determination of AA, DA, and UA in urine samples.

sample	analyte	detected (μM)	added (μM)	found (μM)	recovery (%, n = 5)	RSD (%, n = 5)
urine 1	AA	–	50.0	49.1	98.2	2.0
	DA	–	20.0	20.5	102.5	1.5
	UA	12.3	40.0	50.8	97.1	1.0
urine 2	AA	–	80.0	79.3	99.1	1.2
	DA	–	25.0	25.4	101.6	1.3
	UA	37.5	20.0	56.7	98.6	1.9
urine 3	AA	–	100.0	98.5	98.5	1.3
	DA	–	40.0	40.4	101.0	0.7
	UA	26.4	20.0	47.2	101.7	1.6

References

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