Supplemental Material

Simultaneous detection of acetaminophen, catechol and hydroquinone using

graphene-assisted electrochemical sensor

Guofang Wang[1#], Siyi Zhang[1#], Qinyu Wu[1#], Jingzhi Zhu[1], Suhua Chen[3], Yuanyuan Lei[1], Yanmei Li[1], Haomin Yi[1], Liyin Chen[3], Zi-Qi Shi[2*], Yi Xiao[1,4*],

1. Key Laboratory of Study and Discovery of Small Targeted Molecules of Hunan Province, Department of Pharmacy, School of Medicine, Hunan Normal University, Changsha 410013, Hunan, China

2. Affiliated Hospital of Integrated Traditional Chinese and Western Medicine, Nanjing University of Chinese Medicine, Nanjing 210028, Jiangsu, China

3. Hunan Provincial Maternal and Child Health Care Hospital, Changsha 410008, Hunan, China

4. John A. Paulson School of Engineering and Applied Sciences, Harvard University, Cambridge, MA 02138, USA.

[#] These authors contributed equally to this work.

[*]Corresponding authors. Email address: njcpuxy4936@163.com; shiziqi47@126.com.

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Table S1 Analytical results for Phenols of ITO/APTES /r-GO@Au electrode

Table S1 Analytical results for separate determination of phenols

Phenols	Fitting equation	Dynamic range (μM)	LOD (μM)	LOQ (μM)	R^2
Acetaminophen	$Y=713.59+49.57\,X$	1-500	0.82	2.73	0.9844
Catechol	$Y=-1163.62+59.21\,X$	5-500	1.41	4.71	0.996
Hydroquinone	$Y=2023.84+67.05\,X$	8-700	1.95	6.51	0.9912

Table S2. Analytical results for simultaneous determination of phenols

Table S2 Analytical results for simultaneous determination of phenols

Phenols	Fitting equation	Dynamic range (μM)	LOD (μM)	LOQ (μM)	R^2
acetaminophen	$Y=68.22\,X+2325.89$	1-180	0.12	0.43	0.997
catechol	$Y=75.50\,X+2535.50$	5-140	0.13	0.42	0.9949
hydroquinone	$Y=59.04\,X+5721.67$	8-200	0.11	0.36	0.9948

Table S3 Recovery results for phenolic compounds at ITO/APTES /r-GO@Au

electrode

Table S3 Recovery results for phenolic compounds at ITO/APTES /r-GO@Au electrode

Phenols	Added (μM)	Found (μM)	Recovery (%)	RSD (%)
Catechol	60	63.86	106.43	0.63
Acetaminophen	65	68.86	105.94	0.10
Hydroquinone	88	95.54	108.57	0.31

Table S4 Drug content determined by HPLC and EC

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Samples	HPLC			EC		
	Real concentration (μM)	Detected concentration (μM)	Content	Real concentration (μM)	Detected concentration (μM)	Content
Acetaminophen	231.82	200.33	86.42%	107.58	85.62	79.59%

Table S5 Comparison of analytical performance of phenolic compounds

Table S5 Comparison of analytical performance of phenolic compounds

| Analyte	Methods	Dynamic range (μM)	LOD (μM)	Ref
AP	This work	1-500	0.82	
	A flow injection chemiluminescence method	5 - 50	1.8	1
	A MIP electrochemical sensor	10 - 8000	1	2
CC	This work	5-500	1.41	
	An expanded graphite electrode modified with intercalated montmorillonite	10-1000	1.13	3
	Electrodeposited molecularly imprinted chitosan film on BDD electrodes	0-80	0.69	4
HQ	This work	8-700	1.95	
	MOF-rGO modified carbon paste electrode	4-1000	0.66	5
	A nanometer cobalt/l-glutamate-modified electrode	3.85-1300	0.497	6

Figure S1 Comparison of HPLC and EC method
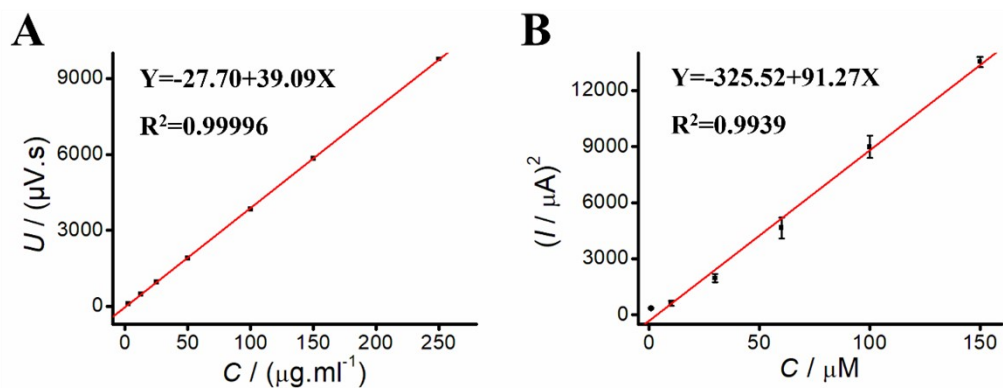
Fig. S1. Comparison of HPLC and EC method. A. Plot of various concentrations of AP *vs* peak area (HPLC). B. Plot of various concentrations of AP *vs* square of current (EC).

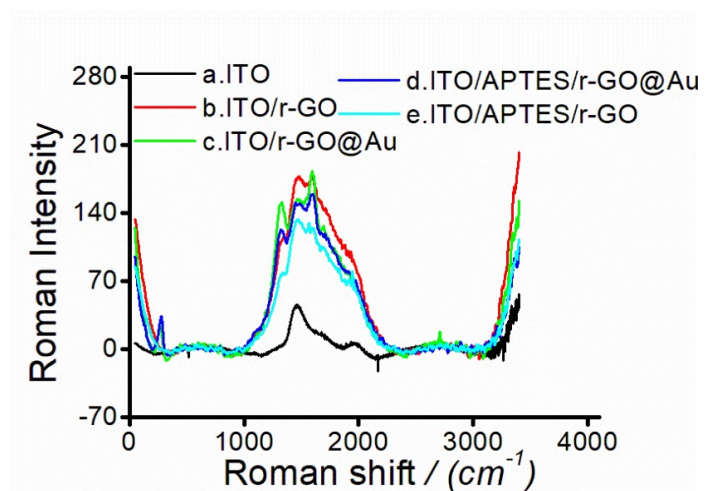# Figure S2 Raman spectra of different electrodes

Fig. S2. Raman spectra of electrodes. Raman spectra of ITO glass, ITO/r-GO glass, ITO/r-GO@Au glass, ITO/APTES /r-GO glass and ITO/APTES / r-GO@Au glass electrodes.

References

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