Supporting Information

A Copper Metal-Organic Framework-based Electrochemical Sensor for Identification of Glutathione in Pharmaceutical Samples

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[1] Equally Contribute

Table S1 Comparison of detection limit using CuMOF/GCE electrode to various modified electrodes using the voltammetric method previously reported in the literature.

Electrodes	Dynamic Range (µmol/L)	Limit of Detection (µmol/L)	References
pCAF/GCE	0.3 µM - 100 µM	2.2 µM	[1]
N-GR/CoPc/GCE	1 µM – 8 mM	1 µM	[2]
Cu-CoHCF/GCE	5 µM - 90 µM	2.5 µM	[3]
MPT/HP-b-CD/ GCE	1 µM - 580 µM	0.287 µM	[4]
SWNTs/GCE	5 µM - 100 µM	0.5 µM	[5]
CuMOF/GCE	0.1 µM – 20 µM	0.1 µM	This Work

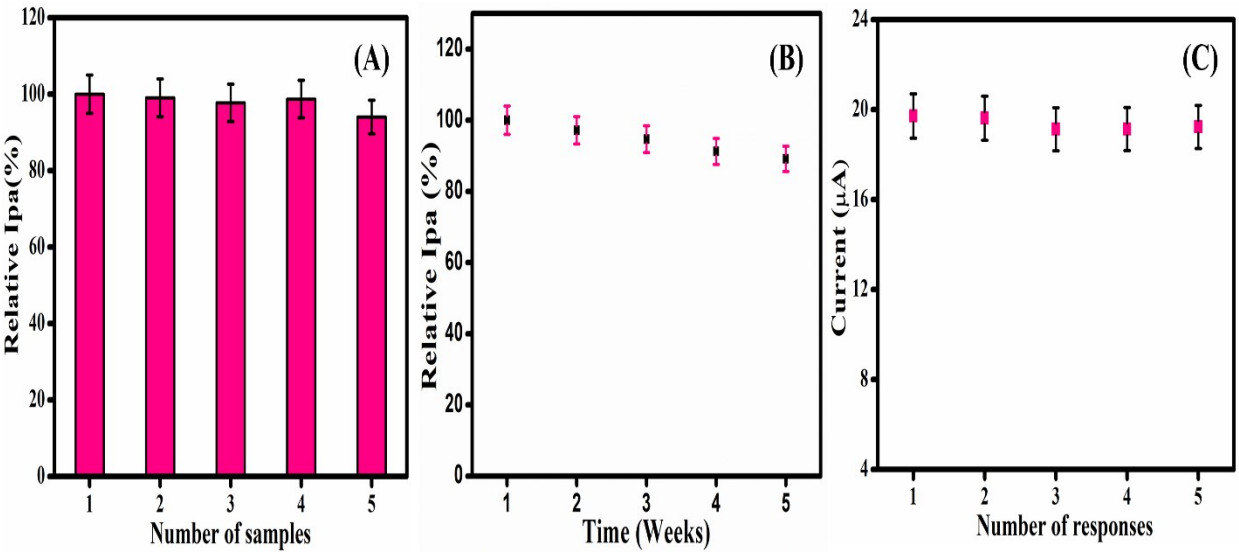

Figure S1 (A) Reproducibility of the different CuMOF electrodes used in the detection of 0.5 mmol/L GSH in 0.1 mol/L PBS solution (pH 7.0). (B) Stability of the prepared cuMOF electrode (kept at a temperature of 4^0C) used in the detection of 0.5 mmol/L GSH in PBS solution (0.1 mol/L pH 7.0) over 5 weeks. (C) Repeatability of the prepared CuMOF electrodes used in the detection of 0.5 mmol/L GSH in 0.1 mol/L PBS solution (pH 7.0).

Table S2 Determination of GSH levels in real samples GSH commercial tablets using the CuMOF modified electrode (n = 3)

Samples	Added (μmol/L)	Original (μmol/L)	Found (μmol/L)	Recovery (%)
GSH Tablets (Labeled: 500 mg/mL)	-	100	98±1.1	98.2
	100	200	199±2.3	99.7
	100	300	302±1.5	100.8
	100	400	401±1.2	100.3

REFERENCES

[1] P.T. Lee, R.G. Compton, Electrochemical detection of NADH, cysteine, or glutathione using a caffeic acid modified glassy carbon electrode, Electroanalysis. 25 (2013) 1613–1620.

[2] H. Xu, J. Xiao, B. Liu, S. Griveau, F. Bedioui, Enhanced electrochemical sensing of thiols based on cobalt phthalocyanine immobilized on nitrogen-doped graphene, Biosens. Bioelectron. 66 (2015) 438–444.

[3] V.V. Sharma, L. Guadagnini, M. Giorgetti, D. Tonelli, Electrocatalytic determination of thiols using hybrid copper cobalt hexacyanoferrate modified glassy carbon electrode, Sensors Actuators B Chem. 228 (2016) 16–24.

[4] X. Li, L. Zheng, Y. Wang, N. Zhang, Y. Lou, T. Xiao, J. Liu, A novel electrocatalyst with high sensitivity in detecting glutathione reduced by 2-hydroxypropyl-$β$-cyclodextrin enveloped 10-methylphenothiazine, RSC Adv. 5 (2015) 71749–71755.

[5] L. Zhao, L. Zhao, Y. Miao, C. Zhang, Selective electrochemical determination of glutathione from the leakage of intracellular GSH contents in HeLa cells following doxorubicin-induced cell apoptosis, Electrochim. Acta. 206 (2016) 86–98.