Supporting Information

An electrochemical sensor with a copper oxide/gold nanoparticle-modified electrode for the simultaneous detection of the potential diabetic biomarkers methylglyoxal and its detoxification enzyme glyoxalase

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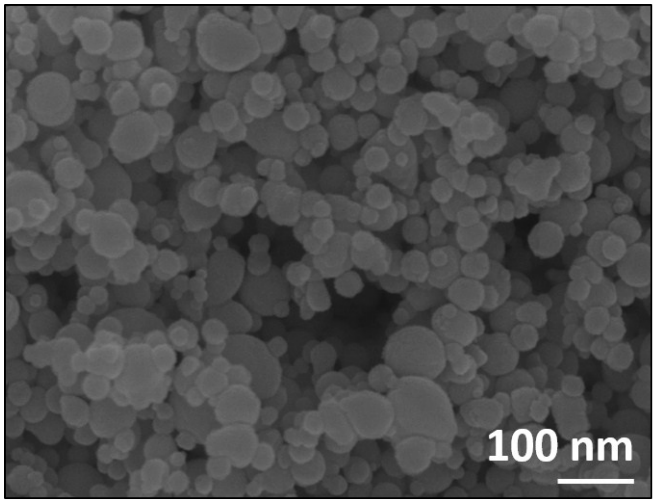

Fig. S1 SEM micrograph of Au nanoparticles

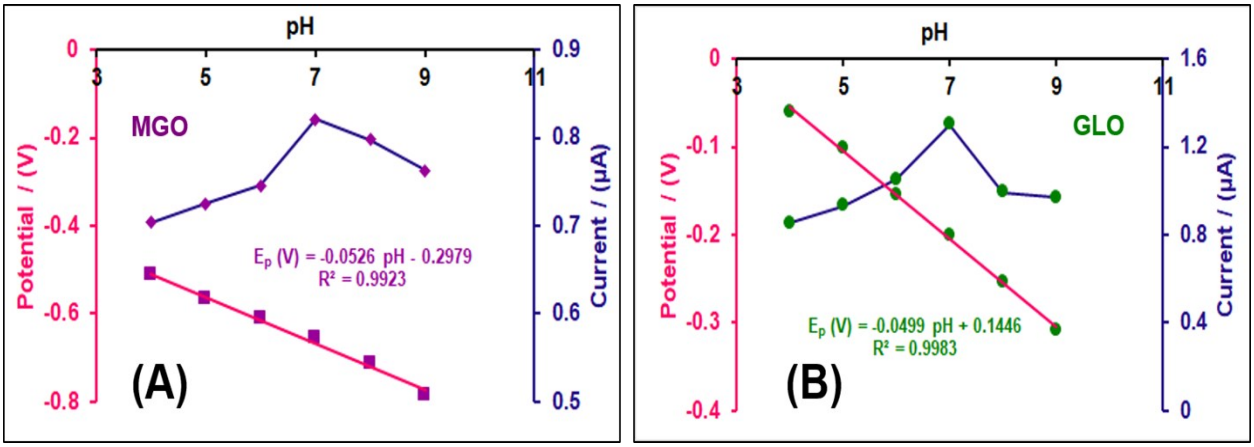

Fig. S2 Plot of E_p versus pH and I_p versus pH obtained from pH study for **(A)** MGO and **(B)** GLO

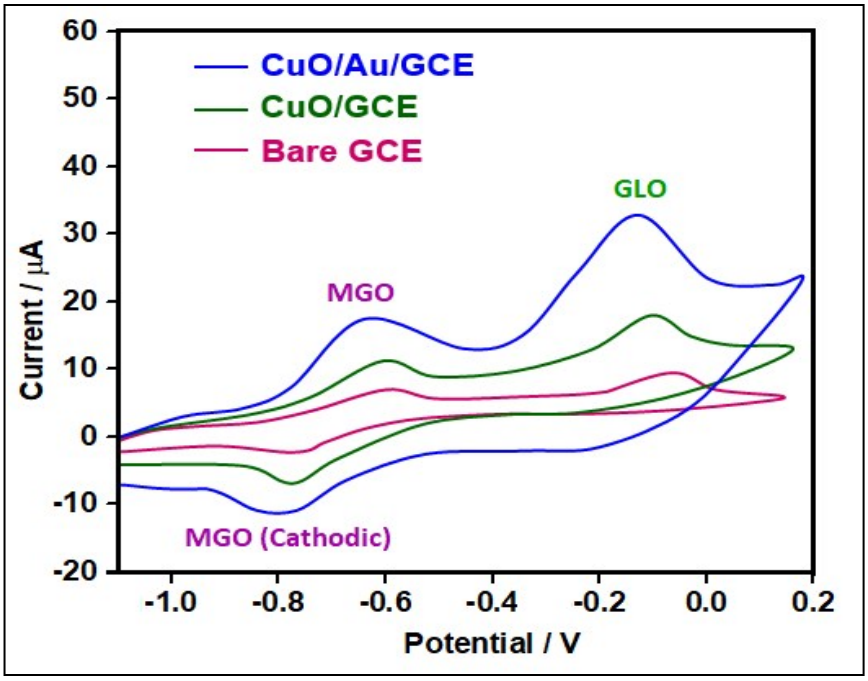

Fig. S3 Comparison of electrodes at different electrodes employing CV

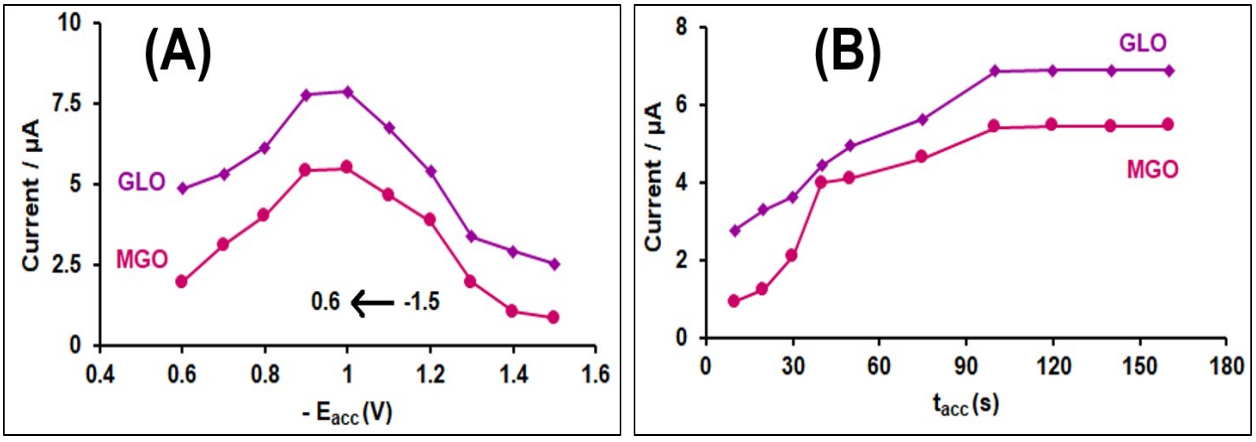

Fig. S4 Effect of stripping parameters viz. **(A)** E_{acc} and **(B)** t_{acc} on the voltammetric signals of MGO and GLO

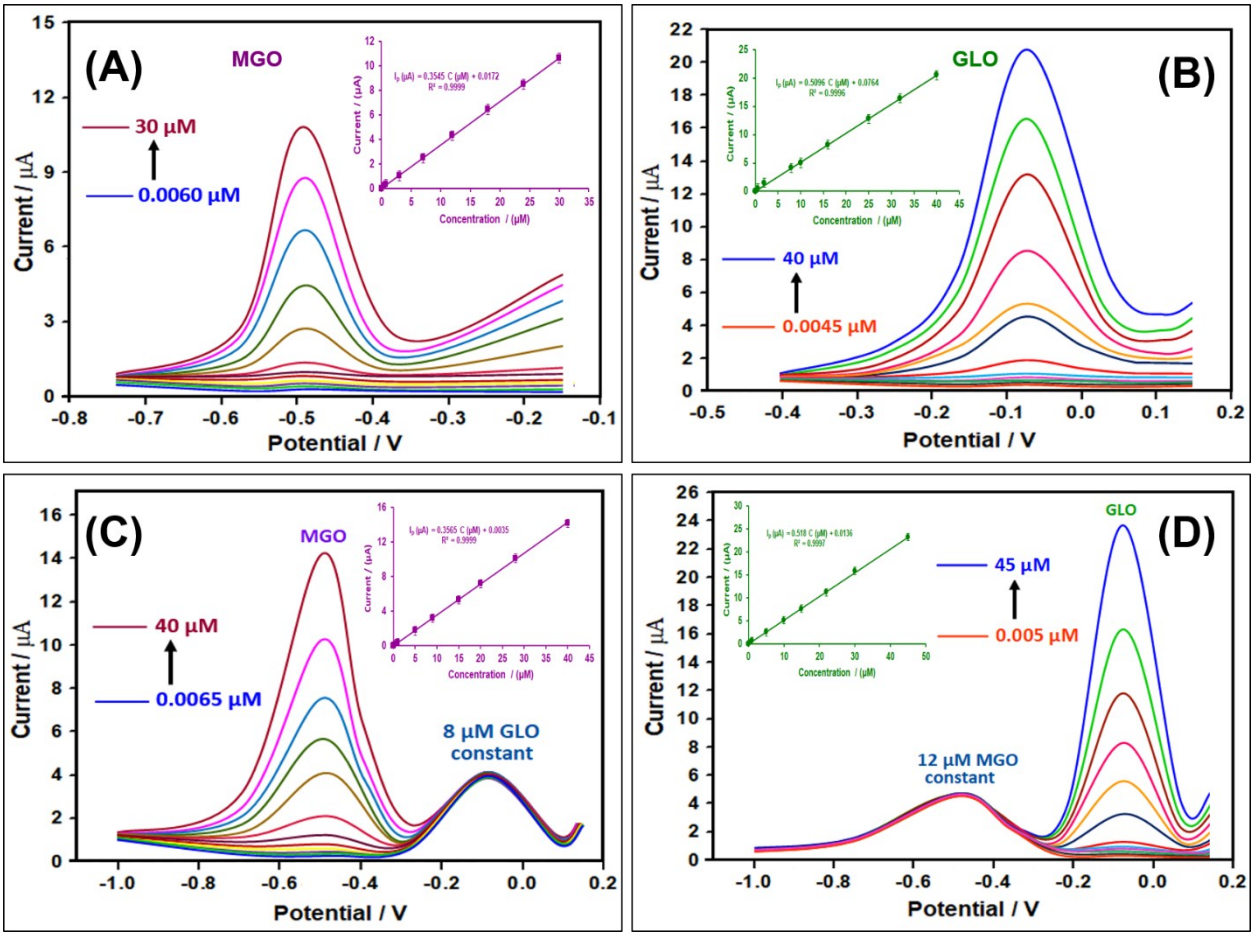

Fig. S5 AdSDPV curves recorded for **(A)** MGO and **(B)** GLO in varying concentration ranges; Linear addition in concentration of **(C)** MGO while keeping 8 µM GLO constant and **(D)** GLO in presence of 12 µM MGO performed by AdSDPV. The inset of **(A-D)** represent the respective calibration curves obtained from the linearity study data

Table S1 Recovery studies for the quantitation of MGO in human body fluids of normal and diabetic patients employing CuO/Au/GCE sensor:

Sample	MGO			
	MGO Spiked (10^{-5} M)	**MGO detected (10^{-5} M)**	**Recovery (% R)**	**Average Recovery (± RSD)**
A) Healthy volunteer				
Blood plasma	---	Not detected	---	99.84 ± 0.46
	1.61	1.60	99.37	
	3.12	3.14	100.6	
	4.5	4.48	99.55	
Urine	---	Not detected	---	100.15 ± 0.76
	1.35	1.37	101.4	
	2.59	2.58	99.61	
	3.75	3.73	99.46	
B) Diabetic Patient				
Blood plasma	---	Not detected	---	99.48 ± 0.22
	2.35	2.33	99.14	
	4.52	4.51	99.77	
	6.53	6.50	99.54	
Urine	---	Not detected	---	99.38 ± 0.31
	1.84	1.82	98.91	
	3.55	3.53	99.43	
	5.14	5.13	99.80	