Supplementary Figures

Graphite Studded with Facile-Synthesized Cu_2O Nanoparticles-Based Cubes as a Novel Electrochemical Sensor for Highly Sensitive Voltammetric Determination of Mebeverine Hydrochloride

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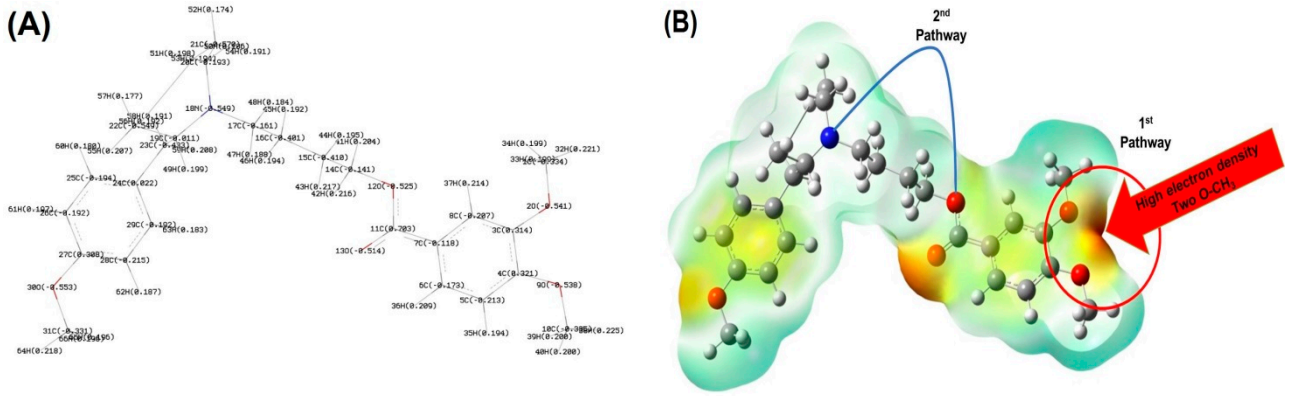

Figure S1. (A) Mulliken charges diagram of MEB atoms, **(B)** MEP of MEB.

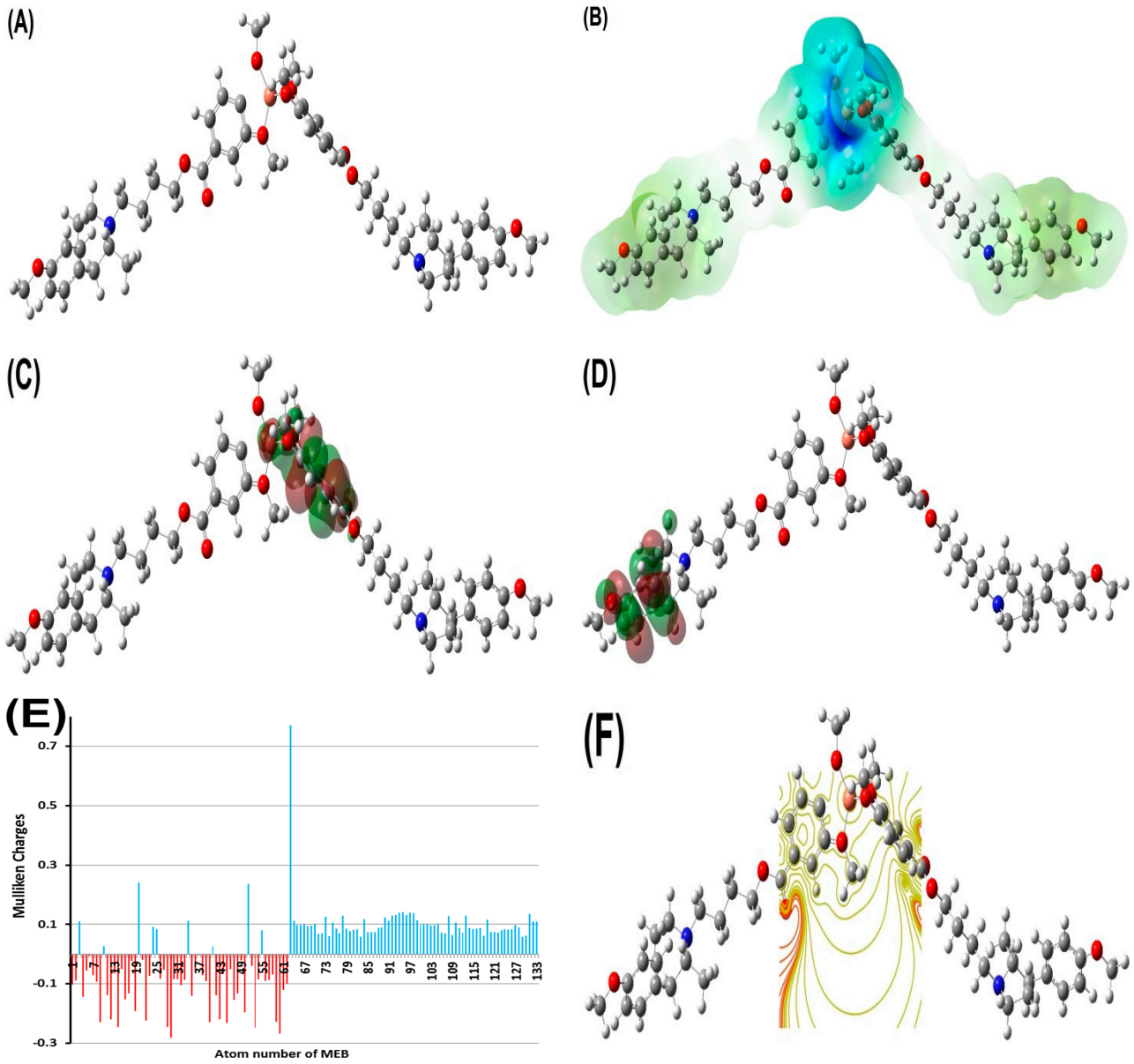

Figure S2. **(A)** Optimized geometric structures; **(B)** MEP; Molecular orbital **(C)** HOMO, **(D)** LUMO, **(E)** Mulliken charges diagram; and **(F)** counter plot of MEB-Cu complex.

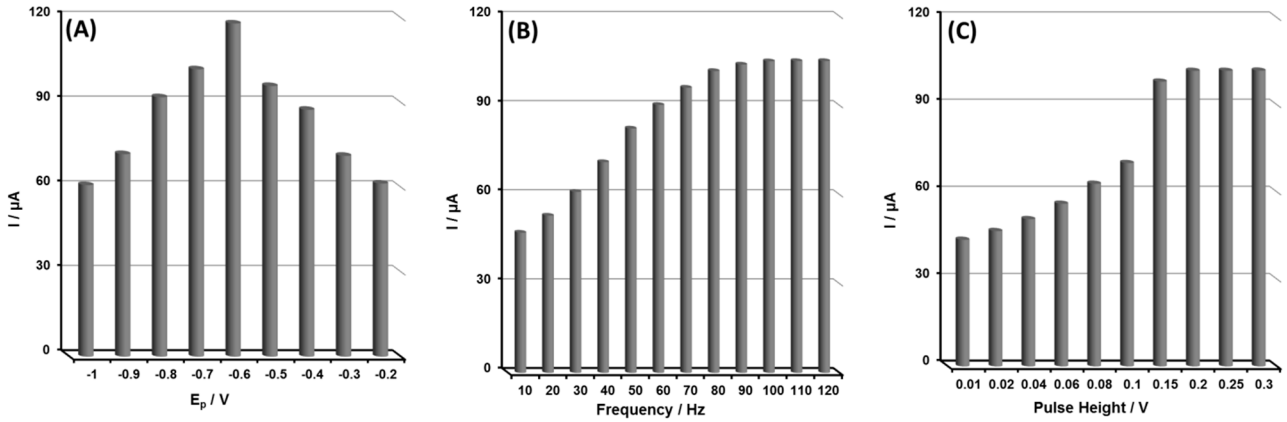

Figure S3. Different optimized instrumental conditions on recorded oxidation peak current of 2×10^{-5} M MEB in Britton–Robinson buffer (pH ≈ 8.0) using Cu_2ONPs–C@G/PE: **(A)** Effect of accumulation potential (V), **(B)** Effect of frequency (Hz) and **(C)** Effect of pulse height (V).

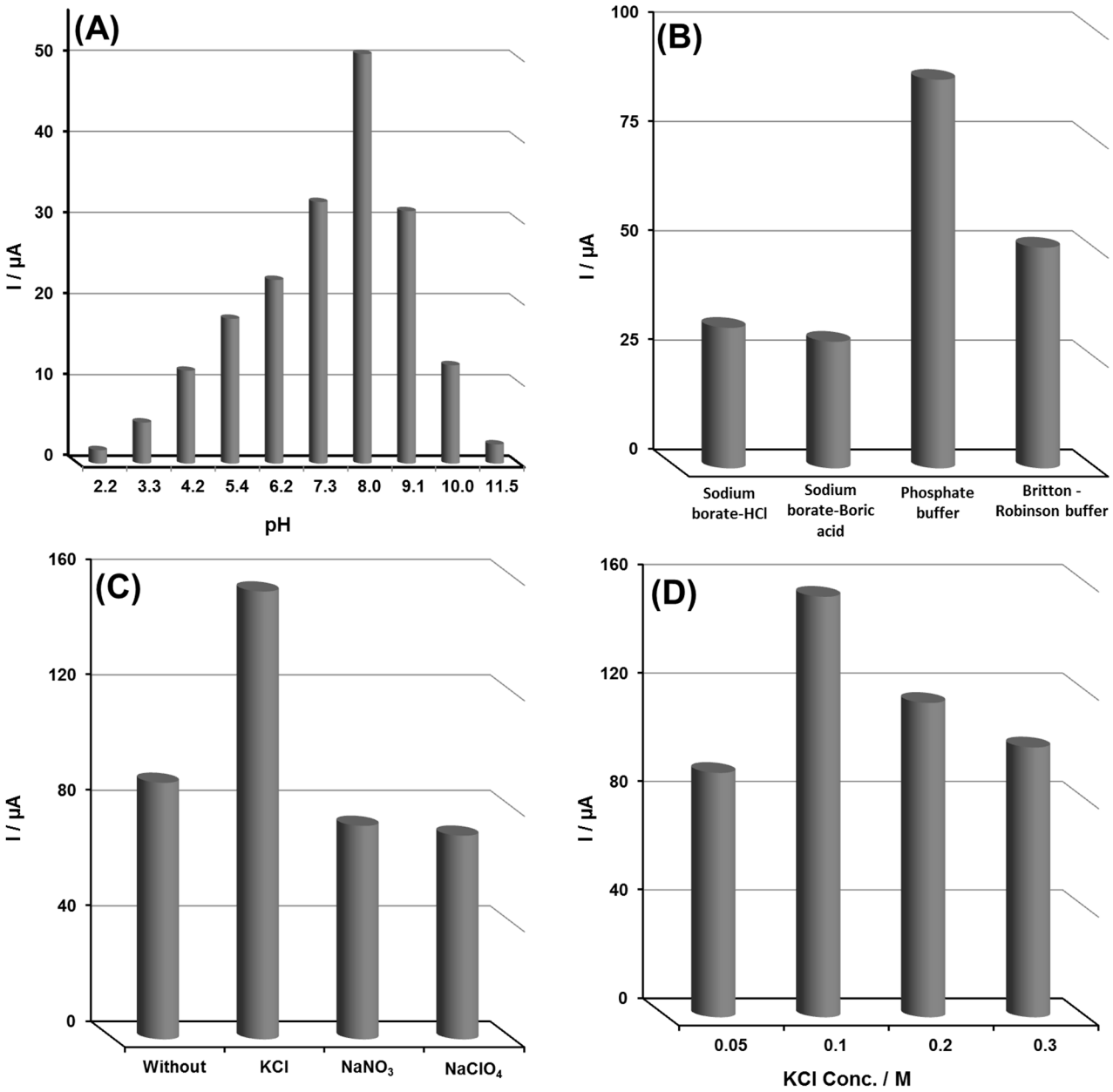

Figure S4. Different optimized experimental parameters on recorded oxidation peak current of 2×10^{-5} M MEB using Cu_2ONPs–C@G/PE: **(A)** Effect of pH, **(B)** Effect of buffer type at pH ≈ 8.0, **(C)** Effect of supporting electrolyte type, and **(D)** Effect of selected supporting electrolyte concentration.

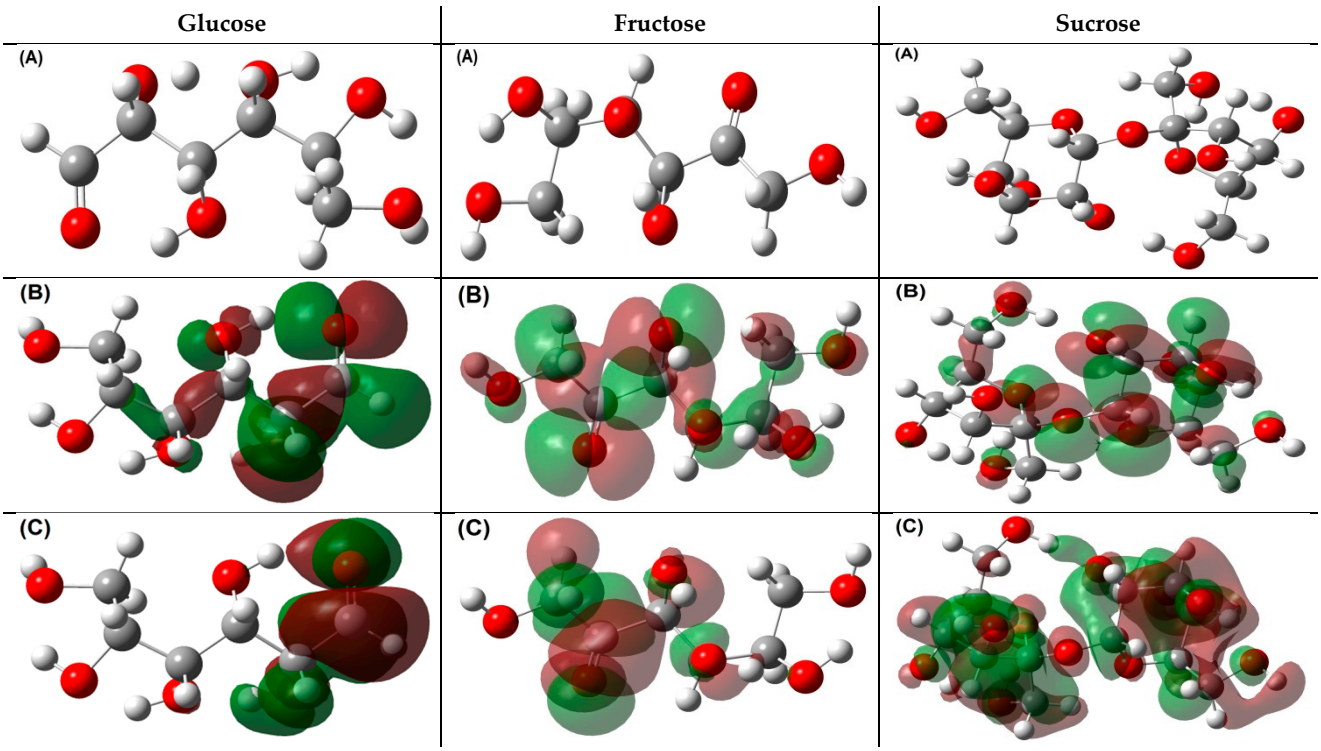

Figure S5. Optimized structure of **(A)** Molecular orbital, **(B)** HOMO and **(C)** LUMO of glucose, fructose and sucrose.

Table S1. Calculated quantum chemical parameters of MEB–Cu complex.

Quantum parameter	Law related to quantum parameter	MEB–Cu complex values
E_{HOMO}	– – – – –	–0.16343
E_{LUMO}	– – – – –	–0.15412
Separation energies (ΔE)	$\Delta E = E_{LUMO} - E_{HOMO}$	0.0093
Ionization potentials (I)	$I = - E_{HOMO}$	0.1634
Electron affinity (A)	$A = - E_{LUMO}$	0.1541
Chemical potential (u)	$u = I+A/2$	0.1588
Electronegativity's (X)	$X = - u$	-0.1588
Absolute hardness (η)	$\eta = (E_{LUMO} - E_{HOMO})/2$	0.0047
Absolute softness (σ)	$\sigma = 1/\eta$	214.88
Global electrophilicity (ω)	$\omega = u*u/2\eta$	2.7084
Total energy (TE)	– – – – –	–4394.3 a.u.
Dipole moment (μ)	– – – – –	7.99 debye

Table S2: The calculated ΔE of MEB and some studied excipients

Compound	ΔE
MEB	0.1203
Glucose	0.1639
Fructose	0.1760
Sucrose	0.2441