SUPPORTING INFORMATION

Novel reduced graphene oxide-glycol chitosan nanohybrid for the assembly of amperometric enzyme biosensor for phenols

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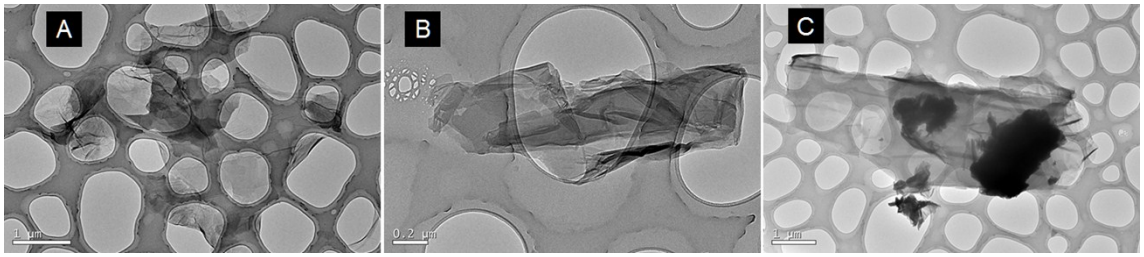

Figure 1S. TEM images of GO (A), Sil-GO (B) and GC-rGO (C).

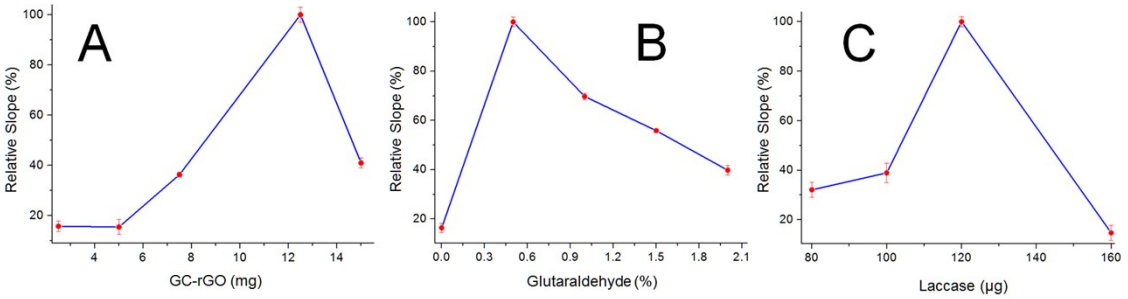

Figure 2S. Influence of the amount of GC-rGO (A), glutaraldehyde (B) and laccase (C) on the amperometric signal of the enzyme electrode toward catechol in 0.1 M sodium phosphate buffer, pH 5.5. Working potential = -150 mV.

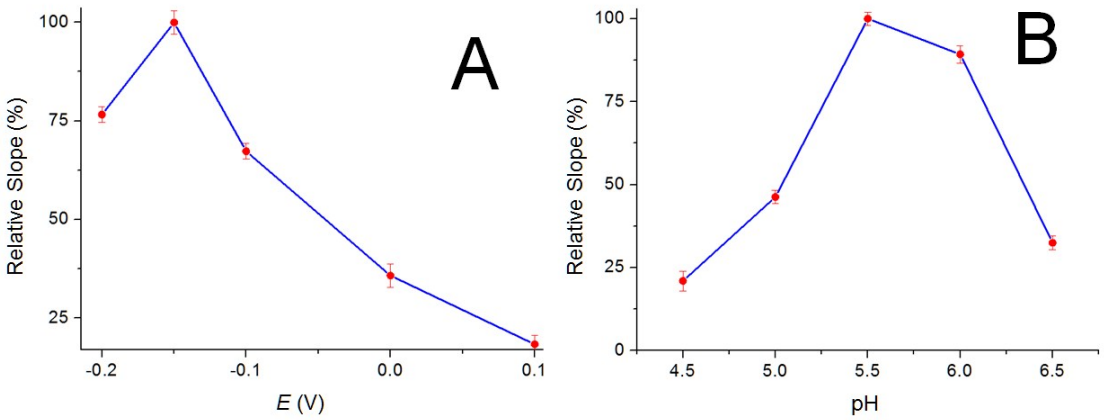

Figure 3S. Influence of the working potential (A) and pH (B) on the amperometric signal of the enzyme electrode toward catechol.

Table 1S. Comparison of the analytical performance of relevant laccase-based enzyme biosensors for catechol.

Electrode	Linear Range (µM)	Sensitivity (mA/M)	Limit of Detection (nM)	K_M (µM)
Lac/Au[1]	1 – 400	15	1000	5400
Lac/MCNT-CS/GCE[2]	1.2 – 30	–	660	9.43
Lac/N-OMC/PVA/Au[3]	0.39 – 8.98	290	310	6.28
Lac/CS/SiO_2-ZrO_2/GCE[4]	1 – 100	8.8	350	–
Lac/PANI/GCE[5]	3.2 – 19.6	706.7	2070	–
Lac/rGO-PdCuNC/GCE[6]	1655 – 5155	5.51	1500	–
Lac/Fe_3O_4-PANI/CS/CPE[7]	0.5 – 80	–	400	1.09
Lac/Cys/Au[8]	10 – 100	–	4760	–
Lac/MCNT/GCE[9]	20 – 1000	-	2000	-
Lac/CS/ZnO/GCE[10]	1 – 100	10.52	290	-
Lac/Nafion/Au-CZF/GCE[11]	0.17 – 7	1626	166	-
Lac/GC-rGO/GCE*	0.2 – 15	6.5	76	93.4

Lac: laccase; **MCNT:** multiwalled carbon nanotubes; **CS**: chitosan; **GCE:** glassy carbon electrode; **N-OMC**: nitrogen-doped ordered mesoporous carbon; **PVA:** polyvinil alcohol; **SiO_2-ZrO_2**: silica-modified zirconia nanoparticles; **rGO:** reduced graphene oxide; **PdCuNC**: palladium-copper alloyed nanocages; **Fe_3O_4:** Fe_3O_4 magnetic nanoparticles; **PANI**: polyaniline; **CPE**: carbon paste electrode; **Cys**: cysteamine; **ZnO**: zinc oxide nanoparticles; **Au-CZF:** zein ultrafine fibers containing gold nanoparticles. * This work.

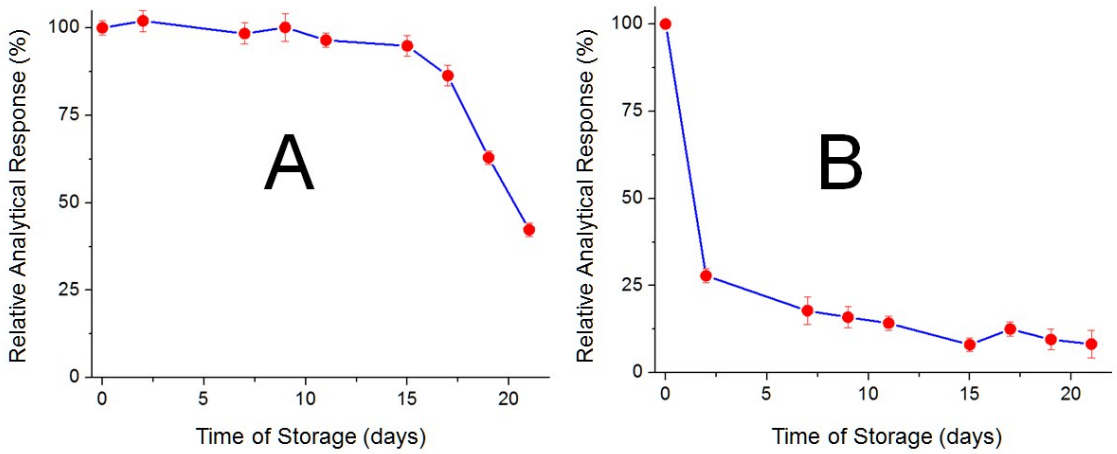

Figure 4S. Effect of time of storage at 4ºC under wet (A) and dry (B) conditions on the amperometric response of the enzyme biosensor.

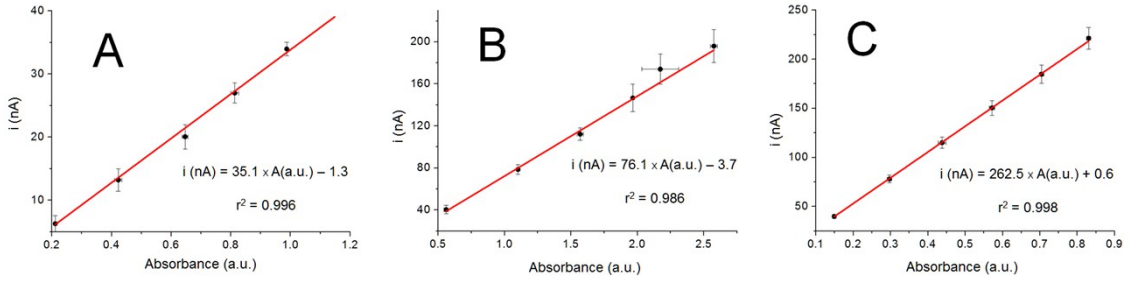

Figure 5S. Relationship between the analytical signal of the biosensor and the absorbance at 750 nm of catechol samples analyzed by the Folin-Ciocalteau colorimetric method. A) Red fruit tea, B) Green-lemon tea, and C) Peppermint tea.

References

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