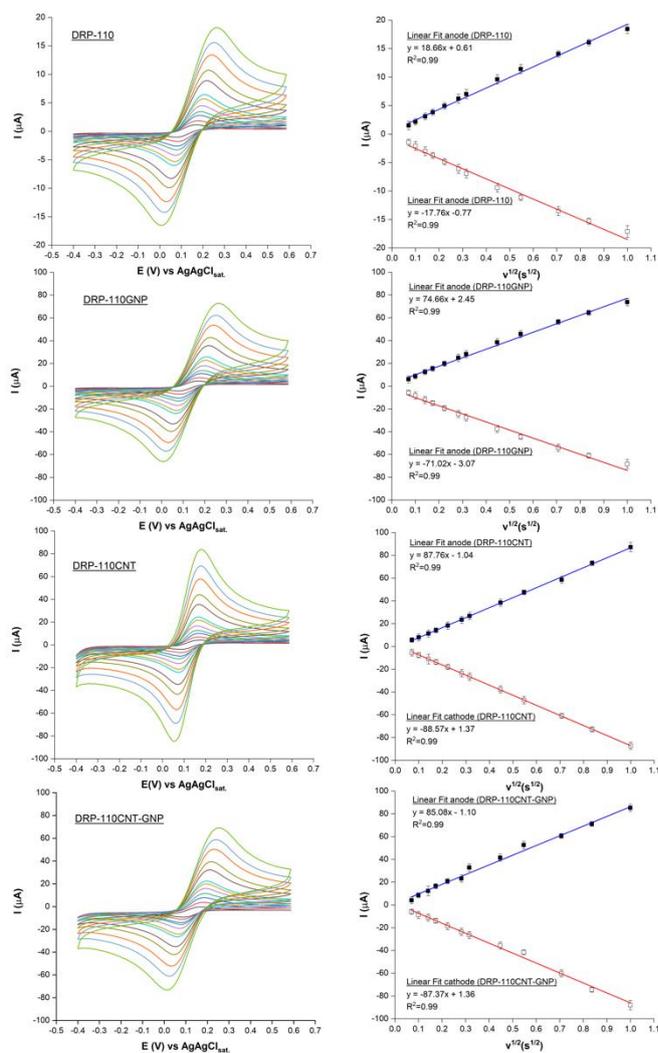
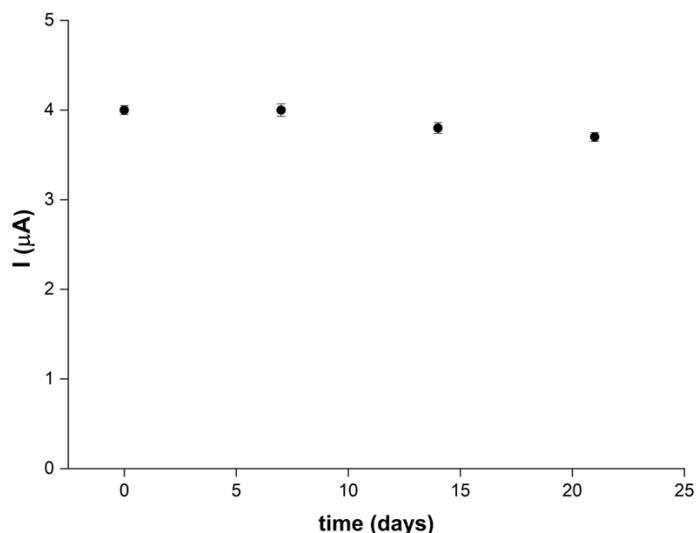


**Figure S1.** SEM images. A) DRP-110; B) DRP-110CNT; C) DRP-110CNT-GNP/*TvLac*; D) DRP-110CNT-GNP/*TvLac*+GA; E) DRP-110CNT-GNP; F) DRP-110CNT-GNP.



**Figure S2.** CV at different scan rates (5-1000 mV/s) in a solution of 1 mM  $[\text{Fe}(\text{CN})_6]^{3-/4-}$  with KCl 0.1 M for the calculation of the electroactive area ( $A_{\text{el}}$ ) of DRP-110, DRP-110GNP, DRP-110CNT, DRP-110-GNP.



**Figure S3.** Catalytic currents obtained through CV measurements for the DRP-110GNP-CNT/*TvLac*/GA platform over 21 days.

**Table S1.**  $A_{el}$  and  $r$  values for the DRP-110, DRP-110GNP, DRP-110CNT and DRP-110CNT-GNP platforms.

Platform	$A_{el}$ (mm <sup>2</sup> )	$r$ ( $A_{el}/A_{geo}$ )
DRP-110	$2.04 \pm 0.02$	0.16
DRP-110GNP	$8.59 \pm 0.05$	0.68
DRP-110CNT	$11.04 \pm 0.10$	0.87
DRP-110CNT-GNP	$11.46 \pm 0.04$	0.91

**Table S2.** Polyphenols recovery in different roasted coffee blends.

Coffee blend sample	Coffee species	Roasting degree
I	<i>C. arabica</i> (100%)	Dark
II	<i>C. arabica</i> (100%)	Medium
III	<i>C. arabica</i> (100%)	Light
IV	<i>C.robusta</i> (80%) <i>C. arabica</i> (20%)	Medium
V	<i>C.robusta</i> (60%) <i>C. arabica</i> (40%)	Medium
VI	<i>C. arabica</i> (100%)	Medium
VII	<i>C. arabica</i> (98%) <i>C. robusta</i> (2%) green	Medium
VIII	<i>C.arabica</i> (100%) green	unroasted

**Table S3. Polyphenols recovery in different coffee blends.**

COFFEE BLEND SAMPLE	VARIETY	ROASTING DEGREE	[polyphenols] (mM) Folin-Ciocalteu	[polyphenols] (mM) Biosensor	[polyphenols] (mg/g) Biosensor	recovery
I	100% <i>arabica</i>	Dark	33.05	35.07 ± 0.31	170.05 ± 1.5	94%
II	100% <i>arabica</i>	Medium	36.24	37.49 ± 0.24	180.22 ± 1.2	96%
III	100% <i>arabica</i>	Light	41.13	44.85 ± 0.47	210.80 ± 2.3	91%
IV	80% <i>robusta</i> . 20% <i>arabica</i>	Medium	49.68	52.02 ± 0.26	250.28 ± 1.3	95%
V	60% <i>robusta</i> . 40% <i>arabica</i>	Medium	44.43	46.65 ± 0.30	227.71 ± 1.5	95%
VI	100% <i>arabica</i>	Medium	34.33	36.07 ± 0.21	170.53 ± 1.0	95%
VII	98% <i>arabica</i> . 2% <i>robusta</i> green	Medium	40.77	42.13 ± 0.17	200.48 ± 0.8	97%

**Table S4. Polyphenols recovery in different roasted coffee blends.**

SAMPLE	ROASTING DEGREE	OVEN TEMPERATURE (°C)	ROASTING TIME (min)	[polyphenols] (mM) Folin-Ciocalteu	[polyphenols] (mM) Biosensor	[polyphenols] (mg/g) Biosensor	recovery
VIII 100% <i>arabica</i> green coffee	unroasted	/	/	22.74	22.03 ± 0.26	105.05 ± 0.32	97%
	Light	180	10	32.92	31.40 ± 0.10	152.62 ± 0.49	95%
	Light	180	15	16.20	17.00 ± 0.14	82.63 ± 0.63	95%
	Light	180	20	8.77	9.34 ± 0.24	45.40 ± 1.0	94%
	Medium	200	10	24.22	25.52 ± 0.11	124.04 ± 0.53	95%
	Medium	200	15	16.86	18.09 ± 0.22	80.79 ± 1.1	93%
	Medium	200	20	9.88	9.14 ± 0.15	44.43 ± 0.73	93%
	Dark	250	10	16.86	18.09 ± 0.22	80.79 ± 1.1	93%
	Dark	250	15	11.07	10.34 ± 0.18	50.02 ± 0.9	93%
	Dark	250	20	9.68	10.02 ± 0.20	40.87 ± 1.0	96%