Electronic Supplementary Material (ESI) for Sensors & Diagnostics.

SUPPORTING INFORMATION

Magneto-controlled electrochemical immunosensing platform to assess the senescence-associated GDF-15 marker in colorectal cancer

Sandra Tejerina-Miranda[a], Víctor Pérez-Ginés[a], Rebeca M. Torrente-Rodríguez[a], María Pedrero[a], Ana Montero-Calle[b], José M. Pingarrón[a], Rodrigo Barderas[b,*], Susana Campuzano[a,*]

[a]*Departamento de Química Analítica, Facultad de CC. Químicas, Universidad Complutense de Madrid, Pza. de las Ciencias 2, 28040-Madrid, Spain*

[b]*Chronic Disease Programme, UFIEC, Institute of Health Carlos III, Majadahonda, 28220-Madrid. Spain*

* to whom correspondence should be addressed (r.barderasm@isciii.es; susanacr@quim.ucm.es)

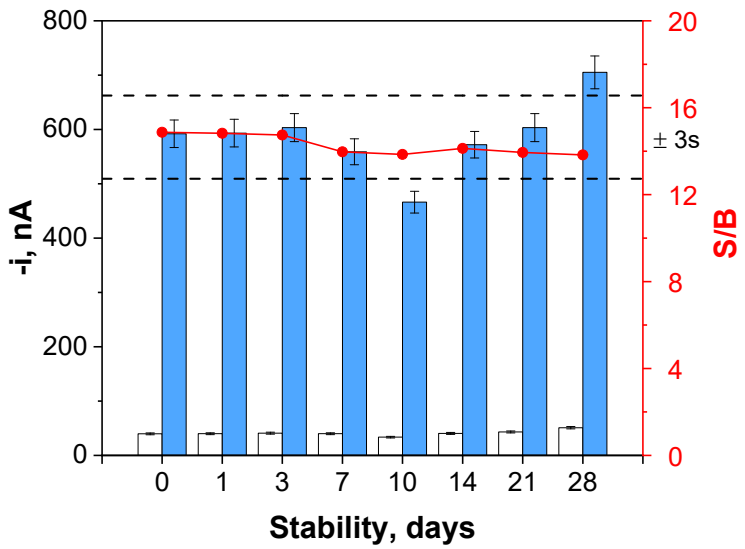

Fig. S1. Amperometric responses provided by the immunoplatforms prepared each control day using the stored CAb-MBs (in filtered PBS at 4 ºC) after their preparation (day 0 is the CAb-MBs preparation day) for 0 (white bars) and 2500 pg mL^{-1} GDF-15 (blue bars). Control limits (dashed black lines) were set as ± 3s of the mean value of the measurements provided by three bioplatforms prepared on day 0.

Table S1. Relevant characteristics of electrochemical immunosensors and immunoassays reported for the determination of GDF-15.

Electrode	Linear Range	LOD	Assay time	Application	Ref
GCE	1.0 pg mL^{-1}– 50 ng mL^{-1}	0.825 pg mL^{-1}	1 h (AuPtCu NFs and SWCNTs: 1 h; AuPtCu NFs-SWCNTs@MoS_2-rGO (A@M): 25 h; A@M/CAb: 12 h; A@M/CAb/BSA: 1 h; A@M/CAb/BSA/GDF-15: 1 h)	Human serum (CVDs)	[1]
GCE	1.5 pg mL^{-1} – 1.5 μg mL^{-1}	0.9 pg mL^{-1}	3 h 30 min (MoS_2/AuPtPd NDs:1 h 45 min; MoS_2/AuPtPd-DAb:10 h)	Human blood (CVDs)	[2]
GCE	100 fg mL^{-1} – 10 ng mL^{-1}	42.23 fg mL^{-1}	3 h (PANI/Pd NPs: 16 h 50 min; $ZnGa_2O_4$/Au NPs/Ab_2: 25 h 7min; CAb- PANI/PdNPs: overnight)	Human serum (CVDs)	[3]
GCE	500 fg mL^{-1} – 50 ng mL^{-1}	0.212 pg mL^{-1}	3 h 40 min (Au TNPs: 15 h; GDY-Au TNPs:6 h 46 min; AuPtCu HNFs:10 h 35 min; MoS_2: 24 h 26 min; MoS_2-AuPtCu HNFs-Ab_2: 12 h 45 min)	Human serum (CVDs)	[4]
SPCE	140–10000 pg mL^{-1}	42 pg mL^{-1}	1 h 15 min (CAb-MBs: 2 h 40 min)	Human plasma	This work

Au TNPs: Au triangular nanoprisms; BSA: bovine serum albumin; CAb: capture antibody; DAb: detector antibody; CVDs: cardiovascular diseases; GCE: glassy carbon electrode; MoS_2-AuPtCu HNF: AuPtCu hexagonal metal nanoframes loaded onto molybdenum disulfide nanosheets; GDY: graphyne; GDY-Au TNPs: Au triangular nanoprisms hybridized with graphyne; MBs: magnetic beads; MoS_2/AuPtPd NDs: MoS_2/AuPtPd nanodendrite; NFs: nanoflowers; PANI/PdNPs: hollow polyaniline microtubules decorated with Pd nanoparticles; rGO: reduced graphene oxide; SPCEs: screen-printed carbon electrodes; SWCNTs: single-wallet carbon nanotubes; $ZnGa_2O_4$/Au NPs: peony-like zinc gallinate coupled with Au nanoparticles.

References

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