

SUPPORTING INFORMATION

Contributing to the management of viral infections through simple immunosensing of the arachidonic acid serum level

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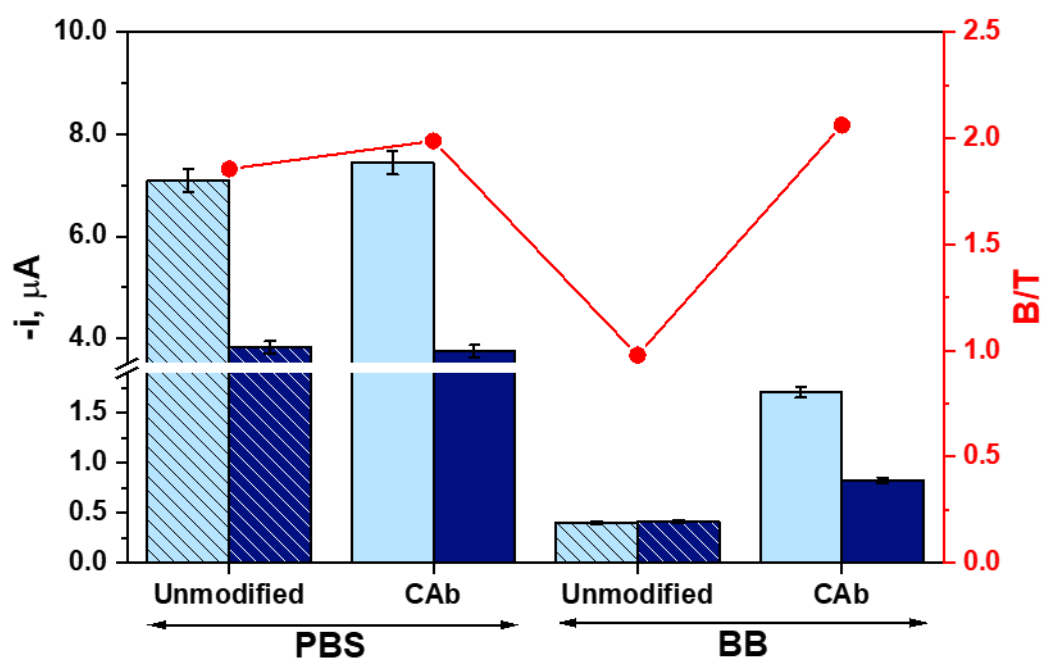


Fig. S1 Influence of the buffer solution on the assay suitability. Variation of the amperometric responses obtained with the developed bioplayers in PBS and commercial BB onto unmodified (patterned bars) or Ab-modified (non-patterned bars) for 0.0 (light blue) and 5.0 $\mu\text{g mL}^{-1}$ (dark blue) of ARA standards, and the resultant B/T ratio (red dots connected by lines).

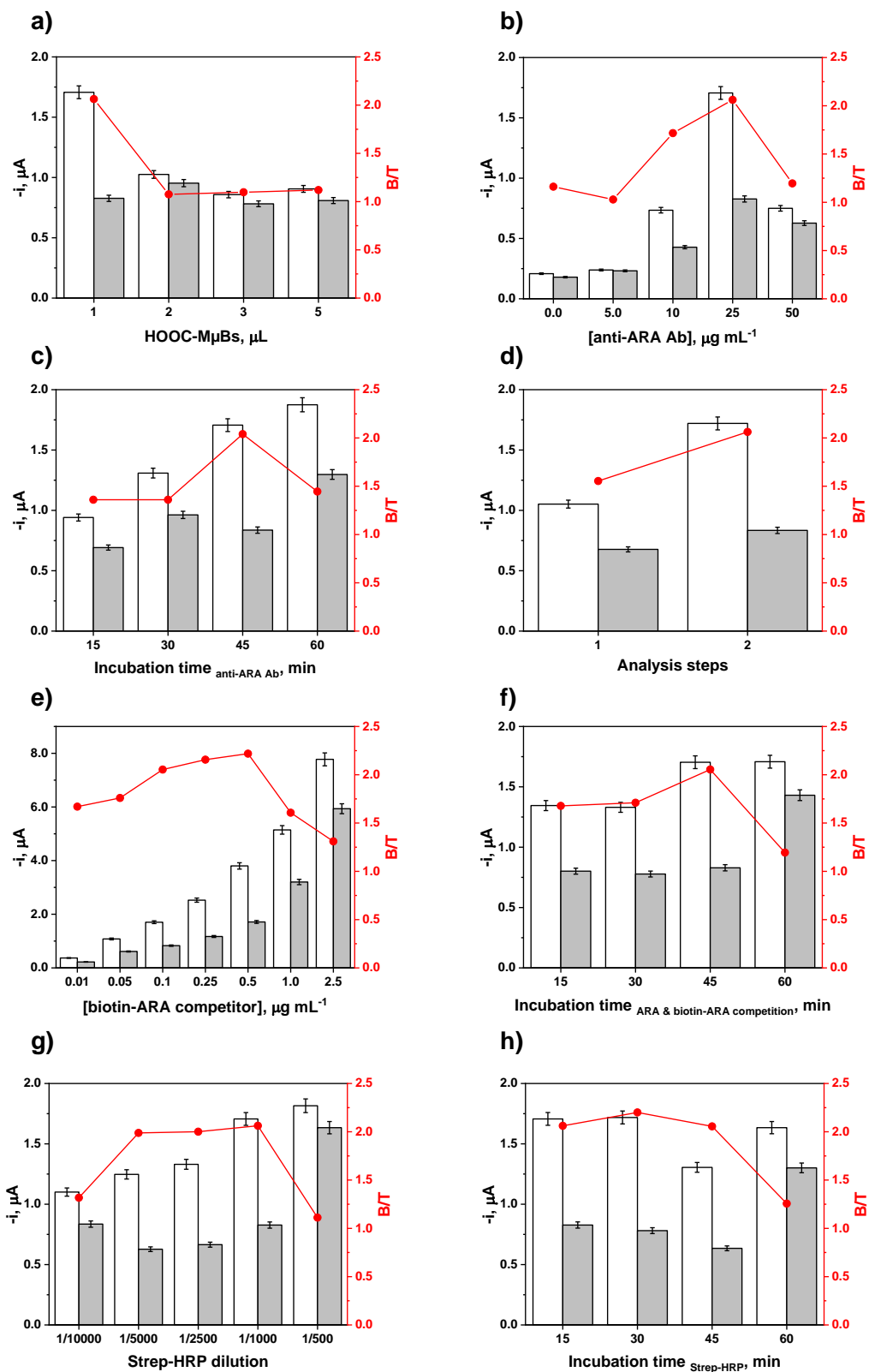


Fig. S2 Amperometric responses obtained with the developed bioplatfrom for 0.0 (blank, B, white bars) and 5.0 μ g mL⁻¹ (target, T, grey bars) ARA standards and the corresponding B/T ratios (red dots connected by lines) by varying the volume of HOOC-M μ Bs (a), concentration (b) and incubation time of anti-ARA Ab (c), steps of the immunoassay (d), concentration of

biotin-ARA competitor (e), incubation time of the competition step between free ARA and biotin-ARA competitor (f), and dilution (g) and incubation time (h) of the Strep-HRP enzymatic conjugate. The tentatively selected initial assay conditions were 3.0 μL HOOC-M μBs , 25 $\mu\text{g mL}^{-1}$ anti-ARA Ab/45 min incubation time, 2.5 $\mu\text{g mL}^{-1}$ biotin-ARA competitor/30 min incubation time, and 1/1000 Strep-HRP/30 min incubation time, and for each optimization study just the variable under study was ranged while the other were kept constant.

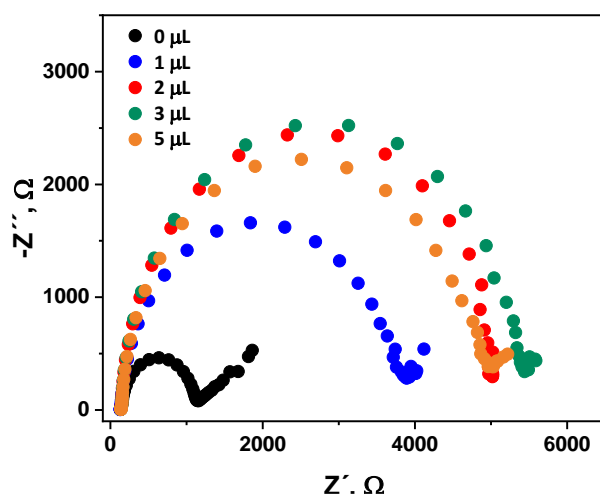


Fig. S3. Nyquist plots recorded for 5 mM $[\text{Fe}(\text{CN})_6]^{3-/4-}$ in 0.1 M KCl solutions for a bare SPCE and SPCEs after trapping 1, 2, 3 and 5 μL of anti-ARA Ab-HOOC-M μBs . Range of frequencies: 10^5 –0.04 Hz; open circuit.

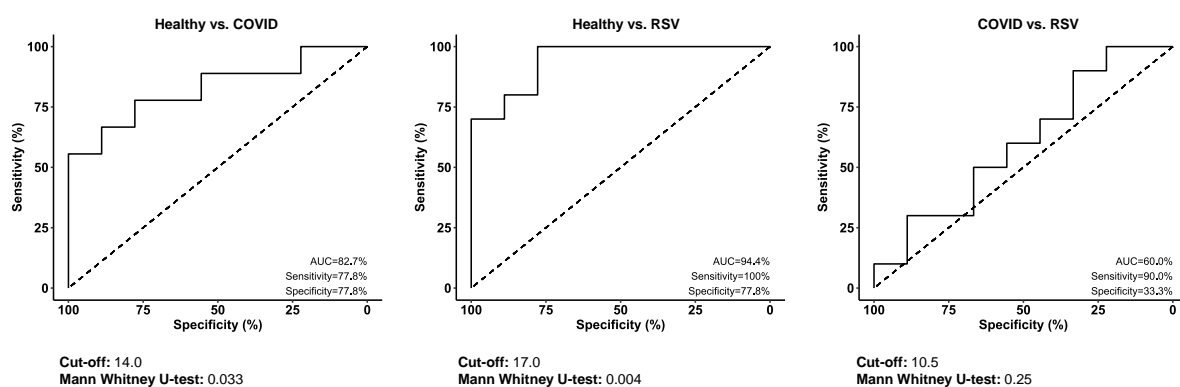


Fig. S4 Potential of the ARA concentration in serum measured with the developed immunoplatform to detect the presence of SARS-CoV-2 or RSV infections. The analyzed results by ROC curves analyses are those summarized in Table 4.

Table S1 Slope values of the resulting linear least-squared regression (in nA μg^{-1} mL) calculated from the calibration plots constructed from the amperometric responses obtained with the bioplatfrom for the determination of ARA standards prepared in buffered solution and in a 10-times diluted SARS-CoV-2 representative serum sample.

| Matrix | Slope | t_{exp}^{**} | $t_{\text{tab}(0.05, 4, 2 \text{ tailed})}^{**}$ |
|--|-----------------|-----------------------|--|
| Buffered solutions | (-185 ± 68) | -- | 4.303 |
| 10-times diluted serum of COVID-19 patient | (-171 ± 26) | 0.193 | |

***Estimated as described in [1].*

References

1. Andrade JM, Estévez-Pérez MG (2014) Statistical comparison of the slopes of two regression lines: A tutorial. Anal Chim Acta 838:1–12. <https://doi.org/10.1016/j.aca.2014.04.057>.