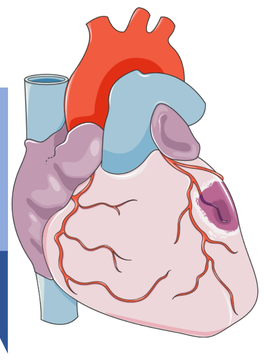
PLASTIC ANTIBODY FOR THE DIAGNOSIS OF ACUTE MYOCARDIAL INFARCTION



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INTRODUCTION

Myoglobin (Myo) is the first cardiac biomarker to be released into the bloodstream after the onset of symptoms of Acute Myocardial Infarction (AMI), allowing earlier detection of this disease [1]

Novel application based on Plastic Antibody that responds to a cardiac biomarker, Myo

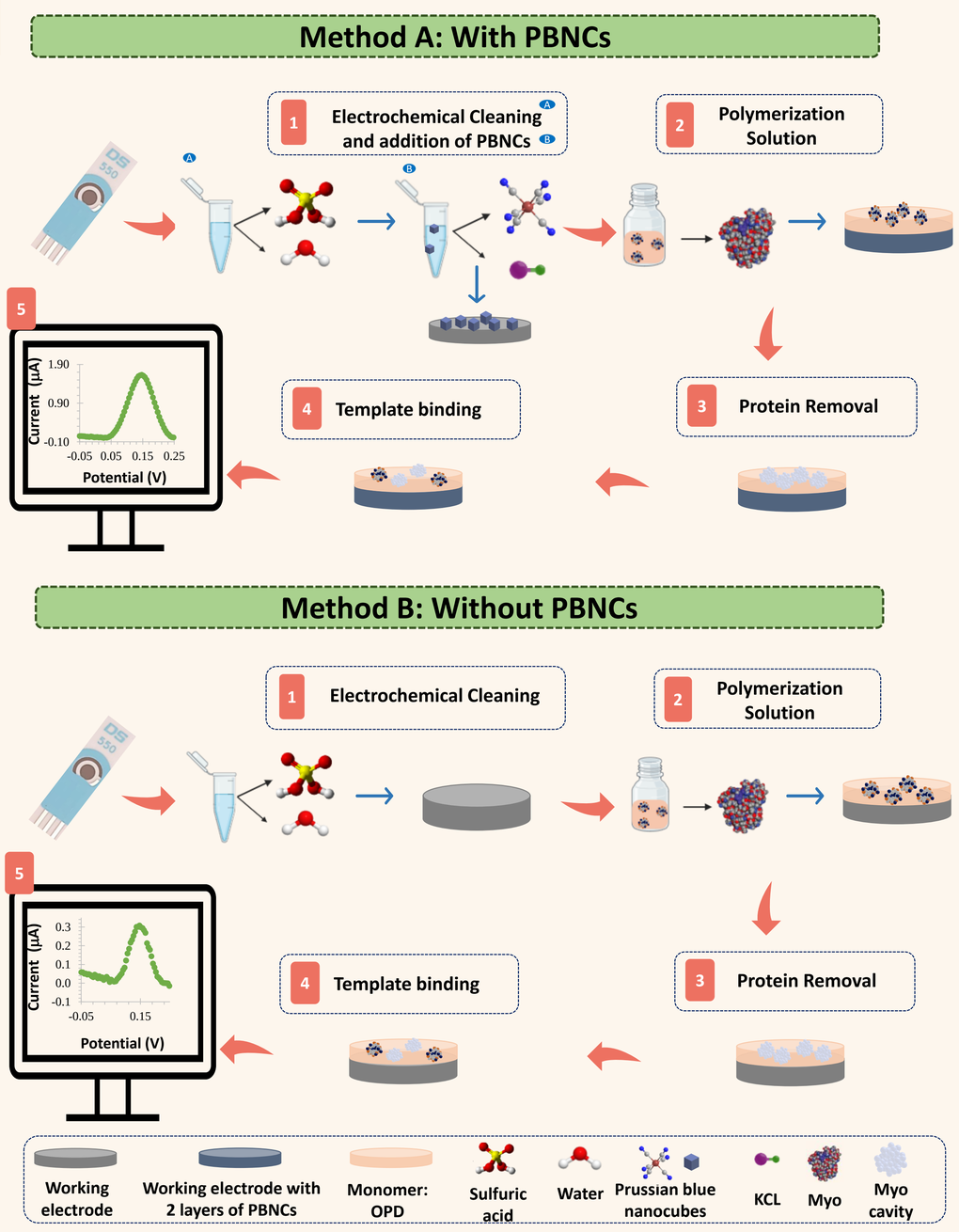
Imprint stage with electropolymerization of ortho-phenylenediamine (OPD) in the presence of Myo

Template removal from polymeric matrix digested by trypsin

The biomimetic film was fabricated on platinum screen-printed electrodes (Pt-SPE) modified with electroactive Prussian blue nanocubes (PBNCs)

METHODOLOGY

Method A: With PBNCs

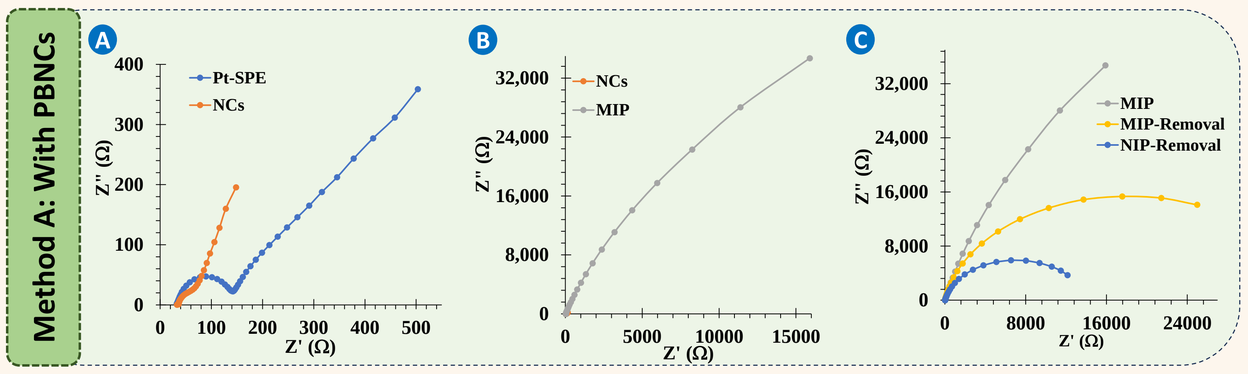


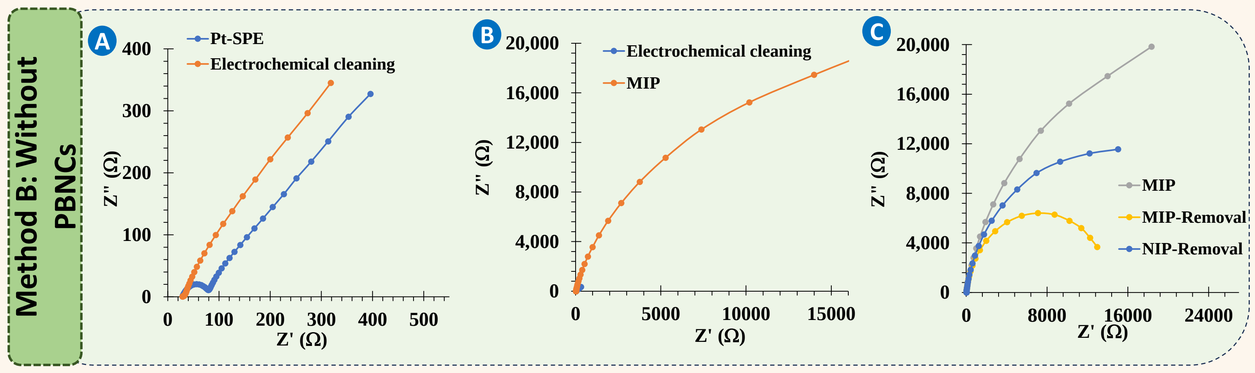
Method B: Without PBNCs

Schematic representation of the assembly of a MIP for the detection of Myo: (1) Working electrode pre-treatment; **(2)** Electropolymerization of a solution containing the monomer (OPD) and Myo; **(3)** Myo removal from polymer matrix; **(4)** Template re-binding on the MIP sensor; **(5)** Data related to the analytical performance of the sensor.

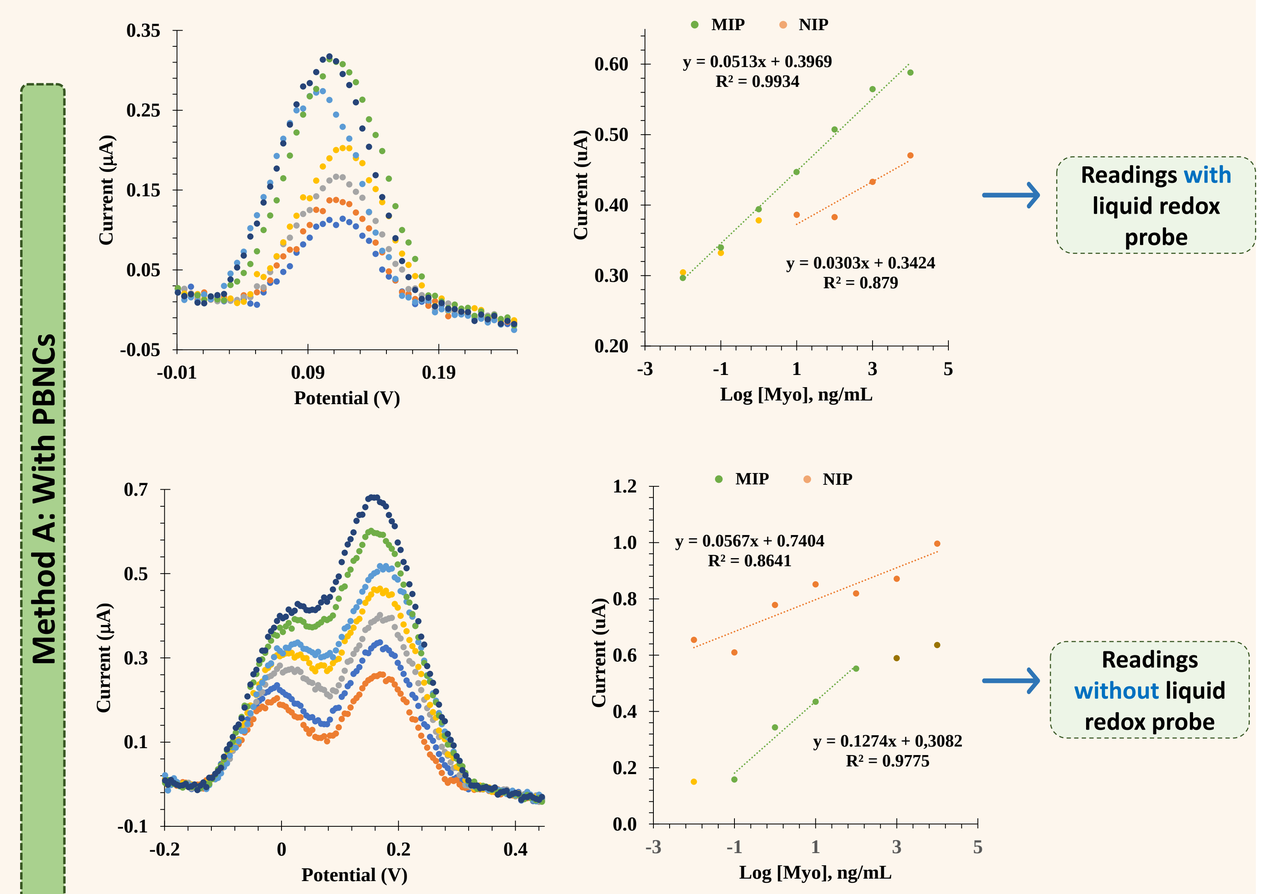
RESULTS

Electrochemical assembly of the biossensor





Analytical performance of the biossensor



CONCLUSION

Linear response range of the biosensor: 0.01 and 10000 ng/mL

MIP showed superior sensitivity to NIP, providing specific sites for detection

Effective tool for AMI screening biomarkers in PoC tests

REFERENCES

[1] Vílchez, J. A., Orenes-Piñero, E., Hernández-Romero, D., Valdés, M., & Marín, F. (2014). Biomarkers of Necrosis and Myocardial Remodeling. In *General Methods in Biomarker Research and their Applications* (pp. 1–24). Springer Netherlands. https://doi.org/10.1007/978-94-007-7740-8_42-1

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