Aptamer-Enhanced Electrochemical Biosensor for the Detection of *Listeria monocytogenes*

Giuseppe Lamberti [1,*], Daniela Chirizzi [3], Livia Giotta [2], Paola Semeraro [2], Roberta Catanzariti [3] and Maria Rachele Guascito [2]

[1] Dep. Of Mathematics and Physics, Ennio de Giorgi, University of Salento, Via per Arnesano – Lecce (Italy).
[2] Dep. Of Biological and Environmental Sciences and Technologies, University of Salento, Via per Monteroni 73100, Lecce (Italy).
[3] Experimental Zooprophylactic Institute of Puglia and Basilicata (IZSPB), Via Manfredonia 20, I-71100 Foggia, Italy.
Emails:
giuseppe.lamberti@unisalento.it
danielachirizzi@gmail.com
livia.giotta@unisalento.it
paola.semeraro@unisalento.it
roberta.catanzariti@izspb.it
maria.rachele.guascito@unisalento.it
***** Correspondence: giuseppe.lamberti@unisalento.it ; Tel.: +39 389 293 1278

Keywords: Aptamers, Electrochemistry, Sensors-BioSensors, Polymers

A wide variety of biosensors has been developed and investigated in recent years, and electrochemical biosensors are obtaining an increasing attention from the scientific community. Among the different electrochemical biosensors, spacing from amperometric to potentiometric and impedentiometric sensors, an upcoming class has risen up: Aptasensors. These biosensing platform exploit aptamers, which are complex biological species obtained through gene sequencing [1]. These custom-made oligonucleotides grant very useful capabilities, such as high stability, reproducibility, selectivity and ease-to-use. Being custom-made species, these can be fully tailored to detect specific species such any bacteria/pathogens of interest. In the case of the present work, the aptamer was custom-made to detect *Listeria monocytogenes,* a food-related bacterium responsible of Listeriosis, an invasive infection that can be lethal for weak people and pregnant women. The biosensor platform consisted of the aptamer and a polymer (Polydopamine and its derivatives) to which the aptamer is anchored. Different concentrations of polymer and aptamer were investigated. The entire biosensor was investigated step-by-step through Cyclic Voltammetry, Impedance Spectroscopy, Fourier-Transform Infra-Red spectroscopy and Raman Spectroscopy.

Acknowledgments: The authors thank the project IZSPB 02/21 RC - BIMPA.
[1,*]PhD scholarship M.D. 118/2023 (“PNRR”) PhD in Nanotechnology
XXXIX cycle A.A. 2023/2024 COD. DOT1712250 (CUP F83C23000940002)

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