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Development of New Catalytic Material for Accurate Detection of Biological Biomarkers Related to Most Common Non-Communicable Diseases †

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† Presented at the 1st International Electronic Conference on Biosensors, 2–17 November 2020; Available online: https://iecb2020.sciforum.net/.

Received: date; Accepted: date; Published: date

Abstract: Presently, long-lasting health disorders represent a significant health problem in developing countries. Further, epidemiological trends associated with lifestyle habits, suggests that chronic conditions trend not to slow down all over the world. Hence, reliable analytical techniques to manage chronic health conditions like diabetes-mellitus, cardiovascular diseases, neurodegenerative diseases, among other non-communicable diseases (NCD), is of paramount importance [1].

Keywords: non-communicable diseases; electrochemical sensors; silver nanoparticles; eco-friendly synthesis; *Plecthrantus genus*

Electrochemical biosensor is a pivotal technique for low analyte concentration detection, aiming for a swift and accurate diagnosis/therapy, to deal with the various health conditions. Though, the performance of electro-biosensors heavily depends on the catalytic activity of the material used as biosensor transducer. As a result, nanomaterials are widely used on the electrode surface owing to their unique physicochemical characteristics, like the high surface area to volume ratio, which renders their convenient features for biosensing heterogeneous catalysts [2].

Nowadays, silver nanoparticles (AgNPs) are used in numerous biomedical applications, such as therapeutic purposes or as catalytic material in the electrochemical analysis. Notwithstanding AgNP's health benefits impact, conventional methods used in their synthesis, are far from healthy, with scientific researchers pursuit for eco-friendly alternatives without health-hazardous chemicals [3].

One of the most used alternatives is plant-assisted synthesis, where, phytochemicals of the genus *Lamiaceae Plectranthus* proving to be a remarkable reducing and stabilizing agent of well-dispersed metal nanoparticles [4].

Aim of the current study is the design of a skilled approach for the provision of *Plectranthus*-assisted AgNPs, pointing their application as high-performance catalytic material in a sensitive biosensor for NCD.

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