

World Congress On

BIOSENSORS AND BIOELECTRONICS

August 20-21, 2018 | Chicago, USA



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Point-of-care testing of nitrites: In the route to market

The quantification of nitrites (NO_2^-) has gained an increasing relevance in biomedicine due to its recognition as a central homeostatic species in the NO physiology, as well as an important signalling molecule. Though, the circulating levels of nitrites in body fluids have been difficult to measure due to sampling issues and the poor performance of common diagnosis methods. In clinical applications, the detection of nitrites in urine is widely used, as a marker of NO production under infection and/or inflammatory conditions. Thus, the implementation of an effective and easy-to-use point-of-care-test (POCT) for quick and effective NO_2^- readings would be surely welcome either in translational medicine or clinical diagnosis. Other markets for nitrites testing exist in the food industry, and pollution control (the main

international authorities, for instance, have promulgated rules restricting nitrite concentrations in drinking water and foodstuff). Our research group has been focused on the construction of a POCT for nitrites quantification using enzyme-based electrochemical biosensors. In this communication, the progress made over the last years will be shortly reviewed. Several second generation biosensors using redox mediators were initially proposed. These were followed by several third generation configurations based on a direct electron transfer approach. Recently, the electrodes system was fully miniaturized using disposable screen-printed electrodes and the proof-of-concept was established. The technology is now mature to start its transference into the market.

Biography

Maria Gabriela Almeida received her undergraduate education in Chemistry at Universidade de Lisboa and the Master's degree in Biotechnology from Universidade Técnica de Lisboa. She completed her Doctoral studies in Biochemistry (2003), at Universidade Nova de Lisboa. She is the Associate Professor at Instituto Universitário Egas Moniz and the head of the Group of Biomarkers and Biosensors. Her main research interests are focused in the discovery of novel biomarkers through proteomic techniques and the development of point-of-care tests based on enzyme electrochemical biosensors.

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