Aegean
Analytical Chemistry Days

AACD

8th Aegean Analytical Chemistry Days

16 - 20 September 2012

I Z T E C H - i Z M i R

Call for Papers

As reflected in its name, The 8th Aegean Analytical Chemistry Days conference is geographically centered about the Aegean Sea with conferences being held alternately in Turkey and Greece. We cordially invite all those interested in attending the conference to submit an abstract for consideration.

Atomic Spectrometry
Molecular Spectrometry
Mass Spectrometry
Chromatography and Separation Techniques
Electroanalytical Techniques
Surface Characterization Techniques
Automated Methods of Analysis
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Analytical Chemistry & Materials Science
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Electrochemical Microbial Biosensor Conducting Polymer ofN-(2,5-di(thiophen-2-yl)-1*H*-pyrrol-1-yl)4-aminobenzamide

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Conducting polymer that is a class of functional polymers contain consecutive single and double carbon-carbon bonds along the polymeric chains [1]. Indeed these polymers form π-conjugation within the polymer backbone. Moreover this structure have been used in many applications such as electrochemical batteries, gas separation membranes, solar cells and ion-exchange membrane in fuel cells and drug release systems owing to unusual electrochemical properties like low energy optical transitions, high electrical conductivity, low ionization potential, high electronic affinities [2]. Usage of conducting polymers in biosensors is attractive because of being suitable matrices for biomolecules in order to improve stability, speed and sensitivity and convenient for the construction of multi-analyte micro-amperometric biosensors [3].

Immobilization of microorganisms provides wide range use in biosensors. As a biocomponents, microbial cells have several advantages; no need to enzyme purification and addition of coenzymes, more stable in their natural conditions in the cell and they are able to metabolism widespread chemical compounds. Microbial biosensors may be limited by longer response time and low selectivity [4].

Here we describe a bacterial biosensor which was constructed by immobilization of *Gluconobacter oxydans* cells on graphite electrodes modified with the conducting polymer of N-(2,5-di(thiophen-2-yl)-1*H*-pyrrol-1-yl)4-aminobenzamide. A shematic representation of the developed biosensor was shown in Fig 1. The effect of several parameters such as pH, electrochemically deposition time and cell amount were optimized. Afterwards, analytical characterizations were carried out and linear range, repeatability, storage stability, reproducibility, substrate specificity and interferences have been investigated. The biosensing system applied for glucose analysis in real samples. Spectrophotometric method based on a commercial enzyme assay kit was used as the reference method and data was also compared with the ones obtained by spectrophotometric method.

Fig.1 Schematic representation of the construction of the proposed microbial biosensor.

KEYWORDS: conducting polymer, microbial biosensor, *Gluconobacter oxydans*

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