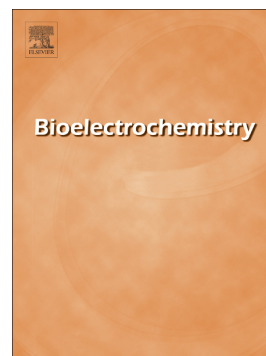


## Accepted Manuscript

A new composite consisting of electrosynthesized conducting polymers, graphene sheets and biosynthesized gold nanoparticles for biosensing acute lymphoblastic leukemia

Mohammad Mazloum-Ardakani, Behnaz Barazesh, Ali Reza Khoshroo, Mohammad Moshtaghiun, Mohammad Hasan Sheikhha



PII: S1567-5394(17)30616-3  
DOI: <https://doi.org/10.1016/j.bioelechem.2017.12.010>  
Reference: BIOJEC 7092  
To appear in: *Bioelectrochemistry*  
Received date: 7 December 2017  
Revised date: 17 December 2017  
Accepted date: 20 December 2017

Please cite this article as: Mohammad Mazloum-Ardakani, Behnaz Barazesh, Ali Reza Khoshroo, Mohammad Moshtaghiun, Mohammad Hasan Sheikhha , A new composite consisting of electrosynthesized conducting polymers, graphene sheets and biosynthesized gold nanoparticles for biosensing acute lymphoblastic leukemia. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Biojec(2017), <https://doi.org/10.1016/j.bioelechem.2017.12.010>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**A new composite consisting of electrosynthesized conducting polymers,  
graphene sheets and biosynthesized gold nanoparticles for biosensing acute  
lymphoblastic leukemia**

Mohammad Mazloun-Ardakani<sup>a\*</sup>, Behnaz Barazesh<sup>a</sup>, Ali Reza Khoshroo<sup>a</sup>, Mohammad Moshtaghiun<sup>b</sup>, Mohammad

Hasan Sheikhha<sup>c</sup>

E-Mail: mazloun@yazd.ac.ir

<sup>a</sup>Department of Chemistry, Faculty of Science, Yazd University, Yazd, Iran <sup>b</sup>Department of Biology, Faculty of Science, Yazd University, Yazd,  
Iran

<sup>c</sup> Research and Clinical Center for Infertility, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

**Abstract:**

In this work we report the synthesis of a stable composite with excellent electrical properties, on the surface of a biosensor. Conductive polymers offer both high electrical conductivity and mechanical strength. Many reports have focused on synthesizing conductive polymers with the aid of high-cost enzymes. In the current work we introduce a novel electrochemical, one-step, facile and cost effective procedure for synthesizing poly (catechol), without using expensive enzymes. The poly (catechol) conductivity was enhanced by modification with graphene sheets and biosynthesized gold nanoparticles. Four different robust methods, DPV, EIS, CV and chronoamperometry, were used to monitor the biosensor modifications. The peak currents of the catechol (an electroactive probe) were linearly related to the logarithm of the concentrations of target DNA in the range 100.0  $\mu$ M to 10.0 pM, with a detection limit of 1.0 pM for the DNA strand. The current work investigates a new, stable composite consisting of conductive polymers and nanoparticles, which was applied to the detection of acute lymphoblastic leukemia.

Download English Version:

<https://daneshyari.com/en/article/7704533>

Download Persian Version:

<https://daneshyari.com/article/7704533>

[Daneshyari.com](https://daneshyari.com)