

Electrochemical sensing of cytochrome c using Graphene Oxide nanoparticles as platform

Bhawna Batra a, Samiksha Sangwan b, Jyoti Ahlawat b, Minakshi Sharma b*,

^aDepartment of Biotechnology, DCRUST, Murthal, Sonapat, Haryana, India

^bDepartment of Zoology, Maharshi Dayanand University, Rohtak, Haryana, India

Copyright: 2021 Sharma M. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

An improved cytochrome c (Cyt c) biosensor based on immobilization of cytochrome c oxidase (COx) on the surface of graphene oxide nanoparticles (GONPs) electrodeposited onto pencil graphite (PG) electrode. Characterization of graphene oxide nanoparticle was done by Transmission electron microscopy (TEM), Fourier transform infra-red spectroscopy (FTIR) and X-ray diffraction study (XRD). The working electrode (COx/GONPs/PG) was characterized at its different stages of fabrication by scanning electron microscopy (SEM) and FTIR. Fabrication of Cyt c biosensor was done by connecting COx/GONPs/PG as working electrode, Ag/AgCl as reference electrode and Pt as auxiliary electrode to potentiostat. The mechanism of detection of present biosensor was based on oxidation of Cyt c (reduced) to Cyt c (oxidized) by COx resulting in flow of electrons through GONPs to the PG electrode, hence current generated is proportional to the concentration of Cyt c. Present biosensor exhibited optimum potential at 0.49 V with optimum pH 7.5 and optimum temperature 35°C. Biosensor showed linearity within 40–180 ng/ml having 40 ng/ml limit of detection..

Biography:

Prof. Minakshi Sharma has completed his PhD at the age of 32 years from Maharshi Dayanand University, Rohtak (Haryana), India. She is the Head of department of Zoology. She has published more than 40 papers in reputed journals.

Citation: Prof. Minakshi Sharma, Electrochemical sensing of cytochrome c using Graphene Oxide nanoparticles as platform, 4th International Conference on Biosensors and Bioelectronics, Paris, France, May 21-22, 2021