Electrochemical Immune Analysis System for Gastric Cancer Biomarker Carcinoembryonic Antigen (CEA) Detection

Zhenggui Tao, Jinghu Du, Yu Cheng and Qingfeng Li*

Xiangyang Central Hospital Affiliated to Hubei University of Arts and Science, Xiangyang, Hubei, 441021, P.R. China

*E-mail: liqfeng@hotmail.com

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In the present work, carcinoembryonic antigen (CEA), a significant biomarker in gastric cancer diagnostics, was successfully detected by a desirably selective and sensitive electrochemical aptasensor with an electrocatalyst and nanocarrier, i.e., Pt/Au-diaminonaphthalene (DN)-graphene. The developed bioconjugate was captured onto the surface of the electrode via a “sandwich” strategy during the detection of CEA. The proposed method was demonstrated to be sensitive, as indicated by the improved electrochemical response, since the dendritic Pt/Au/DN-graphene showed peroxidase-mimic activity for the reduction of H₂O₂ introduced into the electrolytic cell, thereby confirming its desirable catalysis capacity.

Keywords: Sandwich immunosensor; Carcinoembryonic antigen; Biomarker; Electrochemical determination; Pt/Au nanocomposite

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