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基于聚邻苯二胺复合膜电位型免疫传感器的制备

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Preparation of Potentiornetric Immunosensor Based on Poly (o-Phenylenediamine) Film

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全文: PDF (504 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 首先利用循环伏安法制备聚邻苯二胺(POPD)修饰碳糊电极(CPE/POPD)，然后在CPE/POPD上电沉积普鲁士蓝(PB) 和纳米金(GNPs)，制备CPE/POPD/PB-GNPs电极，最后将羊抗小鼠IgG通过金-氨键固定在CPE/POPD/ PB-GNPs上，从而制得一种免疫传感器(CPE/POPD/PB-GNPs/Ab).用循环伏安法和电化学交流阻抗技术对电极的修饰过程进行表征.利用所制备的免疫传感器对溶液中的小鼠IgG进行检测，结果表明，在2.0×10-5 μg/L和1.0×04 μg/L 2种浓度下，免疫传感器均得到了很稳定的电位响应信号，响应时间不超过3 min.所制备的免疫传感器具有灵敏度高、响应速度快、检测范围宽、成本低廉等突出优点.

关键词: 聚邻苯二胺 纳米金 普鲁士蓝 抗体

Abstract: Firstly,o-phenylenediamine(OPD) was electropolymerized on carbon paste electrode (CPE/POPD) by cyclic voltammetry method.Then the gold nanoparticals (GNPs) and prussian blue (PB) were deposited onto the CPE/POPD by electrodeposition technology to fabricate CPE/POPD/PB-GNPs electrode.Finally,the goat anti-mouse IgG (antibody,Ab) were immobilizeded on to the CPE/POPD/PB-GNPs electrode through Au-NH-bond,and thus a potentiometric immunosensor (CPE/POPD/PB-GNPs/Ab) was sucessfully prepared.The modified process of the electrode was characterized by cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS).The immunosensor exhibited fast potentiometric response (<3 min) under the antigen concentration of 2.0×10-5 μg/L and 1.0×104 μg/L when it was used to detect the mouse IgG.The results of experiments showed that the immunosensor based on POPD/GNPs-PB composite film exhibited the advantages of high sensitivity,fast response,wide detection range and low cost.

Key words: poly (o-phenylenediamine) nano gold prussian blue antibody

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