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摘要: 本文研究腺嘌呤(A)和单链DNA(ssDNA)在电化学预处理碳糊电极上的循环伏安(CV)和微分脉冲伏安(DPV)行为。讨论底液、预处理电压、富积电压和富积时间对测定的影响。实验结果表明,用电化学方法预处理的碳糊电极制作过程简单,效果明显;此种碳糊电极对腺嘌呤和DNA的吸附能力大大增强,用微分脉冲伏安法可得到灵敏的氧化峰,氧化峰的电流值与其浓度在一定范围内呈良好的线性关系;这种传感器可用于嘌呤碱基的定量检测和单链DNA浓度的测定,并为将来制备相应的一次性电极奠定基础。

关键词: DNA, 腺嘌呤, 碳糊电极, 微分脉冲伏安法

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[Differential pulse voltammetry method for the determination of adenine and ssDNA concentration using an electrochemically pretreated carbon paste electrode](#)

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Abstract: The cyclic voltammograms and differential pulse voltammetry methods were used for the sensitive and selective determination of adenine and ssDNA in 0.1mol/L phosphate buffer solution with pH=7.0 by using an electrochemically pretreated carbon paste electrode. It was discussed that the electrolyte, pretreated potential, and the accumulation time and potential have influence on the oxidation peak current of adenine. The results indicated that the electrochemically pretreated CPE could accumulate adenine and ssDNA by effective adsorption and produce sensitive differential pulse peaks. The oxidation peak heights were linear with the concentrations of adenine and ssDNA in the suitable range. The proposed method can be used to determine the adenine and adenine contents in ssDNA with good selectivity, and can also provided some basic information for producing one-off electrode in the future.

Key words: DNA, Adenine, Carbon paste electrode, Differential pulse voltammetry

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