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论文

多巴胺在聚对氨基吡啶修饰电极上伏安行为及其溶出伏安法测定

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摘要：

目的 大量抗坏血酸(AA)存在下，研究聚对氨基吡啶(POAP)化学修饰膜电极测定神经递质多巴胺(DA)。方法 用循环伏安和多阶半微分电化学方法研究对氨基吡啶在玻碳电极上的聚合和伏安行为。结果 POAP电极对DA有明显的分子识别和电催化作用。2 000倍AA存在下对DA测定无影响，检测限为4.2×10^{-11} mol.L^{-1}(富集8 min)。结论 POAP电极使用寿命至少长达3个月，DA与AA的氧化峰分开200 mV,可用于大量AA存在下测定神经递质DA。

关键词： 聚对氨基吡啶修饰电极；多巴胺；多阶半微分伏安法

VOLTAMMETRIC BEHAVIOR OF DOPAMINE AT POLY(4-AMINOPYRIDINE) FILM MODIFIED ELECTRODE AND ITS DETERMINATION BY ADSORPTIVE STRIPPING VOLTAMMETRY

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Abstract:

AIM To study the determination of dopamine (DA) in the presence of ascorbic acid (AA) using poly(4-aminopyridine) (POAP) film modified electrode. METHODS The POAP modified electrode was polymerized on a glassy carbon electrode by cyclic voltammetry, and the quantitative determination of DA was by 2.5th-order differential electrochemical method. RESULTS The POAP electrode showed molecular recognition and electrocatalysis characteristics, DA showed a very sensitive response at the electrode. DA could be determined in the presence of 2000-fold of AA without obvious interference. The detection limit was 42×10^{-11} mol.L^{-1} with 8 min accumulation. CONCLUSION The useful life period of the modified electrode was three months at least. The anodic peaks of DA and AA could be separated by about 200 mV at this electrode. POAP electrode could be used for the determination of neurotransmitter DA in the presence of plenty of AA.

Keywords: dopamine 2.5th-order differential voltammetry poly(4-aminopyridine) modified electrode

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