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腺嘌呤、腺苷和5'-腺苷酸电化学氧化行为的比较研究

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摘要 本文使用微分脉冲伏安法, 循环伏安法, 计时电流法,
和线性扫描伏安法对这三种生物分子在碳糊电极上的氧化行为进行比较研究, 并对典电极反应动力学参数(βnb)、扩散系数(D)及反应速度常数(Kb)进行测量比较.

关键词 氧化 反应动力学 腺嘌呤核苷 反应速度常数 生物分子 计时电位法 腺嘌呤 电化学 循环伏安法 单磷酸腺苷

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A comparative study on the anodic behaviour of adenine, adenosine, and 5'-AMP at carbon paste electrode

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Abstract The anodic behavior of 3 biolog. important mols., adenine, adenosine, and 5'-AMP, was comparatively investigated at C paste electrode. The peak potential and peak current for differential pulse voltammetry were studied as a function of pH and concentration The kinetic parameters (bnb) for the rate-detg. step of the oxidation reactions under diffusion-control were measured with linear sweep voltammetry at 10?and pH 3.3, which were 0.77, 0.91, and 0.87, resp. Chronoamperometry was used to determine the diffusion coefficient (D) of these compounds, which were 5.03, 4.21, and 1.59 ?10-6 cm2/s, resp. Using the bnb and D data obtained independently from each other, the heterogeneous rate constants (kb) for the overall anodic processes were calculated and compared.

Key words OXIDATION REACTION KINETICS ADENOSINE REACTION RATE CONSTANT BIOMOLECULE CHRONOPOTONTIOMETRY ADENINE ELECTROCHEMISTRY CYCLOVOLTAMGRAPH ADENOSINE MONOPHOSPHATE

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