

研究论文

克拉霉素的电化学反应机理研究与应用

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摘要 应用线性扫描伏安法、循环伏安法、常规脉冲伏安法等电化学手段并结合紫外吸收光谱研究了药物克拉霉素(clarithromycin, CAM)在pH 1.8~9.2 Britton-Robinson缓冲溶液和0.05 mol·L⁻¹ NaOH溶液中的电化学行为. 在所研究的pH范围, CAM分别产生P₁, P₂, P₃, P₄四个还原波, 其中P₁, P₂, P₄三个波均为其药效活性基团C-9位羰基的还原所产生. 实验结果表明: 在pH 1.8~5.7的B-R缓冲溶液条件下所获得的P₁波为两电子不可逆弱吸附还原波; 在6.0<pH<9.2的B-R缓冲溶液中, CAM产生P₂和P₃两个波, 其中P₂为两电子不可逆还原波, P₃为催化氢波. 在0.05 mol·L⁻¹ NaOH溶液中, CAM产生的P₄波是一个单电子的不可逆吸附还原波. 根据P₄波的峰电流*i_p*与CAM浓度的线性关系, 建立了CAM含量测定的新方法.

关键词 [伏安法](#) [反应机理](#) [克拉霉素](#)

分类号

Investigation on Electrochemical Reaction Mechanism of Clarithro-mycin and Its Application

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Abstract The electrochemical behavior of clarithromycin (CAM) was studied in pH 1.8~9.2 Britton-Robinson buffer solution and 0.05 mol·L⁻¹ NaOH solution by means of linear sweep voltammetry, cyclic voltammetry, normal pulse voltammetry and UV spectrophotometry. Over the studied pH range, four reduction waves P₁, P₂, P₃ and P₄ of CAM were achieved, three of which were the reduction of C=O at C-9. CAM yielded one wave P₁ as pH of B-R buffer solution was changed from 1.8 to 5.7. P₁ was an irreversible and weak adsorption reduction wave involving two electrons. Additional two waves P₂ and P₃ were exhibited in pH 6.0~9.2 buffer solution. The former was an irreversible reduction wave involving two electrons, and the latter was a catalytic hydrogen wave. P₄ was attained in 0.05 mol·L⁻¹ NaOH solution, which was an irreversible and adsorption reduction wave involving one electron. Based on the linear relation between the peak current of P₄ and the concentration of CAM, a new method for determination of CAM was described.

Key words [voltammetry](#) [reaction mechanism](#) [clarithromycin](#)

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