

论文 甲氧苄氨嘧啶(TMP)的电分析化学研究及其在药物分析中的应用

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摘要:

本文用微分脉冲极谱法和循环伏安法研究了甲氧苄氨嘧啶(TMP)的电化学行为,选择了最佳的测定条件,TMP的检出限可达 2.0×10^{-7} mol/L,方法灵敏度较高,并研制了TMP-PVC膜离子选择性电极,试验了该电极的各种特性及Nernst响应范围。本法应用于制剂中TMP的测定,选择性好,干扰少,毋须分离,方法简便快速。选择电极在人尿和血清的介质中测定,也能获得良好的结果。

关键词: 脉冲极谱 循环伏安法 TMP

ELECTROANALYTICAL CHEMISTRY STUDY OF TRIMETHOPRIM AND ITS APPLICATION TO PHARMACEUTICAL ANALYSIS

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Abstract:

The electrochemical behaviour of trimethoprim was investigated by differential pulse polarography and cyclic voltammetry. The optimum conditions for the determination of TMP were as follows: The electrolyte was 0.02 mol/L HAc-NaAc (pH 4.0) buffer solution, initial potential -1.00 V(vs. Ag-AgCl), final potential -1.50 V (vs. Ag-AgCl). The calibration graph was linear over the range of TMP concentrations $5.5 \times 10^{-7} \sim 5.5 \times 10^{-6}$ mol/L. The detection limit was 2.0×10^{-7} mol/L. This paper also reports the construction and performance characteristics of a PVC membrane trimethoprim ion selective electrode. It is based on the use of tetraphenylborate-TMP ion pair complex as the active material. The PVC membrane electrode showed Nernstian response over the trimethoprim concentration range from 4.4×10^{-6} to 2.2×10^{-5} mol/L, with a slope of 57.3 mV/decade, the limit of detection being 4.6×10^{-6} mol/L. The electrode gave fast response, and good reproducibility. The electrode potential drift was less than 4 mV for a duration of twenty days. The trimethoprim ion selective electrode and differential pulse polarographic methods have been applied to the determination of TMP in pharmaceutical preparations. The electrode can also be used to determine TMP in urine and serum with satisfactory results.

Keywords: Cyclic voltammetry Trimethoprim Differential pulse polarography

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