

Full Paper

在线微超滤化学发光法研究中穿琥宁与牛血清蛋白的相互作用

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摘要 脱水穿心莲内酯琥珀酸半酯单钾盐(穿琥宁, DAS-K)具有清热解毒、抗菌消炎功能, 在临床上广泛用于病毒性肺炎、疟疾和呼吸道感染等疾病的治疗。本文基于NaOH碱性介质中, 在罗丹明B的存在下, 铁氰化钾可以直接氧化穿琥宁产生化学发光这一现象, 建立了一种利用化学发光测定穿琥宁的新方法。优化了化学发光反应的条件并讨论了可能的反应机理。在优化实验条件下, 该法测定DAS-K的线性范围为0.1~80

$\mu\text{mol}\cdot\text{L}^{-1}$, 检出限为 $0.05\mu\text{mol}\cdot\text{L}^{-1}$ 。在此基础上, 结合在线微超滤技术, 测定了DAS-K和牛血清白蛋白作用后未结合DAS-K的浓度, 以Scatchard和Klotz方程作图求解, 得出了DAS-K和与牛血清白蛋白相互作用的结合常数, 为中药与蛋白相互作用的研究提供了一种简单、快速的在线微超滤化学发光新方法。

关键词 [化学发光](#), [微超滤](#), [流动注射分析](#), [药物蛋白作用](#), [脱水穿心莲内酯琥珀酸半酯单钾盐](#), [牛血清蛋白](#)

分类号

A Study on the Interaction of the DAS-K with Bovine Serum Albumin by On-line Ultrafiltration and Chemiluminescence

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Abstract Potassium dehydroandrographolide succinate (DAS-K) has antibacterial and antiviral effects. It has been used widely for the treatment of virus pneumonia, malaria and respiratory infections. In this work, a novel flow-injection chemiluminescence (CL) method for the determination of DAS-K was proposed. The method is based on the reaction between DAS-K and hexacyanoferrate(III) in alkaline solution to give weak CL signal, which is enhanced by rhodamine B. The experimental conditions for the CL reaction were optimized and the possible reaction mechanism was discussed. Under the optimum conditions, the concentration of DAS-K is proportional to the CL intensity in the range of 0.1—80 $\mu\text{mol}\cdot\text{L}^{-1}$ with a detection limit of $0.05\mu\text{mol}\cdot\text{L}^{-1}$. The interaction of the DAS-K with bovine serum albumin by on-line ultrafiltration and flow-injection chemiluminescence was studied. The concentrations of unbound DAS-K from ultra filter tube were determined by the flow-injection CL method. The binding parameters were estimated by the Scatchard plot and Klotz plot. The proposed system proved that FIA-CL coupled with on-line ultrafiltration sampling was a fast and simple technique for the study of drug-protein interaction.

Key words [chemiluminescence](#) [ultrafiltration sampling](#) [flow-injection analysis](#) [drug-protein interaction](#) [potassium dehydroandrographolide succinate](#) [bovine serum albumin](#)

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