

毛细管电泳-激光诱导荧光检测法测定抗癫痫药加巴喷丁

蔡元丽, 杨甲甲, 王宇飞, 白珂珂, 李晖*

四川大学化学工程学院, 四川 成都 610065

Determination of gabapentin using capillary electrophoresis with laser-induced fluorescence detection

CAI Yuanli, YANG Jiajia, WANG Yufei, BAI Keke, LI Hui*

College of Chemical Engineering, Sichuan University, Chengdu 610065, China

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摘要 建立了毛细管电泳-激光诱导荧光(CE-LIF)测定抗癫痫药加巴喷丁的方法。加巴喷丁经4-氯-7-硝基苯并-2-氧杂-1,3-二唑(NBD-Cl)衍生化后,采用10 mmol/L硼砂-10 mmol/L十二烷基硫酸钠(pH 9.75)的缓冲体系,加巴喷丁在6 min内实现高效基线分离。方法的线性范围为0.01~10 mg/L($r=0.9997$),检出限为2 $\mu\text{g/L}$,定量限为10 $\mu\text{g/L}$ 。方法的平均回收率为100.2%~103.1%,相对标准偏差为0.15%~1.00% ($n=3$)。该方法灵敏、快速、准确和可靠,已用于加巴喷丁药物制剂的质量控制。

关键词: 毛细管电泳-激光诱导荧光检测 加巴喷丁 4-氯-7-硝基苯并-2-氧杂-1,3-二唑 抗癫痫药

Abstract: A novel method for the determination of gabapentin (an antiepileptic drug) has been developed using capillary electrophoresis with laser-induced fluorescence detection (LIFD). Gabapentin was first derived by 4-chloro-7-nitrobenzofurazan (NBD-Cl) and baseline separated within 6 min with a running buffer consisting of 10 mmol/L borate sodium and 10 mmol/L sodium dodecyl sulfate (pH 9.75). The linear range of this method was 0.01~10 mg/L ($r=0.9997$) with the limit of detection (LOD) of 2 $\mu\text{g/L}$ and the limit of quantification (LOQ) of 10 $\mu\text{g/L}$. The average recoveries were 100.2%~103.1% with the relative standard deviation (RSD) of 0.15%~1.00%. This method is fast, sensitive, accurate and reliable, and it has been used successfully for the quality assessment of gabapentin drug products.

Keywords: capillary electrophoresis-laser induced fluorescence detection (CE-LIFD) gabapentin 4-chloro-7-nitrobenzofurazan (NBD-Cl) antiepileptic drug

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Corresponding Authors: 李晖,教授,博士生导师,研究方向为药物分析. E-mail: lihuilab@sina.com. Email: lihuilab@sina.com

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