**Chinese Journal of Chemistry** 2006 24 (10): 1384—1387 ISSN: 0567-7351 CN: 31-1320/06

Full Papers

# 以高度磺化的β－环糊精为手性选择剂的利伐斯狄明对映体毛细管电泳分离

王兆彦[1,2],许杏祥[2],胡之德[1],康经武*[1,2]

[1]*兰州大学化学化工学院，兰州 730000*

[2]*中国科学院有机化学研究所, 上海 200032*

收稿日期 2006-1-19 修回日期 2006-6-28 网络版发布日期 2006-12-14 接受日期

摘要 利用高度磺化的β－环糊精为毛细管电泳手性选择剂，成功地分离了碱性药物利伐斯狄明，并且测定了其非消旋体样品的光学纯度。一般情况下碱性药物的分离是在酸性条件下进行的（pH＝2.5），目的是为了减小分析物在毛细管内壁的吸附。然而，对于利伐斯狄明，在pH

2.5时检测灵敏度较低，且不足以检测样品中低于1%的光学杂质；但实验发现提高缓冲液的pH值可以提高其检测灵敏度；而且，由于分析物在毛细管壁吸附造成的柱效降低可以通过线性聚丙烯酰胺动态涂层来抑制。本实验考察了环糊精的浓度，缓冲液的pH值和离子强度对分离度的影响，同时通过测定重现性，线性范围，最低检测限和最低检测量对方法进行了验证。最后在最佳条件下测定了非对映异构体样品的光学纯度。

关键词 利伐斯狄明 对映体分离 毛细管电泳 高度磺化的β－环糊精

分类号

## Sensitive Method for Enantioseparation of Rivastigmine with Highly Sulfated Cyclodextrin as Chiral Selector by Capillary Electrophoresis

WANG Zhao-Yan[1,2], XU Xing-Xiang[2], HU Zhi-De[1], KANG Jing-Wu*[,1,2]

[1]*College of Chemistry and Chemical Engineering, Lanzhou University, Lanzhou, Gansu 730000, China*

[2]Shanghai Institute of Organic Chemistry, *Chinese Academy of Sciences, Shanghai 200032, China*

**Abstract** A sensitive method for enantioseparation of a basic drug rivastigmine and determination of its optical impurity by capillary electrophoresis with highly sulfated *β*-cyclodextrin (HS-*β*-CD) as the chiral selector is described. In general, enantioseparation of basic chiral compounds is carried out in acidic condition (pH 2.5) to prevent analytes from adsorption on the capillary wall. However, in the case of rivastigmine, the detection sensitivity was too limited to determine the optical impurity of *S*-rivastigmine lower than 1% when buffer pH was 2.5. It was found that the detection sensitivity was improved 1.6 times just by raising the buffer pH value from 2.5 to 5.8. The poor column efficiency due to the adsorption of the analytes on the capillary wall was resolved by using dynamical coating of the capillary wall with the linear polyacrylamide solution. The experimental parameters such as the concentration of HS-*β*-CD, buffer pH and buffer ionic strength were optimized, respectively. The method was validated in terms of repeatability, linearity, limit of detection (LOD) and limit of quantitation (LOQ). Using the present method, the optical purity of nonracemic rivastigmine with the enantiomeric excess (ee) value of 99.14% was determined.

**Key words** **Keywords** rivastigmine enantioseparation capillary electrophoresis highly sulfated *β*-cyclodextrin

DOI:

通讯作者 康经武 jingwu.kang@mail.sioc.ac.cn