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综述

质谱动力学方法在手性识别及对映体过量值方面的原理及应用

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摘要 近年来电喷雾质谱被越来越多地应用于手性分析研究中，本工作综述了质谱中的动力学方法在手性识别和对映体过量值测量中的应用，并对该方法在这些主要应用中存在的关键问题进行讨论。动力学方法是通过观察离子键合三元复合物离子的碰撞诱导解离反应，测量一对竞争反应速率常数的比值。当上述离子键合三元复合物由手性配体和手性分析物组成时，速率常数的比值与三元金属复合物中手性分析物的绝对构型有关，这是手性识别和对映体过量值测量的基础。研究中所涉及的手性化合物已经从以往对氨基酸扩展到了手性药物，手性糖等。

关键词 动力学方法 手性识别 对映体过量值

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Theory and Applications of Kinetic Method for Chiral Recognition and Enantiomeric Excess Measurement

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Abstract Chiral recognition of enantiomers was achieved by kinetic method. Transition metal bound complex ions containing the chiral analyte and chiral selector were generated by electrospray ionization mass spectrometry (ESI-MS) and subjected to collision-induced dissociations. The ratio of the two competitive dissociation rates was related to the absolute configuration of the chiral analyte, and that was the basis for both chiral recognition and enantiomeric excess measurement. The structures of the fragment Cu^{2+} complexes were discussed in the light of the CID behavior of related compounds. The interactions within these ions that might contribute to chiral recognition were rationalized to account for the observed chiral effects. Recently, the analytes utilized by the kinetic method were extended to amino acids, chiral drugs and sugars. The theory of kinetic method used and its major applications in the field of chiral analysis were reviewed.

Key words kinetic method chiral recognition enantiomeric excess

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