

论文

HPLC-ESI-ITMSⁿ法鉴定麻黄碱及其大鼠体内主要代谢产物

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摘要:

目的建立快速灵敏的LC-ESI-ITMSⁿ分析检测麻黄碱及其大鼠体内代谢物的方法。方法以麻黄碱对照品对LC-ESI-ITMS²色谱及质谱条件进行了优化,分析总结其电喷雾质谱的一级电离规律和多级质谱裂解规律,以此作为麻黄碱大鼠体内代谢物分析鉴定的依据。健康大鼠空腹灌胃麻黄碱10 mg·kg⁻¹,收集0~48 h的尿样,经C₁₈小柱固相萃取分离纯化后,直接采用LC-ESI-ITMSⁿ方法对尿样进行测定。结果根据生物体内药物代谢转化规律及母体药物的色谱-质谱行为规律,在尿样中鉴定出3个第I相代谢产物,未发现第II相代谢产物。结论本方法灵敏、快速、选择性高、专属性好,可用于麻黄碱的代谢产物研究。

关键词: 高效液相色谱-电喷雾离子阱串联质谱 麻黄碱 代谢物

Analysis of ephedrine and its metabolites in rat urine by HPLC-ESI-ITMSⁿ

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Abstract:

AimTo establish a rapid and sensitive LC-ESI-ITMSⁿ method for the identification of ephedrine and its main metabolites in rat urine. MethodsAfter optimizing the detection condition of LC-ESI-ITMSⁿ chromatography and mass spectrometry by using a standard ephedrine, the ionization and cleavage rules of ephedrine in ESI-MS and ESI-MSⁿ modes were summarized, and then serving as the basis for the metabolite analysis of ephedrine in rat urine. Rat urine samples of 0-48 h were collected after ig 10 mg·kg⁻¹ ephedrine, then the samples were purified through C₁₈ solid-phase extraction cartridge. The purified samples were analyzed by LC-ESI-ITMSⁿ. ResultsThe structures of ephedrine metabolites were elucidated according to the changes of the molecular weights of the metabolites (ΔM) and their cleavage pattern in ESI-ITMSⁿ. As a result, three phase I metabolites and the parent drug ephedrine were identified existing in rat urine, but no phase II metabolites were found. ConclusionThe LC-ESI-ITMSⁿ method is rapid and highly sensitive and sepecific, it is suitable for the identification of ephedrine and its metabolites in rat urine.

Keywords: ephedrine metabolite HPLC-ESI-ITMSⁿ

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