

论文

液相色谱-串联质谱法同时测定人血浆中二甲双胍和格列吡嗪

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摘要:

建立了快速、灵敏的液相色谱-串联质谱法测定人血浆中的二甲双胍和格列吡嗪。血浆样品经0.3%甲酸-乙腈(v/v)沉淀蛋白后,以乙腈-水-甲酸(70:30:0.3, v/v/v)为流动相,流速为0.50 mL·min⁻¹。Zorbax Extend C₁₈柱分离,采用大气压化学电离源;以选择反应监测(SRM)方式进行正离子检测。用于定量分析的离子反应分别为m/z 130→m/z 60(二甲双胍), m/z 446→m/z 321(格列吡嗪)和m/z 256→m/z 167(内标, 苯海拉明)。测定血浆中二甲双胍的线性范围为2.00~2 000 ng·mL⁻¹, 定量下限为2.00 ng·mL⁻¹; 格列吡嗪的线性范围为1.00~1 000 ng·mL⁻¹, 定量下限为1.00 ng·mL⁻¹。该方法专属性好,灵敏度高,准确快捷,适用于二甲双胍和格列吡嗪的临床药代动力学研究。

关键词: 二甲双胍 格列吡嗪 液相色谱-串联质谱法 血浆药物浓度

Simultaneous determination of metformin and glipizide in human plasma by liquid chromatography-tandem mass spectrometry

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Abstract:

To develop a sensitive and rapid liquid chromatographic-tandem mass spectrometric (LC-MS/MS) method for simultaneous quantitation of metformin and glipizide in human plasma, metformin, glipizide and internal standard diphenhydramine were separated from plasma by protein precipitation with acetonitrile (containing 0.3% formic acid), then chromatographed by using a Zorbax Extend C₁₈ column. The mobile phase consisted of acetonitrile-water-formic acid (70:30:0.3, v/v/v), at a flow rate of 0.50 mL·min⁻¹. A tandem mass spectrometer equipped with atmospheric pressure chemical ionization source was used as detector and operated in the positive ion mode. Selected reaction monitoring (SRM) using the precursor/product combinations of m/z 130→m/z 60, m/z 446→m/z 321 and m/z 256→m/z 167 were used to quantify metformin, glipizide and diphenhydramine, respectively. The linear concentration ranges of the calibration curves for metformin and glipizide were 2.00-2 000 ng·mL⁻¹ and 1.00-1 000 ng·mL⁻¹, respectively. The lower limits of quantitation of metformin and glipizide were 2.00 ng·mL⁻¹ and 1.00 ng·mL⁻¹, respectively. The method proved to be sensitive, simple and rapid, and suitable for clinical investigation of compound preparation containing metformin and glipizide.

Keywords: glipizide liquid chromatography-tandem mass spectrometry plasma concentration metformin

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