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Determination of Aminophylline in Plasma of Rat by UPLC Method with Ultraviolet Detection: Applications for Pharmacokinetic Studies

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***SUMMARY*. A rapid, selective and sensitive analytical method based on ultra-performance liquid chromatography (UPLC) was developed and validated for the quantitative analysis of aminophylline based on the detection of theophylline in aminophylline in rat plasma. Analytes were extracted through liquid-liquid extraction, and chromatographic separation was performed on an Acquity UPLC BEH C18 column (2.1 × 50 mm, 1.7 μm) with a water-acetonitrile mobile phase (0.2 mL/min), utilizing ultraviolet detection at 273 nm. The assay was linear over the range of 0.625-100 μg/mL for theophylline and an excellent linearity (r = 0.9994) was achieved. The limit of quantitation (LOQ) for theophylline is 0.5 μg/mL. Intra and inter-day precisions of theophylline were no more than 10% and its accuracies were in the range of 97.7-104.9 %. Our method was successfully applied for the determination of aminophylline in rat plasma for pharmacokinetic study.**

RESUMEN. Se desarrolló y validó un método analítico rápido, selectivo y sensible basado en cromatografía líquida de ultra-rendimiento (UPLC) para el análisis cuantitativo de aminofilina basado en la detección de teofilina en aminofilina en plasma de rata. Los analitos se extrajeron mediante extracción líquido-líquido y la separación cromatográfica se realizó en una columna Acquity UPLC BEH C18 (2,1 × 50 mm, 1,7 μm) con una fase móvil agua-acetonitrilo (0,2 mL/min), utilizando detección ultravioleta a 273 nm . El ensayo fue lineal en el rango de 0.625-100 μg/mL para teofilina y se logró una excelente linealidad (r = 0.9994). El límite de cuantificación (LOQ) para la teofilina es de 0.5 μg/mL. Las precisiones intra- e interdía de teofilina no fueron más del 10% y su precisión estuvo en el rango de 97.7-104.9%. Nuestro método se aplicó con éxito para la determinación de aminofilina en plasma de rata para el estudio farmacocinético.

KEY WORDS: aminophylline, pharmacokinetic, plasma, rat, theophylline, UPLC.

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