



Development and Application of a LC–MS/MS Method for the Determination of Fentanyl in Rat Plasma

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SUMMARY. In this study, a simple, rapid and sensitive liquid chromatography tandem mass spectrometry (LC-MS/MS) method is described for determination of fentanyl in rat plasma samples using sufentanil as the internal standard (IS) from pharmacokinetic assays. Sample preparation was accomplished through a simple protein precipitation with acetonitrile, and chromatographic separation was performed on an Acquity BEH C18 column (2.1 mm × 50 mm, 1.7 μm) with gradient profile at a flow of 0.4 mL/min. The linearity of this method was found to be within the concentration range of 0.1-25 ng/mL for fentanyl in rat plasma. Only 2.0 min was needed for an analytical run. The method was applied to a pharmacokinetic study of fentanyl in rats.

RESUMEN. En este estudio se describe un método simple, rápido y sensible de cromatografía líquida en tándem con espectrometría de masas (LC-MS/MS) para la determinación de fentanilo en muestras de plasma de rata, utilizando sufentanilo como estándar interno (IS) en ensayos farmacocinéticos. La preparación de la muestra se llevó a cabo mediante una simple precipitación de proteínas con acetonitrilo, y la separación cromatográfica se realizó en una columna Acquity BEH C18 (2,1 mm × 50 mm, 1,7 μm) con perfil de gradiente a un flujo de 0,4 mL/min. La linealidad del método está dentro del intervalo de concentración de 0,1-25 ng/mL para el fentanilo en plasma de rata. Sólo se necesitan 2,0 min para una serie de análisis. El método se aplicó a un estudio farmacocinético de fentanilo en ratas.

KEY WORDS: Fentanyl, LC-MS/MS, Rat plasma, Pharmacokinetic.

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