



Determination of Furosemide in Urine by a Dispersive Liquid-Liquid Microextraction-Spectrofluorometric Method

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SUMMARY. A new analytical method for the determination of furosemide (FUR) in urine samples has been developed using dispersive liquid-liquid microextraction (DLLME) prior to spectrofluorimetric analysis. The effects of pH, the type and volume of extraction and disperser solvents and salt addition in the DLLME process were investigated. Under the obtained experimental conditions, the method provided a linear range of 0.25 to 18 $\mu\text{g/mL}$, with a R^2 of 0.996. The limit of detection, lower limit of quantification and upper limit of quantification were 0.07, 0.25 and 18 $\mu\text{g/mL}$, respectively. The found recovery varied from 98.1 to 102.0% for various concentrations and the intra- and inter-day precisions were 4.9 and 7.9%, respectively. The short-term temperature and freeze-thaw stability studies showed that FUR in urine samples was stable for sample preparation and analysis after storage. The developed method is able to determine FUR in urine samples with satisfactory precision and accuracy.

RESUMEN. Un nuevo método analítico para la determinación del FUR en muestras de orina ha sido desarrollado utilizando microextracción líquido-líquido dispersiva (DLLME) antes del análisis espectrofluorométrico. Fueron investigados los efectos del pH, el tipo y volumen de los disolventes de extracción y dispersores y el efecto de la sal en el proceso DLLME. Bajo las condiciones experimentales obtenidas, el método proporciona un intervalo lineal de 0,25 a 18 $\mu\text{g/mL}$, con un R^2 de 0,996. Los límites de detección, inferior de cuantificación y superior de cuantificación fueron 0,07, 0,25 y 18 $\mu\text{g/mL}$, respectivamente. La recuperación encontrada varió desde 98,1 hasta 102,0% para varias concentraciones y las precisiones intra- e inter-día fueron 4,9 y 7,9%, respectivamente. Los estudios de estabilidad a la temperatura a corto plazo y de congelación-descongelación mostraron que FUR en muestras de orina era estable para la preparación de muestras y el análisis post-almacenamiento. El método desarrollado es capaz de determinar FUR en muestras de orina con precisión y exactitud satisfactorias.

KEY WORDS: Furosemide, Analysis, Pharmacokinetic, Doping, Spectrofluorimetry, Urine.

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