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Dispersive Liquid-Liquid Microextraction Combined with Liquid Chromatography for Preconcentrations and Determination of Tamoxifen in Biological Samples

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***SUMMARY*. The present study aimed to use the capabilities of dispersive liquid-liquid microextraction combined with HPLC-UV in a fully optimized analytical approach for tamoxifen analysis in aqueous, urine, and blood serum samples. Multivariate data analysis and chemometrics methods were utilized for optimizing the effect of independent variables on the efficiency of the procedure. Under the optimized conditions, the analytical signal was linear in the range of 5-300 ng/mL for aqueous and urine samples, and 10-300 ng/mL for blood serum matrix. In addition, the limit of detection (LOD) and quantitation (LOQ) were 0.9 and 2.86 ng/mL in the aqueous sample, 1.57 and 4.77 ng/mL in the urine sample, and 2.38 and 7.21 ng/mL in blood serum, respectively. The precision including repeatability (RSD %) and reproducibility (RSD %) for all samples were < 7.5% and < 8.5%, respectively. Finally, the feasibility study was evaluated for tamoxifen analysis in real samples with satisfactory relative recoveries (96.5-105.1%).**

RESUMEN. El presente estudio tuvo como objetivo utilizar las capacidades de microextracción líquido-líquido dispersiva combinada con HPLC-UV en un enfoque analítico completamente optimizado para el análisis de tamoxifeno en muestras de suero acuoso, orina y sangre. El análisis de datos multivariados y los métodos de quimiometría se utilizó para optimizar el efecto de las variables independientes en la eficiencia del procedimiento. En condiciones optimizadas, la señal analítica fue lineal en el rango de 5-300 ng/mL para muestras acuosas y de orina, y 10-300 ng/mL para matriz de suero sanguíneo. Además, el límite de detección (LOD) y la cuantificación (LOQ) fueron 0.9 y 2.86 ng/mL en la muestra acuosa, 1.57 y 4.77 ng/mL en la muestra de orina y 2.38 y 7.21 ng/mL en suero sanguíneo, respectivamente. La precisión, incluida la repetibilidad (RSD%) y la reproducibilidad (RSD%) para todas las muestras fueron < 7.5% y < 8.5%, respectivamente. Finalmente, el estudio de viabilidad se evaluó para el análisis de tamoxifeno en muestras reales con recuperaciones relativas satisfactorias (96.5-105.1%).

KEY WORDS: chemometrics method, DLLME-LC-UV, multivariate strategy, tamoxifen analysis.

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