

عنوان مقاله:

Determination of valproic acid in human plasma using dispersive liquid-liquid microextraction followed by gas chromatography-flame ionization detection

محل انتشار:

مجله علوم پایه پزشکی ایران، دوره 18، شماره 10 (سال: 1394)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

Objective(s): Dispersive liquid-liquid microextraction coupled with gas chromatography (GC)-flame ionization detector was developed for the determination of valproic acid (VPA) in human plasma. Materials and Methods: Using a syringe, a mixture of suitable extraction solvent (۴۰ μ l chloroform) and disperser (۱ ml acetone) was quickly added to ۱۰ ml of diluted plasma sample containing VPA (pH, ۱.۰; concentration of NaCl, ۴% (w/v)), resulting in a cloudy solution. After centrifugation (۶۰۰۰ rpm for ۶ min), an aliquot (۱ μ l) of the sedimented organic phase was removed using a ۱- μ l GC microsyringe and injected into the GC system for analysis. One variable at a time optimization method was used to study various parameters affecting the extraction efficiency of target analyte. Then, the developed method was fully validated for its accuracy, precision, recovery, stability, and robustness. Results: Under the optimum extraction conditions, good linearity range was obtained for the calibration graph, with correlation coefficient higher than ۰.۹۹۸. Limit of detection and lower limit of quantitation were ۳.۲ and ۶ μ g/ml, respectively. The relative standard deviations of intra and inter-day analysis of examined compound were less than ۱۱.۵%. The relative recoveries were found in the range of ۹۷ to ۱۰۷.۵%. Finally, the validated method was successfully applied to the analysis of VPA in patient sample. Conclusion: The presented method has acceptable levels of precision, accuracy and relative recovery and could be used for therapeutic drug monitoring of VPA in human plasma.

کلمات کلیدی:

Dispersive liquid-liquid-microextraction, Gas chromatography-flame- ionization detector, Human plasma, Valproic acid

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