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Determination of furosemide in plasma samples by a dispersive liquid-liquid microextraction (DLLME) - spectrofluorimetric method

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Background and Aims: Furosemide (FD) is a potent diuretic agent which is widely used for the treatment of edematous states associated with cardiac and chronic renal failure, hypertension, congestive heart failure and cirrhosis of the liver. A simple and accurate method to monitor its concentrations in biological fluids is in demand in biomedical analysis laboratories. In this work, such a method for preconcentration and determination of FD levels in plasma is reported. Methods: One ml of plasma sample was taken to precipitate the proteins by adding 1 ml acetonitrile and vortexing for 20 sec. The supernatant was transferred to another glass tube, NaCl was added, pH was adjusted and the mixture of microextractant and disperser solvents was injected into the solution. The obtained cloudy solution was centrifuged and the organic phase was collected at the bottom of tube and transferred into a spectrofluorimeter cell for the determination of furosemide at excitation/emission wavelengths of 342/417 nm.
Results: The effect of types and volumes of the microextractant and disperser solvents, pH, salt effect, time, speed of centrifugation and sample volume were optimized. Using the optimized conditions, the linear range of 0.1–13 ug/ml was obtained which covers the therapeutic concentration of FD is 1-6 ug/ml in plasma. Full validation results will be presented.
Conclusions:
The simple and accurate method is developed for quantification of FD in plasma. The developed and validated method shows satisfactory linearity, precision and accuracy and could be used for biomedical analysis.

Keywords: : Furosemide; Spectroflourimetry; DLLME; Biological fluids; Preconcentration