High-performance liquid chromatographic determination of furosemide in plasma and urine and its use in bioavailability studies.

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A sensitive, selective and efficient reversed-phase high-performance liquid chromatographic (HPLC) method is reported for the determination of furosemide in human plasma and urine. The method has a sensitivity limit of 5 ng/ml in plasma, with acceptable within- and between-day reproducibilities and good linearity ($r^2 > 0.99$) over a concentration range from 0.05 to 2.00 microg/ml. The one-step extract of furosemide and the internal standard (warfarin) from acidified plasma or urine was eluted through a muBondapak C18 column with a mobile phase composed of 0.01 M potassium dihydrogenphosphate and acetonitrile (62:38, v/v) adjusted to pH 3.0. Within-day coefficients of variation (C.V.s) ranged from 1.08 to 8.63% for plasma and from 2.52 to 3.10% for urine, whereas between-day C.V.s ranged from 4.25 to 10.77% for plasma and from 5.15 to 6.81% for urine at three different concentrations. The minimum quantifiable concentration of furosemide was determined to be 5 ng/ml. The HPLC method described has the capability of rapid and reproducible measurement of low levels of furosemide in small amounts of plasma and urine. This method was utilized in bioavailability/pharmacokinetic studies for the routine monitoring of furosemide levels in adults, children and neonate patients.

Mesh-terms: Biological Availability; Chromatography, High Pressure Liquid, methods; Furosemide, blood; Furosemide, pharmacokinetics; Furosemide, urine; Human; Male; Reproducibility of Results; Sensitivity and Specificity;

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