High-performance liquid chromatographic method for determination of tramadol in human plasma.

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Abstract

A modified high-performance chromatographic method using UV detection was developed for determination of tramadol concentration in human plasma. Plasma samples were extracted with ethyl acetate in a one-step liquid-liquid extraction (recovery 88.5+/-2.1%). Analysis of the extract was performed on a reversed-phase LiChrospher 60 RP-select B column with a particle size of 5 microm. The mobile phase consisted of 0.05 M KH2PO4 aqueous solution (pH 3.5) and acetonitrile in a ratio of 90:10 (v/v). Metoprolol was used as the internal standard and UV detection at 225 nm was employed. Accuracy of the assay in the concentration range examined was from 1.3 to 11.9% for the intra-day run and from 1.4 to 8.1% for the inter-day run. The precision of this method varied from 1.2 to 8.7%. The reproducibility of the method was determined to be from 0.8 to 7.2% over the six-day period. A limit of detection was 9 ng/ml at a signal-to-noise ratio of 3. This validated method was then applied to the determination of tramadol concentrations in healthy volunteers after oral administration of 100 mg of tramadol in capsules of Painlax and Tramal.