A New HPLC Method for the Determination of Memantine In Human Plasma With Fluorescence Detection

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A simple and sensitive high performance liquid chromatographic method with fluorescence detection was developed for the quantitation of memantine in human plasma. Memantine was extracted from 1 ml human plasma with hexan:isoamyalcohol (98:2), the extract was pre-column derivatized at 40°C for 20 minutes with 9-fluorenylmethyl chloroformat (FMOC) in the presence of borat buffer. The fluorescent derivative was chromatographed on a reverse-phase C18 column using the mobil phase of acetonitrile-10 mM orthophosphoric acid containing 1 ml/l triethylamine with gradient elution at a flow rate of 1.5 ml/min. The derivative was detected by monitoring the emission wavelength at 310 nm, and the excitation wavelength at 260 nm. Calibration curve was linear over the range of 1.0-50.0 ng/ml of memantine in human plasma. Limit of detection and limit of quantitation were found to be 0.3 and 1.0 ng/ml, respectively. Assay precision and recovery of memantine from plasma at three different concentration were assessed. Intra-day and inter-day relative standard deviation (RSD%) values were found less than 3.39 %. Proposed method was applied to the pharmacokinetic study in a healthy volunteer after a single oral administration of 20 mg of memantine and drug monitoring of memantine.