

## Multi-dimensional column chromatographic method with UV detection for the determination of propranolol at therapeutic levels in human plasma

**Kamal A. al-sagar**  
Tripoli University, Libya

Propranolol is a beta-adrenergic blocking agent; it inhibits the cardiac accelerator responses to sympathetic stimulation, reduces myocardial blood flow, and increases myocardial resistance to flow. It also decreases heart rate, cardiac output, mean arterial pressure, and left ventricular minute work in response to exercise. The drug is used to reduce the heart's work and to lower blood pressure. It is also effective to reduce the frequency and severity of angina attacks. Other uses of the drug includes; treatment of hyperthyroidism, cirrhosis, migraine and glaucoma. An Improved reproducible and selective online multi-dimensional HPLC method using a UV detector at 291 nm was optimized and successfully applied to determination of propranolol in human plasma at therapeutic dose levels. This method performs in a single step for an efficient extraction and clean-up of the drug from human plasma. The calibration graphs over three days were linear over the calibration range 20-100ng/mL plasma with a limit of detection of 1ng/ml and limit of quantification at 8ng/mL plasma. The intra- and inter-assay coefficients of variation were less than 8% and the recoveries ranged from 94 to 96%. The accuracy of the assay, which was defined as the percentage difference between the mean concentrations found and the theoretical concentration, was 7% or better. The whole procedure takes ca. 10 min, the newly developed method compares favourably with previously reported methods for the analysis of this drug in terms of limit of detection and recovery. The proposed method combines the advantages of being simple, reproducible and selective. It is suitable for routine analyses to obtain valuable information about propranolol bioavailability, clinical effects and treatments. The method is also suitable for high altitude pharmacokinetic studies, in which the quantitation of this drug in blood fluids is required.

[kamalalsagar@yahoo.co.uk](mailto:kamalalsagar@yahoo.co.uk)