Application of accelerated Dispersive liquid-liquid micro extraction for analysis of metoprolol

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Abstract:
B-Adrenergic blockers represent a very important class of drugs that are used in the treatment of various cardiac diseases. Metoprolol is a selective β₁ receptor blocker used in treatment of several diseases of the cardiovascular system, especially hypertension.

Finding an easy and cheap technique to determine the drugs from biological fluids is an important matter. Dispersive liquid–liquid micro extraction (DLLME) is a novel liquid-phase micro extraction technique and its advantages are simplicity of operation, rapidity and low cost. The present research intended to supply such a method for quantitative determination of metoprolol in biological liquids.

The aim of this work is propose and develop a facile method to pretreatment of metoprolol from biologic fluids and validation the method.

This method is based on a ternary component solvent system involving an aqueous phase, a nonpolar water-immiscible solvent (extracting solvent) and a polar water-miscible solvent (disperser solvent). Extracting and disperser solvents are rapidly injected into the aqueous sample by syringe. The mixture is then gently shaken and a cloudy solution is formed. After centrifugation, the fine particles of extraction solvent are sediment in the bottom of the conical test tube. The resulting sediment phase is taken with a micro syringe and determined by spectrophotometer.

Some important parameters such as type and volumes of extraction and disperser solvent, pH, salt effects and sample volume will be optimized.

Under optimized parameters of DLLME method will be used for the determination of metoprolol in plasma sample. Then, this method validated according to FDA guideline.

The developed and validated method will be used in determination of metoprolol in biological sample by spectrophotometer. The developed method will be validated according to FDA guideline.

Keyword: sample preparation, dispersive liquid-liquid microextraction, metoprolol.