

**DEVELOPMENT OF A METHOD FOR THE DETERMINATION OF
PROPAFENONE IN BIOLOGICAL FLUIDS**

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Propafenone is characterized by pronounced individual variability in the concentration of the active substance in blood plasma, and exceeding the therapeutic dose can lead to arrhythmogenic effects and severe intoxication. In this regard, the development of sensitive and selective methods for its isolation, identification, and quantitative determination in biological fluids is an important task in chemical-toxicological and clinical analysis.

The aim of this study was to develop a method for determining propafenone in biological fluids (blood, urine) using high-performance liquid chromatography (HPLC) for therapeutic drug monitoring.

The studies were carried out on model blood and urine samples, and the method was also tested on the blood of volunteers who had taken a therapeutic dose of propafenone. Isolation of the drug from urine was performed by chloroform extraction (three times, 5 mL each) after acidifying the sample with 0.2 N hydrochloric acid solution to pH 3.5–4.0 and adding sodium chloride. Isolation from blood was performed using an acetate buffer solution (pH 4.0) followed by centrifugation and threefold extraction with chloroform. After evaporation of the organic solvent, the dry residue was dissolved in the mobile phase and chromatographed by HPLC. The analysis was carried out on an Agilent 1100 Series chromatograph equipped with a UV detector (detection at 242 nm), using a Spherisorb SCN column (4.6×120 mm, 3 µm). The mobile phase was a mixture of acetonitrile and acetate buffer solution at pH 6.0 (50:50), with a flow rate of 0.7 mL/min.

HPLC analysis showed that the retention time of propafenone isolated from blood samples was 3.4 min. Co-extracted substances did not interfere with the determination of the drug. The quantitative content of propafenone was calculated by comparing the peak areas of the standard and test solutions. For the analysis of blood from volunteers who had taken a therapeutic dose of propafenone (150 mg), 5 mL blood samples were collected. Isolation of the drug was carried out according to the developed method, and propafenone was determined by HPLC under the conditions described above. The method allowed the drug to be quantified over the range 0.04–0.06 mg/mL.

Thus, a method has been developed for the isolation of propafenone from biological fluids (blood, urine). For optimal extraction of the drug, it is recommended to use chloroform as the organic solvent in a medium at pH of 3.5–4.0. The method was tested in the analysis of blood from volunteers who had taken a therapeutic dose of propafenone. The developed HPLC method ensures reliable and selective detection and quantitative determination of propafenone in biological fluids (blood, urine) and can be recommended for use in clinical and chemical-toxicological practice for therapeutic drug monitoring, as well as in the diagnosis of acute and chronic poisoning by this drug.