Charles University

Faculty of Pharmacy in Hradec Králové

Department of Pharmaceutical Chemistry and Drug Analysis

Candidate: Eva Hanková

Supervisor: RNDr. Milan Mokrý, CSc.

Title of Diploma Thesis: Analytical evaluation of drugs using HPLC II.

Abstract

This diploma thesis dealt with analytical evaluation of tiaprofenic acid using high performance liquid chromatography. To determine tiaprofenic acid, a LiChroCART® 250-4 LiChrospher® 100 RP-18 (5 μm) column and a mobile phase consisting of acetonitrile and aqueous KH_2PO_4 buffer 0.01 mol/l in a ratio of 40 : 60 (v/v) were used. The pH of the buffer was adjusted to 3.0 with phosphoric acid; the flow rate was set to 1 ml/min and the temperature at 22 °C. Naproxen was chosen as the internal standard, and a 263 nm wavelength was used for detection.

Since the tiaprofenic acid is a chiral substance present in the form of a racemate, the selection of chromatographic conditions for the separation of its enantiomers followed. Two chiral columns in both normal and reverse mode were tested. The cellulose-based Chiralcel OD-R 250 x 4.6 mm (10 μm) column was chosen as the most suitable, using a mobile phase of n-hexane : propan-2-ol : acetic acid in a ratio of 94 : 6 : 0,1 (v/v /v) at a flow rate of 0.5 ml/min and a temperature of 22 ° C. Enantiomers were eluted at retention times of 28.3 and 30.7 minutes with a resolution of 1.17.

Finally, extraction of tiaprofenic acid from human plasma was performed, for which a liquid-liquid extraction method was chosen with an average yield of 98.9 %.