Abstract

The diploma thesis deals with the extraction method for determination of losartan using sequential injection analysis with spectrophotometric and spectrofluorimetric detection. The principle of determination is based on losartan ion-pair formation with the orange II and calmagite dyes in an acid buffer, which is then extracted into a chloroform phase. For the purposes of the analytical determination of losartan, an increase in absorbance and fluorescence emission of the ion-pair extracted into the chloroform in its absorption maximum is detected. Losartan potassium was used as the standard substance.

First, the conditions for determination in a static arrangement with UV/VIS detection were verified and the basic optimization parameters of determination were measured and the basic characteristics of the determination were identified in the first part of the thesis.

An SIA extraction apparatus was prepared and the control programme for the entire analytical process was created in the other part of the thesis. Then the experimental parameters of the determination were optimized and the basic characteristics for both spectrophotometric and spectrofluorimetric detection were measured.

The reliability of the losartan determination using the selected methods was verified by analysing real pharmaceutical samples – Lorista, Lozap, Losartan Stada and Losartan Teva. The results gained for the spectrofluorimetric detection demonstrate the suitability of this method for determination of losartan.

The values of the basic characteristics and the contents of the analysed substance in the samples were expressed as mass concentration ($\mu g \cdot ml^{-1}$). As for the spectrophotometric detection with the orange II dye, the limit of detection (LOD) of 1.38 $\mu g \cdot ml^{-1}$ and the limit of quantification (LOQ) of 4.60 $\mu g \cdot ml^{-1}$ with the linear dynamic range (LDR) up to 115 $\mu g \cdot ml^{-1}$ were reached. As for the spectrofluorimetric detection with the orange II dye, the LOD of 0.68 $\mu g \cdot ml^{-1}$ and the LOQ of 2.26 $\mu g \cdot ml^{-1}$with the linear dynamic range up to 32 $\mu g \cdot ml^{-1}$ were determined.

Keywords: sequential injection analysis, liquid-liquid extraction, spectrophotometric detection, spectrofluorimetric detection, losartanum