QUANTITATIVE DETERMINATION OF EFAVIRENZ BY THE METHODS OF UV-SPECTROPHOTOMETRY

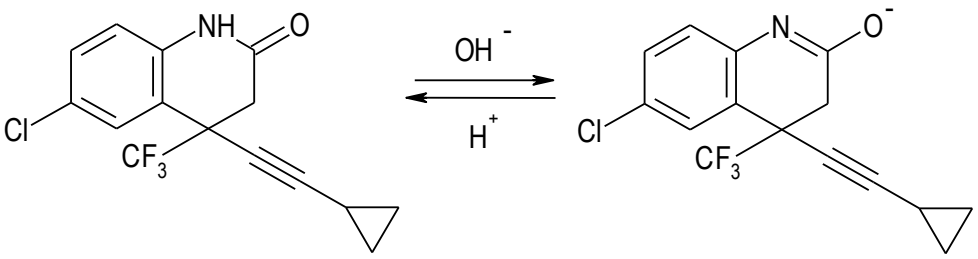
Slabiak O. I.
Scientific supervisors: as. prof. Ivanchuk I. M., as. prof. Mykytenko O. Ye.
Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine
National University of Pharmacy, Kharkiv, Ukraine
lynnne2@ukr.net

Introduction. To ensure additional reliability of analysis in forensic toxicology it is necessary to determine analyte content in the sample with the help of at least two methods of analysis, which are based on different principles. UV- spectrophotometry may give us such possibilities in the cases, when our analyte exists in the solutions in the form of different tautomers and has the different spectra, for example, in acid and alkaline medium.

Aim. To develop a number of UV-spectrophotometric procedures of efavirenz quantification and carry out step-by-step validation of the developed procedures.

Materials and methods. Efavirenz was of pharmacopoeial purity. All spectrophotometric measurements were carried out using a single beam UV/VIS spectrophotometer SPEKOL®1500 (Analytik Jena AG, Germany).

Results and discussion. The efavirenz chemical structure supposes its existence in two forms when changing medium pH:



The presence of such transformations is confirmed by the data of UV-spectrophotometry. UV-spectra of efavirenz in 0.1 M hydrochloric acid solution, 96% ethanol and 0.1 M sodium hydroxide solution have been investigated and it has been set that when increasing the pH value shift of substance maximum absorption to the right is observed (247 nm → 247 nm → 267 nm).

The procedures of efavirenz quantitative determination by the method of UV-spectrophotometry have been developed using the mentioned solvents and wavelengths respectively. Their validation by such parameters as stability, linearity, accuracy and precision has been carried out.

Conclusions. Three new procedures of efavirenz quantitative determination by the method of UV-spectrophotometry have been developed using 0.1 M hydrochloric acid solution, 96% ethanol and 0.1 M sodium hydroxide solution as the solvents.