

Abstract

Charles University in Prague, Faculty of Pharmacy in Hradec Králové

Department of Analytical Chemistry

Candidate: Mgr. Petra Koblová

Supervisor: prof. RNDr. Petr Solich, CSc.

Title of Doctoral Thesis: Using of flow analytical method for determination of biological active compounds

The presented dissertation thesis is dealing with development of HPLC and SIC methods for determination of active substances and degradation products in pharmaceutical formulations. Developed methods were validated and meet all requirements for suitability, precision and reliability.

In the first work, HPLC method for determination of active compound clotrimazole and its degradation products (2-chlorophenyl) diphenylmethanol and imidazole in Clotrimazol spray 1 % was developed. Ibuprofen was used as the internal standard.

The aim of the next work was to compare separation efficiency particle based and monolithic columns with various lengths. HPLC method for determination of indomethacin and its two degradation products was used for comparison. Ketoprofen was used as an internal standard for data evaluation throughout the study.

SIC method for determination of water-insoluble vitamins (retinol acetate, D₂, or D₃ and tocopherol acetate) was developed. The novel SIC method with the monolithic column and UV spectrophotometric detection was applied for the determinations of vitamin D₃ in the pharmaceutical formulation Vigantol and vitamins A, D₂ in the formulation Vitamin AD Slovakofarma capsules. Tocopherol acetate was used for quantification as an internal standard.

Applicability and separation efficiency of SIC and HPLC with gradient elution was demonstrated on the separation a simultaneous assay of active compound indomethacin and its two degradation products in topical pharmaceutical formulation (Indobene gel 1 %). Ketoprofen was used as internal standard.

Next work dealt with development and validation of HPLC method for determination of nonoxinol and trimecaine in topical formulations – lubricant gels. Amitriptyline was chosen as internal standard. The developed method was practically applied for evaluation of preparation LG non-stop.

The last method that is mentioned in this work described determination of ascorbic acid, phenylephrine, paracetamol and caffeine. Monolithic column and UV detection were used. Salicylic acid was used as internal standard. Optimized method was applied for determination of active compounds in pharmaceutical formulation Coldrex tablets.