ABSTRACT

Charles University, Faculty of Pharmacy in Hradec Králové

Department of Analytical Chemistry

Candidate: Barbora Harmáčková, DiS.

Supervisor: doc. PharmDr. Ludmila Matysová, Ph.D.

Title of the diploma thesis: Development and validation of HPLC methods for determination volume of preservatives in pharmaceutical formulations

This diploma thesis is focused on the development and validation of methods for determination of preservative content in medicinal products, especially thiomersal and benzalkonium chloride. The development was based on the HPLC methods used for benzalkonium chloride a mixture of methanol and 7.5 mM potassium phosphate in a ratio of 68:32 and for a thiomersal mixture of methanol and phosphate buffer in a ratio of 65: 35: 0.9. The development of the methods for both mentioned substances consisted mainly in optimizing the composition of the mobile phase and the temperature conditions of the analysis. In particular, the length of the analysis and the resolution and symmetry of the peaks of the substances being determined were monitored. In the final version of the HPLC method for benzalkonium chloride an isocratic elution with the mobile phase of MetOH: K3PO4 (pH 3, 7.5 mM) in a ratio of 73: 27 was chosen at 50 ° C. In the final version for thiomersal, an HPLC method with the same mobile phase composition was used as in the background study, but the flow rate was increased from 0.6 ml / min to 1 ml / min to accelerate analysis and improve peak symmetry. Validation has shown that the methods provide precise and accurate results and are suitable for determining the content of these substances in medicinal products.