

## **Abstract**

Charles University in Prague

Faculty of Pharmacy in Hradec Králové

Department of Analytical Chemistry

Candidate: Ivona Lhotská

Supervisor, consultant: María Carolina Fernández Ramos, Ph.D,

Doc. RNDr. Dalibor Šatínský, Ph.D.

Title of Diploma Thesis: Column switching chromatography for mycotoxines  
determination in Czech beer samples

A new fast and sensitive method of high performance liquid chromatography for simultaneous determination of mycotoxins ochratoxin A and citrinin using column-switching system for on-line sample pretreatment was developed. 100 µl of beer was injected directly into the chromatographic system. Isolation of analytes was performed on guard column Ascentis Express RP-C18 (5 x 4.6 mm, 2.7 µm) washing out with methanol – water solution of acetic acid 0.5% (30:70, v/v), at a flow rate 2 ml/min; time of valve switch was set on 2 minutes. The separation was performed on Ascentis Express Phenyl-Hexyl column (100 x 4.6 mm, 2.7 µm) with mobile phase of composition acetonitril – water solution of acetic acid 0.5% at a flow rate 1 ml/min. A gradient was increasing up to 75:25 linearly in time 3 – 5.5 min. The temperature 50°C was set up for column separation. Wavelengths of fluorimetric detection were set at Ex 335 nm, Em 497 nm. Analysis of one sample including on-line pretreatment was less than 6 minutes. Limit of quantification of ochratoxin is 0.01 µg/l and LOQ of citrinin is 0.02 µg/l. The mycotoxins were analyzed in 48 samples of Czech beer. Only a small amount under the limit level was detected. The contribution of beer to the intake of ochratoxin A and citrinin in food is small in comparison with the maximum recommended intake.

Keywords: HPLC, column switching, ochratoxin A, citrinin, beer