Abstract

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Title of thesis: **An influence of individual modes of TOF analyzer on linearity and sensitivity of UHPLC-HRMS methods**

This diploma thesis deals with the comparison of four modes (sensitive mode, resolution mode, high resolution mode, enhanced resolution mode) of the hybrid analyser Q-TOF connected with UHPLC system. Totally, ten analytes were selected for this study. It was a group of 5 statins and their interconversion products. UHPLC method was borrowed from previous developed multistatin method however, ESI conditions were optimized. Developed method was used to measure standard calibration curves and matrix calibration curves in four analyser modes (sensitive, resolution, high resolution and enhanced mode). Spiked lyophilized serum treated by the protein precipitation was used for matrix calibration curve. Finally, the individual analyser modes were compared due to the linearity and sensitivity

The effect of individual analyser modes on the correlation coefficient was not observed. On the other hand, analyser modes influenced the method sensitivity. In positive mode, lower LOQ values were obtained for the standard calibration curves than for the matrix calibration curves. The sensitive and resolution mode provided a lower LOQ than high resolution and enhanced resolution mode. The differences between sensitive and resolution mode (high resolution mode, enhanced resolution mode) were insignificant. In a negative mode a similar trend was generally observed however, the LOQ values between the different modes were considerably lower.

Keywords: UHPLC, HRMS, TOF, ESI, reflectron , resolution