Abstract

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Title of thesis: HPLC Determination of Selected Antibiotics in Plasma

The purpose of this diploma thesis was to develop and optimize conditions for determination of selected antibiotics (meropenem, imipenem, ceftazidime, piperacillin and linezolid) in plasma using high performance liquid chromatography with meropenem as the main substance to be determined.

Separation was performed on the silica gel column Ascentis® C18 (100Å, 150 × 4,6 mm; 5 µm) using spectrofotometric detection. Selected antibiotics were detected at different wavelenghts (298 nm for meropenem and imipenem, 254 nm for ceftazidime and linezolid, 210 nm for piperacillin) according to maximum absorbance of the antibiotics.

Different types of mobile phase were tested as well as different pH of buffer used for the mobile phase. The final mobile phase consisted of two components:

- mobile phase A: phosphate buffer 50 mM; pH 2,5
- mobile phase B: acetonitrile

Separation was achieved by gradient elution. The flow rate was set to 1 ml/min and the injection volume was 10 µl. The column oven was tempered to 25°C. Total runtime was 15 min.

Validation of the developed method was not performed completely due to the fact that the lab would have to validate the method according to its own guidelines. Measured validation parameters were selectivity, linearity and recovery. All measured values met the criteria.

Keywords: meropenem, imipenem, ceftazidime, piperacillin, linezolid, HPLC