

## Abstract

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**Title of Dissertation Thesis:** Usage of HPLC and UHPLC – MS/MS techniques for clinical research

The dissertation thesis is dealing with the extraction techniques and with development, optimization and validation of chromatographic methods for the determination of omeprazol which is drug from the group of proton pump inhibitors, and retinol as a new potential biomarker of kidney damage.

The theoretical part of the thesis is focused on detailed description of the individual analytes, their clinical significance, options of determination and the matrix in which the target analytes were determined. Furthermore, the preparation of the sample before the analysis is discussed and validation recommendations related to chromatographic methods used in both pharmaceutical analysis and bioanalysis are also mentioned.

In the experimental part the development, optimization and validation of UHPLC methods and their subsequent use are described in detail. The pharmaceutical-analytical part of the work describes the determination of omeprazole in new suspension preparations, including the use of the UHPLC system, columns with particles with a porous shell and very simple sample preparation. The bioanalytical part of the work is focused on the determination of retinol and creatinine in urine. The method uses the combination of UHPLC with tandem mass spectrometry and simple and fast sample preparation usable for a large series of samples.

In the last part of the thesis an overview of publications, grant projects, lectures and posters are attached.