

Abstract

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Title of Thesis:

GC analysis of drugs with utilization of ionic liquid as a stationary phase I

In this thesis, we focused on testing of three commercially obtainable columns with ionic liquids as stationary phases, which we tested on a model sample of ibuprofen and its four pharmacopoeial impurities after derivatization by alkylchloroformates. The results obtained on these columns were compared to results obtained on column with conventional nonpolar stationary phase.

Furthermore, we tried to describe and explain retention mechanisms, which were important in these separations, we also tried to optimize methods for our individual columns and extract our derivatives into a nonpolar phase, with the view to diminishing the harmful effect of samples on columns.

We appraise the results obtained on ionic liquid stationary phases and on a nonpolar stationary phase as quite comparable. The analysis of our derived samples can be performed on all tested ionic liquid columns and the analysis can be optimized for all of them. Apart from the change in selectivity on the most polar stationary phase, we did not notice any great benefits of using ionic liquid stationary phases in our separations.

The extraction of derivatives from the sample into a nonpolar phase was only partially successful, the best results were reached when 100 μ l of water was added into the polar phase of extracted sample.

Thus, the main contribution of this work is in exploration of behaviour of concrete substances on ionic liquid stationary phases.

Keywords: ibuprofen, ibuprofen impurities, alkylchloroformates, ionic liquids, gas chromatography