ABSTRACT

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Title of diploma thesis: **Stationary phase based on ionic liquids for separation of ibuprofen impurities.**

Rigorous thesis was focused on the determination of ibuprofen and its pharmacopoeial impurities B, E, F and J using gas chromatography coupled with mass spektrometry. The analysis was performer on a SLB-IL 100 capillary column with a stationary phase based on ionic liquid – 1,9-di(3-vinylimidazolium)nonane bis(trifluoromethy) sulfonyl imide. Ibuprofen was derivatized with alkyl chloroformate (isobutyl chloroformate, ethyl chloroformate, heptafluorochloroformate) in the presence of the appropriate alcohol (isobutanol, ethanol, heptafluorobutan-1-ol). The derivatization reaction was successful for all derivatizing agents used. However, the use of ethyl chloroformate appeared to be the best due to the negligible amount of non-derivatized ibuprofen residue. Subsequently, the amount of added alcohol, the derivatization of ibuprofen depending on the retention of the sample in the ultrasonic bath and the influence of the ibuprofen solution on the derivatization and subsequent analysis were investigated. The developed method was applied to the analysis of pharmacopoeial impurities of ibuprofen in concentrations of 0,1 % for impurities F, B and 0,15 % for impurities E and J. Selected validation parameters were testes.
Key words: ibuprofenum, gas chromatography, ionic liquid, derivatization