

ABSTRACT

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Department of Analytical Chemistry

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Title of Doctoral Thesis **Stability Studies of Oral Liquid Preparations Using HPLC**

According to the database of the Czech State Institute for Drug Control there are 59 thousand of registered drugs available in the Czech Republic, out of which 8 thousand drugs were marketed in July 2017; however, there are still some therapeutic needs that cannot be met by using of these commercially available drugs because of unsuitability of available dosage forms for being used, e.g., in pediatric patients.

Thus, cooperation was established between the Faculty of Pharmacy in Hradec Králové (Department of Analytical Chemistry and Department of Pharmaceutical Technology) and the University Hospital in Motol (Prague) to address such therapeutic needs by developing of extemporaneous formulations of oral liquid preparations containing selected pharmaceutical active ingredients.

Each project was composed of three major parts. First part was to develop several versions of drug formulations according to various requirements (e.g., sugar-free or preservative-free). This part was accomplished by the Department of Pharmaceutical Technology. The second (development of HPLC method) and the third (stability study conducting) part was then carried out at the Department of Analytical Chemistry.

Finally, extemporaneous oral liquid preparations containing three active substances were developed and their stability under various storage conditions was evaluated:

- 1) Propranolol oral liquid solutions – nonselective β -blocker; treatment of infantile hemangioma.
- 2) Sotalol oral liquid solutions – β -blocker with anti-arrhythmic properties; treatment of ventricular and supraventricular tachycardia in children.
- 3) Furosemide oral liquid solutions – diuretic; treatment of hypertension and edema associated with heart failure including pulmonary edema in children.