ABSTRACT

This master's thesis focuses on determining the physio–chemical and stability properties of select groups of potential antituberculosis agents such as T, K, LV and G substances.

The goal of this work was to expand the portfolio of information necessary as this for subsequent preclinical testing of new potential drugs.

The theoretical work introduces the serious global infectious disease, tuberculosis, and the emerging resistance of *Mycobacterium tuberculosis* strains to current drugs. Furthermore, the developmental directions of new potential antituberculosis drugs and a description of the used analytical methods – spectrophotometry and HPLC analysis – are presented here.

The experimental work is dedicated to the description of individual techniques which were used to determine the properties of the selected substances, such as its solubility in 5 % DMSO, stability in plasma, microsomal stability, stability in Šul media, and experimental determination of logP and logD.

It is very clear from the experimental results how individual structural changes in the molecules affected some pharmacokinetic or physio–chemical properties of the given substance. For example reducing plasma stability by incorporating sulphur into the carbon liking chain or decrease of microsomal stability by using lacton form. The stability in Šul´s media revealed the interaction of the substances with the cultivation media, which can negatively affect the effectiveness of the newly tested substance. Furthermore, it was found that predicted logP/logD cannot be completely relied on, as it differs from the experimentally determined one.

In vitro studies of potential drugs help us to predict the physio–chemical properties, for example, the effectiveness, administration forms, or toxicological profile of a given new chemical entity.