ABSTRACT

High performance liquid chromatography (HPLC) is one of the most used separating methods of instrumental analysis enabling both qualitative and quantitative analysis of substances.

Anthracyclines are cytotoxic drugs widely used in clinical practice for treatment of hematological malignancies (leucaemias, lymphoms) and solid tumours (stomach, breast, ovarian cancer). Treatment by these drugs has a serious limiting factor, however. This factor is an anthracycline induced cardiotoxicity, which is caused by hydroxyl radicals and other reactive oxygen forms. The main role in their formation play the complexes with iron.

Dexrazoxane is a derivate of bisdioxopiperazine, which is used to reduce the cardiotoxic effect of anthracyclines. It is supposed that it takes effect by the means of its active metabolite ADR-925, which works as a substance chelating iron. This mechanism hinders the iron dependant formation of oxygen radicals.

This thesis deals with analysis options of dexrazoxane and its hydrolysis products/metabolites on the stationary phase Ascentis HILIC in conditions compatible with mass spectrometric detection (MS).

The best results were achieved in conditions of isocratic elution using mobile phases containing 5 mM ammonium formiate with pH 5 or 7 and acetonitrile in ratio 22:78 (v/v). Mobile phase flowed through the colony at speed 0, 3 ml/min; the colony was temperate at 25 ^{o}C. Detection was performed in UV area at the wavelength of 205 nm.

The results of this thesis will be utilized for further development HPLC-MS method for determination of dexrazoxane and its hydrolysis products/metabolites even in complicated biological material.