I. *INTRODUCTION*

High performance liquid chromatography (HPLC) is the most common method used in commercial analytical laboratories. HPLC in combination with Mass Spectrometry (MS) is frequently used for the determination of drugs in human plasma and it belongs to group of methods that enable new and modern modifications. That is why following new trends, which broaden the field of application of these methods, is so important.

HPLC with MS detection (HPLC-MS) satisfy demand for automation of determination of samples from complex matrixes, which lead to elimination of human error, decrease of expenditure of analytical process and finally handling potentially dangerous samples by laboratory staff.

Highly sensitive methods that do not require time consuming sample pre-treatment are desired for pharmacokinetic (PK) studies. Double MS (MS/MS) detection provides drugs identification and high sensitivity for quantitative determination. It effectively eliminates interferences from endogenous impurities and guarantees method selectivity at the same time.

Pharmacokinetic (PK) studies determine pharmacokinetic characteristics of particular drug that are then used to assess the bioequivalence of determined drug versus other chosen drug of the same nature. The PK parameters are calculated from the plasma concentrations of the drug determined by a validated method.

HPLC-MS/MS technique allows both sample extraction and chromatography to be simplified so that productivity of routine determinations can be considerably enhanced. By its principle it fulfils most of the requirements for analytic methods use for evaluation of PK parameters of drugs in human plasma.