ABSTRACT

The purpose of this research project was to develop and validate advanced high-throughput bioanalytical methods for the estimation of pharmaceutical small molecules individually and simultaneously in complex biological matrix.

The reason for choosing the theme "An Advanced High-Throughput Bioanalytical Methods for the Estimation of Pharmaceutical Small Molecules" was to explore a power of hyphenated technique LC-MS/MS, in which physical separation ability of liquid chromatography with the mass discrimination potential of mass spectroscopy to achieve unforeseen levels of identification and quantification of the potential molecules in complex biological matrix to speed up the product development process.

Thus, the first chapter of the thesis describes the introduction and the literature review of selected molecules. In the second chapter, “selective, sensitive LC-MS/MS method development using fast 96 well plate PPT sample extraction, validation and their application[s] for simultaneous quantification of lornoxicam and paracetmol in human plasma.

In the third, fourth, fifth and sixth chapters, entitled LC-MS/MS method, development and validation of different molecules. All the results are accurate, precise and robust for the molecules such as Fingolimod, Simultaneous estimation of Vildagliptin and metformin, Milnacipran, Eprisone Hydrochloride respectively.

All the methods are specific in the presence of anticoagulants and matrices collected from different sources. The desired sensitivity and reproducibility was achieved with an LLOQ, which has within- and between-batch coefficients of variance [CVs] acceptance. Turbo-V ion source Electrospray ionization technique has proven effective in generating protonated ions molecule with sufficient intensity to monitor quantitatively, accurately and selectively.

At the end of each chapter we have drawn a series of conclusions, concerning the method performance and the results obtained. The conclusions are summarized in chapter seven, where the possible future investigations are also indicated. The PhD thesis ends with a set of references that aim precisely on bioanalytical methods detection by advanced hyphenated techniques.