

Liquid chromatography and mass spectrometry in characterization of metabolites

Selvan Ravindran
Sai Life Sciences Limited, India

Liquid chromatography coupled with mass spectrometry serves as a powerful tool to characterize the structure of drugs and metabolites. Identification of the structure of metabolites during the drug discovery and development helps to optimize the structure of the molecules. Characterization of the structure of compounds by X-ray crystallography and nuclear magnetic resonance spectroscopy need compounds of high purity in solid or liquid form. Single compound can be analyzed by X-ray crystallography or Nuclear magnetic resonance spectroscopy but in biological processes when a drug is converted to many metabolites analysis by either of these techniques is cumbersome. In such instances while many metabolites are present in the system liquid chromatography interfaced with mass spectrometry will be beneficial. Liquid chromatography separates the drugs and metabolites based on the polarity of the compounds and mass spectrometry detector identifies and differentiates the metabolites based on the molecular weight. Metabolites with same masses are identified by their retention times and fragmentation spectra. Fragmentation spectrum (ie MS₂ or MS/MS) of the identified metabolite provides valuable information to characterize the structure of the metabolites. In the present study few important drugs available in the market are subjected to biological treatment and the resultant metabolites are characterized using liquid chromatography and mass spectrometry. Metabolites were also quantified based on the drug metabolite ratio using liquid chromatography. Thus liquid chromatography in tandem with mass spectrometry provides an ideal platform to identify, quantify and characterize the structure of metabolites.

Biography

Selvan Ravindran is a Senior Research Scientist in Sai Life Sciences Limited, Pune, India. He received his Ph.D degree from Indian Institute of Technology (Chennai). He did his postdoctoral studies in University of Texas Medical Branch, USA and University of Arizona, USA. He also worked as a Biotransformation Scientist in Biocon Bristol Myers and Squibb Research Centre in Bangalore. His major areas of research interests are Biotransformation (Metabolite identification using liquid chromatography and mass spectrometry), Bioanalysis and DMPK (Drug Metabolism and Pharmacokinetics). He has published many research papers in reputed journals and presented more than 20 papers in national and international conferences.

Selvan_ravindran@yahoo.com