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Editorial: Drug Metabolism and Toxicology

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Editorial

A drug metabolism study is an important aspect of the early drug discovery and development process [1,2]. In order to improve the understanding of drug efficacy and safety characteristics, it is desirable to investigate the drug metabolism in animals or humans [3,4]. These metabolism studies involve metabolic stability, cytochrome P-450 (CYP-450) induction or inhibition and metabolite identification. As drugs are xenobiotics to living organisms, CYP-450 biotransform them to less toxic, less active and more hydrophilic forms in order to enhance their excretion in urine [5,6]. However, metabolism can lead to formation of active metabolites, reactive or other toxic metabolites. Identification of reactive or toxic metabolites is essential in the drug discovery and development process to optimize lead compounds for further development and to avoid the toxicity, and helps to modify the structure by means of chemical transformations [4,7,8]. The information generated in the early discovery phase of metabolite identification can be used to identify lead compounds and undesirable metabolic products followed by optimization of pharmacokinetic and safety profiles. These metabolism studies are generally carried out by employing *in vitro* and *in vivo* systems [8] followed by using modern analytical techniques. Liquid chromatography-mass spectrometry (LC-MS) is the most popular and versatile analytical technique which has been widely used for the identification of trace levels of drugs and their metabolites in various biological matrices due to its high sensitivity [9-12]. Several strategies, such as MS/MS, MS^n, on-line hydrogen/deuterium exchange experiments, accurate mass measurements, softwares dedicated to the metabolite prediction (*in silico* tools), chemical derivatization and radio-labeling of parent drugs were used for structural characterization of metabolites [9-15].

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