Absorption, Disposition and Pharmacokinetic Properties of Novel Therapeutic Modalities (Part II)

The previous issue of Current Drug Metabolism [1] provided researchers, clinicians, and patients with the recent trends in pharmacokinetic properties of novel therapeutic modalities, including macrolides [2], antibodies [3], and herbal medicines [4]. Experts also highlighted the advancements in the glucose transporters, which mediate drugs with the similar chemical structure to glucose to pass through the phospholipid bilayer, to better understand drug design and drug delivery strategies [5]. As the second part of the thematic issue is dedicated to Absorption, Disposition and Pharmacokinetic Properties of Novel Therapeutic Modalities, several review articles provided by experts in the present issue serve to deal with drug-metabolizing enzymes, metabolism and pharmacological mechanisms of herbal medicines, as well as pharmacokinetics-based herb-drug interactions. We expect that the issue will be an important contribution to the ever-growing field of novel therapeutic modalities.

Sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection, with its main pathological mechanism being complex. Because infection caused by pathogens is the triggering event in sepsis, prompt initiation of appropriate antibiotic therapies to eradicate the pathogens is a cornerstone of sepsis care. A total of 45 antibiotics have been commonly used for the management of sepsis and septic shock in China and the rational use of the antibiotics in clinics necessitates full understanding of their pharmacokinetic drug-drug interaction. A group of researchers from China, Yu and her colleagues provide a wide review on human pharmacokinetics/dispositions of the antibiotics, their interactions with drug-metabolizing enzymes or transporters, and their associated clinical drug interactions [6]. Antibiotic-perpetrated drug interactions involving P450 enzyme inhibition have been reported for four lipophilic antibacterials and three antifungals. Eight hydrophilic antibiotics are potential victims of drug interactions due to transporter inhibition. In addition, three antifungals (caspofungin, itraconazole, and voriconazole) are reported to be victims of drug interactions because of P450 enzyme induction.

**Erigeron breviscapus** is a Chinese species of flowering plants in the daisy family. *Erigeron breviscapus* is also an old traditional herb with proven benefits for damage caused by ischemia (stroke) and other arterial problems and is highly beneficial to the endothelial lining of arteries, and is also neuroprotective. Fan and her colleagues [7] provide a review of the metabolism of the active components from *Erigeron breviscapus*, including flavonoids and phenolic acids. They also summarize the available data on pharmacological roles and the underlying mechanisms of *Erigeron breviscapus* and its active components and metabolites.

CYP1A2 belongs to the CYP1 family and its expression is regulated by the aryl hydrocarbon receptor pathway. CYP1A2 plays an important role in the metabolism of drugs like caffeine, theophylline, clozapine,phenacetin, chlorpromazine, nicotinamide, tizanidine; biotransformation of endogenous compounds like melatonin, bilirubin, estrogens, procarcinogens, aflatoxin B1, and aromatic/heterocyclic amines. Guo et al. [8] contribute to the issue with a short up-to-date review of the drugs metabolized by CYP1A2, the metabolic mechanism of CYP1A2, and various factors that influence CYP1A2 metabolism. They demonstrate that the metabolic mechanism of CYP1A2 is of great significance in the development of personalized medicine and CYP1A2 target-based novel drugs.

REFERENCES


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