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Novel strategies for the multicomponent pharmacokinetic study of Epimedii wushanensis herba

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Prenylflavonoids are major active components of Epimedii wushanensis herba (EWH). The multicomponent pharmacokinetics of EWH are unclear due to complex metabolism. In this study, the metabolic and pharmacokinetic profiles of five prenylflavonoid monomers and EWH extract were elucidated in rats. The potential metabolites were comprehensively discovered and identified by the mass spectral trees similarity filter (MTSF) technique. Major plasma compounds after oral administration of EWH extract and five flavonoids included prototypes, deglycosylated and glucuronidated products. A high performance liquid chromatography-tandem mass spectrometry (HPLC–MS/MS) method was established to simultaneously monitor 14 major compounds in plasma and 10 potential pharmacokinetic markers in hydrolyzed plasma. Pharmacokinetic profiles indicated that the glucuronide conjugates of icaritin were the principle circulating metabolites, and that total icaritin accounted for ~99% of flavonoid exposure. Good correlation (r>0.5) between total icaritin and its glucuronide conjugates indicated that total icaritin sufficed as a pharmacokinetic marker to evaluate dynamic prenylflavonoid exposure levels. Next, a mathematical model was developed according to the flavonoid content in EWH and exposure levels in rats, calculated by using icaritin as the pharmacokinetic marker. This model accurately predicted exposure levels *in vivo*, with similar predicted vs. experimental area under the curve values for total icaritin (24.1 vs. 32.0 mg/Lxh). Icaritin in hydrolyzed plasma could be used as a pharmacokinetic marker to reflect exposure levels of prenylflavonoids, as well as the timely-changes of its glucuronide conjugates.

Biography

Jinlan Zhang has worked in Pharmaceutical Analysis department of Institute of Materia Medica, Chinese Academy of Medical Sciences & Peking Union Medical College as a Professor. She has completed her PhD from Chinese Academy of Medical Sciences & Peking Union Medical College. She has published more than 70 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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