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Pharmacokinetics and Tissue Distribution Study in Adjuvant Arthritis Rats After Oral Administration of Paeoniflorin by UHPLC-MS/MS

Shuping LI #, Guoqiang LI #, Hong WU *, Wei WANG, Liangliang SUN, Rong WANG, Wenyu WANG, Zhengrong ZHANG & Li DAI

College of Pharmacy, Anhui University of Chinese Medicine, Key Laboratory of Modernized Chinese Medicine in Anhui Province, Hefei, Anhui, China

***SUMMARY*. A sensitive and reliable ultra-high performance liquid chromatography-tandem mass spectrometry (UHPLC-MS/MS) was developed for the determination of paeoniflorin (Pae) in adjuvant arthritis rat plasma and tissues. The analyte and internal standard (IS, geniposide, GE) were separated on an ACQUITY UPLC™ HSS C18 column (100 mm × 2.1 mm, 1.8 μm) using acetonitrle-0.1% formic acid water as mobile phase at a flow rate of 0.2 mL/min. The detection was accomplished in multiple reaction monitoring (MRM) mode with negative electrospray ionization. The ion transitions monitored were set at m/z 479.3 → 449.0 for Pae and m/z 387.4 → 122.4 for IS. The method was successfully applied to pharmacokinetic and tissue distribution studies. The pharmacokinetic results showed that the Pae was poorly absorbed after oral administration. Tissue distribution results indicated that Pae exhibited rapid and extensive distribution in all collected tissues.**

RESUMEN. Fue desarrollada una cromatografía líquida de ultra-alto rendimiento en tándem con espectrometría de masas (UHPLC-MS/MS) sensible y fiable para la determinación de paeoniflorina (Pae) en artritis adyuvante de plasma y tejidos de rata. El analito y el estándar interno (IS, genipósido, GE) se separaron en una columna ACQUITY UPLC™ HSS C18 (100 × 2,1 mm, 1,8 μm) utilizando acetonitrilo-0,1% de ácido fórmico como fase móvil a una velocidad de flujo de 0,2 mL/min. La detección se llevó a cabo en el modo de monitoreo múltiple de reacción (MRM) con ionización por electrospray negativo. Las transiciones de iones monitorizados se fijaron en 479,3 → 449,0 m/z para Pae y 387,4 → 122,4 m/z para IS. El método se aplicó con éxito para los estudios farmacocinéticos y de distribución en tejidos. Los resultados farmacocinéticos mostraron que Pae se absorbe bien tras la administración oral y que la distribución tisular de Pae exhibió una distribución rápida y extensa en todos los tejidos analizados.

KEY WORDS: adjuvant arthritis, paeoniflorin, pharmacokinetic, tissue distribution, UHPLC-MS/MS.
* Author to whom correspondence should be addressed. E-mail: hongw@aliyun.com
# These authors equally contributed to this work.

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