



## Pharmacokinetic Study of Benzoylpaeoniflorin in Rat Plasma by UPLC-MS/MS

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**SUMMARY.** In this work, a sensitive and selective UPLC-MS/MS method for determination of benzoylpaeoniflorin in rat plasma was developed. After addition of ardisiacrispin A as an internal standard (IS) and protein precipitation by acetonitrile-methanol (9:1, v/v) was used to prepare samples. Chromatographic separation was achieved on a UPLC BEH C18 column (2.1 × 100 mm, 1.7 μm) with 0.1% formic acid and acetonitrile as the mobile phase with gradient elution. An electrospray ionization source was applied and operated in positive ion mode; multiple reactions monitoring (MRM) mode was used for quantification using target fragment ions m/z 607.2→105.1 for benzoylpaeoniflorin and m/z 1083.5→407.1 for IS. Calibration plots were linear throughout the range 5-2000 ng/mL for benzoylpaeoniflorin in rat plasma. Mean recoveries of benzoylpaeoniflorin in rat plasma ranged from 75.6% to 84.6%. RSD of intra-day and inter-day precision were both < 10%. The accuracy of the method was between 95.3 and 106.7%. The method was successfully applied to pharmacokinetic study of benzoylpaeoniflorin after intravenous administration.

**RESUMEN.** En este trabajo se ha desarrollado un método de UPLC-MS/MS sensible y selectivo para la determinación de benzoilpaeoniflorina en plasma de rata. Después de la adición de ardisiacrispina A como estándar interno (IS), se usó la precipitación de proteínas por acetonitrilo-metanol (9: 1, v/v) para preparar las muestras. La separación cromatográfica se consiguió en una columna de UPLC BEH C18 (2,1 × 100 mm, 1,7 μm) con ácido fórmico al 0,1% y acetonitrilo como fase móvil, con gradiente de elución. Se aplicó una fuente de ionización por electro spray operada en modo de iones positivos; el modo de monitorización múltiples reacciones (MRM) se utilizó para la cuantificación, usando iones de fragmentos diana m/z 607,2→105,1 para benzoilpaeoniflorina y m/z 1083,5→ 407,1 para el IS. Las curvas de calibración fueron lineales en todo el rango de 5-2000 ng/mL para benzoilpaeoniflorina en plasma de rata. Las recuperaciones medias de benzoilpaeoniflorina variaron de 75,6 a 84,6%. La precisión RSD intra-día y entre días fueran ambas < 10%. La precisión del método estuvo entre 95,3 y 106,7%. El método se aplicó con éxito para el estudio farmacocinético de benzoilpaeoniflorina después de administración intravenosa.

**KEY WORDS:** benzoylpaeoniflorin, pharmacokinetics, rat plasma, UPLC-MS/MS.

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