Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense)*
Lat. Am. J. Pharm. **37** (10): 2079-85 (2018)

Received: July 30, 2018
Revised version: August 13, 2018
Accepted: August 14, 2018

Determination of Ecliptasaponin A in Rat Plasma by using UPLC-MS/MS and its Pharmacokinetics Application

Qing PAN [1], Jinghai SUN [2], Lin ZHANG [3], Jingkui TIAN [3] & Luyu MA [4] *

[1] *Shandong Provincial Institute of Dermatology and Venereology, Shandong Academy of Medical Sciences , Jinan , China*
[2] *Jinan Maternity And Child Care Hospital , Jinan , China*
[3] *Department of Biomedical Engineering, Zhejiang University , Hangzhou , China*
[4] *Shandong Academy of Medical Sciences, Jinan, China*

***SUMMARY*. Eclipta (*Eclipta prostrata* L.) is a widely used Chinese medicinal plant that mainly contains saponins. Ultra-high performance liquid chromatography tandem mass spectrometry is a rapid, selective and sensitive method for the determination and pharmacokinetic investigation of ecliptasaponin A in rat plasma with notoginsenoside R1 as the internal standard (IS). Plasma sample preparation was achieved through a one-step liquid-liquid extraction method. Plasma samples were analyzed by using a COSMOSIL 5C18-MS-II packed column (2.0 × 50 mm, 5 μm) with a line gradient elution using acetonitrile and 0.1 % acetic acid as the mobile phase. All analytes and notoginsenoside R1 were detected in negative ionization mode by using multiple reaction monitoring (MRM) of the transitions at *m/z* 633.2→587.2 (ecliptasaponin A) and *m/z* 931.6→637.2 (IS), respectively. The method was linear for all analytes over the investigated ranges, with all correlation coefficients > 0.997. The intra- and inter-day precisions (RSD, %) were < 9.0 %, and accuracy (RE, %) ranged from 5.6 to 11.3 %, which were within the acceptable limits. The mean extraction recoveries of the analytes from rat plasma were within the range of 96.9-104.4 %, and no notable matrix effect was observed. This validated method was successfully utilized in a pharmacokinetic study of an ecliptasaponin A extract via oral and intravenous administration.**

RESUMEN. Eclipta (*Eclipta prostrata* L.) es una planta medicinal china ampliamente utilizada que contiene principalmente saponinas. La espectrometría de masas en tándem con cromatografía líquida de ultra alta eficacia es un método rápido, selectivo y sensible para la determinación y la investigación farmacocinética de la ecliptasaponina A en plasma de rata con notoginsenósido R1 como patrón interno (IS). La preparación de la muestra de plasma se logró a través de un método de extracción líquido-líquido de un paso. Las muestras de plasma se analizaron usando una columna empaquetada COSMOSIL 5C18-MS-II (2,0 × 50 mm, 5 μm) con un gradiente de elución lineal usando acetonitrilo y ácido acético al 0,1% como fase móvil. Todos los analitos y notoginsenósido R1 se detectaron en modo de ionización negativa mediante el uso de monitorización de reacción múltiple (MRM) de las transiciones en *m/z* 633.2→587.2 (ecliptasaponina A), *m/z* 931.6→637.2 (IS), respectivamente. El método fue lineal para todos los analitos sobre los rangos investigados, con todos los coeficientes de correlación > 0.997. Las precisiones intra e interdía (RSD, %) fueron < 9,0% y la precisión (RE, %) varió de 5,6 a 11,3%, que estaban dentro de los límites aceptables. Las recuperaciones medias de extracción de los analitos del plasma de rata estuvieron dentro del rango de 96.9-104.4% y no se observó un efecto de matriz notable. Este método validado se utilizó con éxito en un estudio farmacocinético de un extracto de ecliptasaponina A por vía oral e intravenosa.

KEY WORDS: eclipta, ecliptasaponin A , pharmacokinetics, rat plasma, UPLC-MS/MS.

* Author to whom correspondence should be addressed. *E-mail:* maluyuyky@126.com

ISSN 0326 2383 (printed ed.)
ISSN 2362-3853 (on line ed.)