



A Highly Sensitive LC-MS/MS method for the Determination of Polyphyllin V In Beagle Dog Plasma: a Useful Tool for Pharmacokinetic Study

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SUMMARY. A highly sensitive, rapid assay method has been developed and validated for the analysis of polyphyllin V in beagle dog plasma by using liquid chromatography coupled to tandem mass spectrometry with electrospray ionization in the positive-ion mode. The assay procedure involves extraction of polyphyllin V and ginsenoside Re (IS) from beagle dog plasma. Chromatographic separation was carried out on an Agilent Zorbax XDB-C18 (100 × 2.1 mm, 1.8 μm) column by isocratic elution with acetonitrile and water (50: 50, v/v) at a flow rate of 0.25 mL/min with a total run time of 3.5 min. The MS/MS ion transitions monitored were 721.6→721.6 for polyphyllin V and 969.60→969.60 for IS. Linear responses were obtained for polyphyllin V ranging from 1 to 50 ng/mL. The intra-and inter-day precisions (RSDs) were less than 2.00 and 3.50% and the extraction recovery ranged from 92.36 to 94.33% with RSD less than 2.21%. Stability studies showed that polyphyllin V was stable in preparation and analytical process. The results indicated that the validated method was successfully used to determine the concentration-time profiles of polyphyllin V.

RESUMEN. Ha sido desarrollado y validado un método altamente sensible y rápido de cromatografía líquida acoplada a espectrometría de masas en tándem con ionización por electrospray en modo de ion positivo para el análisis de polyphyllina V en plasma de perro beagle. El procedimiento de ensayo implica la extracción de polyphyllina V y ginsenosido Re (IS) de plasma de perro beagle. La separación cromatográfica se llevó a cabo en una columna Agilent Zorbax XDB-C18 (100 x 2,1 mm, 1,8 μm) mediante elución isocrática con acetonitrilo y agua (50:50, v/v) a una velocidad de flujo de 0,25 mL/min con un tiempo total de ejecución de 3,5 min. Las transiciones de iones MS/MS monitoreados fueron 721,6→721,6 para polyphyllina V y 969,60→969,60 para el IS. Se obtuvieron respuestas lineales para polyphyllina, V que van de 1 a 50 ng/mL. Las precisiones intra-e inter-día (RSD) fueron menores de 2,00 y 3,50% y la recuperación de la extracción fue de 92,36-94,33% con RSD menor a 2,21%. Los estudios de estabilidad mostraron que polyphyllina V era estable en la preparación y durante el proceso analítico. El método validado se utilizó con éxito para determinar los perfiles de concentración-tiempo de polyphyllina V.

KEY WORDS: Beagle dog plasma, LC-MS/MS, Pharmacokinetics, Polyphyllin V.

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