



## Determination of Novel Multikinase Inhibitor Regorafenib by UPLC-MS/MS in Rat Plasma

Zhenglei FEI<sup>1</sup>, Mian YANG<sup>1</sup>, Yingchun SHEN<sup>1</sup>, Yuehui WANG<sup>1</sup>, Feng QIU<sup>1</sup>, Jie LOU<sup>2\*</sup>

<sup>1</sup> Department of Gastrointestinal Surgery, Ningbo Medical Center Lihuili Eastern Hospital, Ningbo 315040, China.

<sup>2</sup> Department of Gastroenterology, Ningbo No. 2 Hospital, Ningbo 315000, China.

**SUMMARY.** In this study, a simple, rapid and sensitive ultra performance liquid chromatography tandem mass spectrometry (UPLC-MS/MS) method is described for determination of regorafenib in rat plasma samples using carbamazepine as the internal standard (IS) from pharmacokinetic assays. Sample preparation was accomplished through a simple protein precipitation with acetonitrile, and chromatographic separation was performed on an Acquity BEH C18 column (2.1 × 50 mm, 1.7 μm) with gradient profile at a flow of 0.40 mL/min. The linearity of this method was found to be within the concentration range of 100-10000 ng/mL for regorafenib in rat plasma. Only 3.0 min was needed for an analytical run. The method was applied to a pharmacokinetic study of regorafenib in rats.

**RESUMEN.** En este estudio se describe un método simple, rápido y sensible de cromatografía líquida de ultra eficacia en tándem con espectrometría de masas (UPLC-MS/MS) para la determinación de regorafenib en muestras de plasma de rata usando carbamazepina como estándar interno (IS) a partir de ensayos farmacocinéticos. La preparación de la muestra se llevó a cabo mediante una simple precipitación de proteínas con acetonitrilo y la separación cromatográfica se realizó en una columna Acquity BEH C18 (2,1 × 50 mm, 1,7 μm) con perfil de gradiente a un caudal de 0,40 mL/min. Se encontró que la linealidad del método está en el intervalo de concentración de 100 a 10.000 ng/mL para regorafenib en plasma de rata. Sólo se necesitaron 3,0 min para una serie de análisis. El método se aplicó a un estudio farmacocinético de regorafenib en ratas.

**KEY WORDS:** pharmacokinetic, rat plasma, regorafenib, UPLC-MS/MS. de

\* Author to whom correspondence should be addressed. E-mail: lovefmy666@sina.com