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Determination of Cucurbitacin E in Rat Plasma by UPLC-MS/MS and its Application to a Pharmacokinetic Study

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***SUMMARY*. Cucurbitacin E is a tetracyclic triterpenoid compound extracted from Cucurbitaceae, and has been proven to have a wide range of biological activities, including anti-tumor, anti-chemical carcinogenic, and anti-infection. In this study, a UPLC-MS/MS was used to detect cucurbitacin E in rat plasma, and its pharmacokinetics in rats was investigated. Six rats were given cucurbitacin E (2 mg/kg) by intravenous (iv) administration. The blood (100 μL) was withdrawn from the caudal vein at 5, 30 min, 1, 2, 4, 6, 8, and 12 h after administration. A UPLC BEH C18 column was for chromatographic separation using mobile phase of methanol-0.1 % formic acid with gradient elution. Electrospray ionization (ESI) with positive ionization in multiple reactions monitoring (MRM) mode was applied. Precision of cucurbitacin E in rat plasma were lower than 14%. The developed UPLC-MS/MS method was successfully applied in the pharmacokinetics of cucurbitacin E in rats after intravenous administration. The $AUC_{(0-t)}$ value for cucurbitacin E was 481.3 ± 107.2 ng/mL.h following intravernous administration. The apparent distribution volumes *(V)* was 27.2 ± 18.4 L/kg, it could be speculated that they were widely distributed in the organs.**

RESUMEN. La cucurbitacina E es un compuesto triterpenoide tetracíclico extraído de Cucurbitaceae, y se ha demostrado que tiene una amplia gama de actividades biológicas, que incluyen antitumorales, carcinogénicas y antiinfecciosas. En este estudio se usó UPLC-MS/MS para detectar cucurbitacina E en plasma de rata y se investigó su farmacocinética. Seis ratas recibieron cucurbitacina E (2 mg/kg) por administración intravenosa (iv). La sangre (100 μL) se retiró de la vena caudal a los 5, 30 min, 1, 2, 4, 6, 8 y 12 h después de la administración. Una columna UPLC BEH C18 se utilizó para la separación cromatográfica usando una fase móvil de metanol-ácido fórmico al 0,1% con gradiente de elución. Se aplicó ionización por electropulverización (ESI) con ionización positiva en modo de monitoreo de reacciones múltiples (MRM). La precisión de cucurbitacina E en plasma de rata fue inferior al 14%. El método desarrollado UPLC-MS/MS se aplicó con éxito en la farmacocinética de cucurbitacina E en ratas después de la administración intravenosa. El valor de $AUC_{(0-t)}$ para la cucurbitacina E fue de 481,3 ± 107,2 ng/mL.h después de la administración intravernosa. Los volúmenes de distribución aparente *(V)* fueron 27.2 ± 18.4 L/kg y se podría especular que estaban ampliamente distribuidos en los órganos.

KEY WORDS: cucurbitacin E, pharmacokinetics, rat, UPLC-MS/MS.

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