Simultaneous Quantification of 6,7-Di-Hydroxyligustilide and Gastrodin in Rat Plasma by LC-MS: Application to Pharmacokinetic Study of Tianshu Capsule

Huifen ZHANG, Linxin SUN, Xiaohui CHEN, Yanshuang HUO, Baoqing YAN & Kaishun BI *

School of Pharmacy, Shenyang Pharmaceutical University, 103 Wenhua Road, Shenyang, 110016, P.R. China

SUMMARY. A LC-MS method was developed and validated for simultaneous determination of 6, 7-di-hydroxyligustilide and gastrodin in rat plasma, and which was subsequently applied in the pharmacokinetic analysis of an administration of a Chinese herbal extract containing Chuanxiong Rhizoma and Gastrodia Elata Rhizome, i.e., TianShu capsule against migraine. The analytes were separated on a Kromasil C18 column with a gradient elution program and detected without interference in the selected ion monitoring mode with positive electrospray ionization. The linear range was 0.010-10.0 μg/mL for 6,7-di-hydroxyligustilide and 0.025-25.0 μg/mL for gastrodin with the limit of quantitation of 0.01 and 0.025 μg/mL, respectively. The intra-day and inter-day precisions for the entire validation were less than 14.7 % of RSD. The pharmacokinetic parameters indicated that 6, 7-di-hydroxyligustilide and gastrodin are absorbed rapidly and reached a maximum concentration within one hour, which was consistent with the clinical requirements for the rapid relieving the symptoms of migraine.

KEY WORDS: 6, 7-di-hydroxyligustilide, Gastrodia elata Bl., gastrodin, LC-MS; Ligusticum chuanxiong Hort., pharmacokinetics, TianShu capsule.

* Author to whom correspondence should be addressed. E-mail: bikaishun@yahoo.com