HPLC考察和厚朴酚在Caco-2细胞模型的转运特征

投稿时间： 2010-11-21 责任编辑：马超一 点此下载全文

引用本文：曾宝,吴安国,陈建南,赖小平.HPLC考察和厚朴酚在Caco-2细胞模型的转运特征[J].中国中药杂志,2011,36(10):1286.

DOI：10.4268/cjcmm20111007

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基金项目:国家"十一五"科技支撑计划项目 (2006BAI11B08-04)

中文摘要:目的: 研究和厚朴酚在Caco-2细胞模型中的转运机制。 方法 :Kromasil 100-5 C_{18}色谱柱(4.5 mm×250 mm, 5 μm),流动相乙腈-水(70 ： 30),检测波长203 nm。以Caco-2细胞模型研究和厚朴酚的双向转运,考察时间、药物浓度、抑制剂、pH、温度对和厚朴酚转运的影响。运用HPLC检测药物浓度,计算其表观渗透系数。 结果 :和厚朴酚标准曲线为Y=24 044 X-3 763.6 (r=0.999 8),检测限0.04 μmol·L^{-1}。和厚朴酚在Caco-2细胞模型中,从细胞层底端到顶端的转运量小于顶端到底端的转运,在相同浓度条件下和厚朴酚在AP→BP和BP→AP方向的转运量随时间呈增长趋势;维拉帕米可以显著提高和厚朴酚AP→BL的转运量;pH对和厚朴酚在AP→BL方向的转运影响不明显;和厚朴酚在AP→BL和BL→AP方向对温度有依赖性。 结论 :和厚朴酚在Caco-2细胞模型中的转运主要为被动转运,兼有载体介导的主动转运,同时还受到P-gp糖蛋白的外排作用。

中文关键词:和厚朴酚 Caco-2 HPLC 表观渗透系数 P-gp糖蛋白 被动转运

Study on transport characteristics of honokiol in Caco-2 cell model by HPLC

Abstract: Objective : To study the transport mechanism of honokiol in Caco-2 cell model. Method : The analysis was performed on a Kromasil 100-5 C_{18} column (4.5 mm×250 mm, 5 μm) eluted with acetonitrile-water (70 ： 30) as mobile phase. The detection wavelength was set at 203 nm. Two-way transport of honokiol was studied by using Caco-2 cell model, and the effects of time, drug concentration, inhibitor, pH, temperature on the transport of honokiol was investigated. The drug concentrations were determined by high performance liquid chromatography(HPLC) and used to calculate the apparent permeability coefficient. Result : The standard curve of honokiol was *Y*=24 044 *X*-3 763.6 (*r*=0.999 8), and the detection limit was 0.04 μmol·L^{-1}. In Caco-2 cell model, the transport amounts from the top side to the base side of were more than that from the base side to the top side under the same concentration. The transport amounts increased with time both in AP→BL and BL→AP directions. Verapamil could improve the transport amounts of AP→BL. There were no effects of pH on the transport of AP→BL. Both in AP→BL and BL→AP directions, the transport showed temperature dependence. Conclusion : Honokiol is transported through the intestinal mucosa via a passive diffusion mechanism primarily, coexisting with a carrier-mediated transport, at the same time effected by P-gp.

keywords:honokiol Caco-2 HPLC apparent permeability coefficient P-gp glycoprotein passive transport

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