



红花及复方脑得生片中羟基红花黄色素A在大鼠体内的药动学研究

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中文摘要:目的: 利用反相高效液相色谱法测定大鼠血浆中羟基红花黄色素A的浓度, 分别比较红花提取物及复方脑得生片中羟基红花黄色素A的药代动力学参数, 探讨复方配伍对羟基红花黄色素A在大鼠体内药动学的影响。方法: 以相同剂量的羟基红花黄色素A(50 mg·kg⁻¹)对大鼠分别灌胃给予红花药材提取物和复方脑得生片, 采用反相高效液相色谱法测定不同时间点血浆中羟基红花黄色素A的含量, 利用3P97软件处理数据, 进行药动学模型拟合并计算二者的药代动力学参数。结果: 羟基红花黄色素A血浆浓度在0.03~2.56 mg·L⁻¹线性关系良好, 血浆中最低检测限和最低定量限分别为10.30 μg·L⁻¹。高、中、低浓度样品平均回收率分别为(99.3±1.4)%、(92.8±1.8)%、(98.4±2.0)%。大鼠灌胃给予红花提取物和脑得生片后的药-时曲线均符合二房室模型, 主要药动学参数AUC_{0-∞}、AUC_{0-12h}、C_{max}和T_{max}在红花提取物和脑得生片各组间均有显著性统计学意义。结论: 本实验建立的反相高效液相色谱测定法专属、准确、灵敏, 适用于羟基红花黄色素A在大鼠体内的药动学研究。脑得生片中其他配伍药材可以促进羟基红花黄色素A的吸收, 提高羟基红花黄色素A的生物利用度。

中文关键词: 羟基红花黄色素A 红花 脑得生片 药动学 高效液相色谱法

Studies on pharmacokinetics of hydroxysafflor yellow A in *Carthamus tinctorius* and its compound preparation in rat

Abstract: Objective: To develop a RP-HPLC method for the determination of the concentration of hydroxysafflor yellow A in rat plasma, to study the pharmacokinetics of *Carthamus tinctorius* extraction and Naodesheng tablet, and to investigate the effect of other components on the pharmacokinetics of hydroxysafflor yellow A. Method: The rats were orally treated with *Carthamus tinctorius* extraction and Naodesheng capsule respectively. Blood samples were collected in heparinized eppendorf tube via the oculi chorioideae vein. Plasma was separated by centrifugation at 10 000 r·min⁻¹ for 10 min, and two-times methanol in volume was added to deposit proteins. After centrifugation, the upper liquid was transferred to filter. The concentration of hydroxysafflor yellow A in serum was determined by RP-HPLC. The stationary phase was C₁₈, and methanol-acetonitrile-0.7% orthophosphoric acid (26 : 2 : 72) was taken as the mobile phase. A UV detector was used at 403 nm. The pharmacokinetic parameters were calculated with 3p97 program. Result: A good linear relationship of hydroxysafflor yellow A was obtained in the range of 0.03 and 2.56 mg·L⁻¹, the lowest limit of determination was 10 μg·L⁻¹, and the lowest limit of quantitation was 30 μg·L⁻¹. The mean recoveries were (99.3±1.4)%、(92.8±1.8)%、(98.4±2.0)% for high, middle, low concentrations of the samples respectively. The plasma concentration-time curves of hydroxysafflor yellow A were fitted with two-compartment model. The AUC_{0-∞}、AUC_{0-12h}、C_{max} and T_{max} of hydroxysafflor yellow A were increased in the Naodesheng group, compared with 50 mg·kg⁻¹ *C. tinctorius* extract group. Conclusion: The HPLC method was selective, accurate and sensitive. The results indicated that the other herbs improved the absorption of hydroxysafflor yellow A and increased the bioavailability of hydroxysafflor yellow A significantly.

keywords: hydroxysafflor yellow A *Carthamus tinctorius* Naodesheng tablet pharmacokinetics RP-HPLC

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