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论文

泻心汤黄酮类成分在大鼠体内的药代动力学研究泻心汤黄酮类成分在大鼠体内的药代动力学研究

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摘要：

研究泻心汤中黄酮类成分在大鼠体内药代动力学规律。大鼠灌胃给予泻心汤12 g·kg^{-1}，给药前及给药后不同时间采集血样或尿样，HPLC法测定黄酮类成分浓度，血药浓度-时间数据和尿药排泄量-时间数据用DAS软件进行动力学分析。采用大鼠肾匀浆温孵法，进行黄芩苷的体外代谢研究。结果显示,黄芩苷、汉黄芩苷血药浓度迅速达峰，药时曲线呈现双峰现象，消除$T_{1/2}$均为6 h左右；黄芩苷、汉黄芩苷、黄芩素、汉黄芩素在尿中均有排泄，尿中排泄量占给药量均<10%，尿排泄$T_{1/2}$在6～8 h；大鼠肾匀浆可将黄芩苷代谢生成黄芩素，酶动力学参数V_{max}＝702 nmol·min^{-1}·g^{-1}(protein)，K_m＝135 μmol·L^{-1}。可见，泻心汤中黄酮类成分可迅速吸收进入体内；黄芩苷、汉黄芩苷、黄芩素、汉黄芩素均可从尿排泄，但尿药排泄量较少；肾脏可将黄芩苷代谢成黄芩素。

关键词： 黄酮类 泻心汤 药代动力学 高效液相色谱法

Pharmacokinetics of flavonoids from Xiexin decoction in rats

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Abstract:

To study the pharmacokinetics of flavonoids from Xiexin decoction in rats. SD rats were given a single ig dose of Xiexin decoction 12 g·kg^{-1}, plasma and urine were collected before and after dosing. Flavonoids components in plasma and urine were measured by HPLC. Pharmacokinetic parameters were determined from the plasma concentration-time data and urinary excretion-time data with the DAS software package. Baicalin was incubated with the rat renal homogenate to investigate its metabolism *in vitro*. After oral administration of Xiexin decoction baicalin and wogonoside were quickly absorbed and exhibited double peak phenomena in their plasma concentrations. The first peaks in plasma concentrations of baicalin and wogonoside reached C_{max1} of (10±8) and (1.5±0.5) mg·L^{-1} at T_{max1} of (0.27±0.09) and (0.17±0.00) h, while the second peaks reached C_{max2} of (3.9±0.5) and (0.74±0.11) mg·L^{-1} at T_{max2} of (7.6±2.6) and (16.0±0.0) h, respectively. The $T_{1/2}$ of baicalin and wogonoside were (7±3) and (6.4±2.1) h, $AUC_{0-\infty}$ were (57±12) and (15±3) mg·h·L^{-1}, respectively. After oral administration of Xiexin decoction, not only baicalin and wogonoside but also baicalein and wogonin can be detected in the urine. The amounts of baicalin, wogonoside, baicalein and wogonin excreted from urine during 0-72 h were (1.4±0.3), (3.4±1.3), (2.2±0.97), (10±4) % of dose given in rats, respectively. The excretion $T_{1/2}$ of the four flavonoids were (6.9±2.1), (9±4), (8.2±2.0) and (7.2±1.8) h, respectively. Baicalin was metabolized into baicalein in the rat renal homogenate *in vitro*, and the kinetic parameters were measured as V_{max}=702 nmol·min^{-1}·g^{-1}(protein) and K_m=135 μmol·L^{-1}. After oral administration of Xiexin decoction, flavonoids can be absorbed quickly. Only a small quantity of baicalin, wogonoside, baicalein and wogonin were excreted from urine. Baicalin may be metabolized into baicalein in the rat kidney.

Keywords: Xiexin decoction pharmacokinetics HPLC flavonoids

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