



中文标题 检索 跨刊检索

三七总皂苷多成分经鼓室给药的体内分布及药代动力学研究

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中文摘要:目的: 考察三七总皂苷(PNS)经鼓室给药后人参皂苷Rb₁(Rb₁)、人参皂苷Rg₁(Rg₁)和三七皂苷R₁(R₁)在豚鼠的体内行为, 探索中药多种成分经内耳途径转运至脑的可行性。方法: PNS分别经鼓室和静脉给药, 于不同时间采集内耳外淋巴液、脑脊液(CSF)、脑组织和血浆, 采用HPLC测定各组织中Rb₁、Rg₁和R₁的浓度, 计算上述成分在各组织的药代动力学参数, 根据各成分的药时曲线下面积(AUC)所占比值自定义为权重系数, 并进一步估算PNS整合后的药代动力学参数。结果: PNS经鼓室给药, 其Rb₁、Rg₁和R₁均能穿过圆窗膜进入内耳外淋巴并转运至脑部, 但3种成分在体内各组织的药代动力学参数差异较大。PNS整合药代动力学参数显示, PNS采用鼓室给药能增加进入脑部的药量, 提高局部生物利用度, 在CSF和脑组织的C_{max}分别比静脉给药高1.04倍, AUC分别增加0.402倍; 并且PNS在血浆的分布减少, C_{max}和AUC分别比静脉给药降低45.9%、33.1%。结论: 经耳入脑有望成为中药脑内输送的一种新方法。

中文关键词: 三七总皂苷 鼓室给药 人参皂苷Rb₁ 人参皂苷Rg₁ 三七皂苷R₁

In vivo distribution and pharmacokinetics of multiple effective components contained in *Panax notoginseng* saponins after intratympanic administration

Abstract: Objective: To investigate *in vivo* distribution and pharmacokinetics of ginsenoside Rb₁ (Rb₁), ginsenoside Rg₁ (Rg₁) and sanchinoside R₁ (R₁) after intratympanic administration (IT) or intravenous administration (IV) of *Panax notoginseng* saponins (PNS) solution, and provide a novel route for delivering traditional Chinese medicine (TCM) to the brain. Method: The guinea pigs were employed as experimental animal. Perilymph (PL), cerebrospinal fluid (CSF), brain tissue and plasma were collected periodically after IT and IV of PNS solution. The concentrations of Rb₁, Rg₁ and R₁ were measured by high performance liquid chromatography (HPLC), and statistic program DAS was applied to the calculation of pharmacokinetic parameters. The self-defined weighting coefficients based on area under curve (AUC) of each component were created to obtain the holistic pharmacokinetic profiles of PNS. The integrated pharmacokinetic parameters were then calculated from non-compartmental model analysis. Result: Rb₁, Rg₁ and R₁ diffused through the round window membrane into PL of the inner ear, and then transported to the brain after IT of PNS solution. However, the pharmacokinetic parameters showed significant differences between the three components. Based on the self-defined AUC weighting coefficients integration approach, the holistic pharmacokinetic profiles of PNS were obtained, from which the integrated pharmacokinetic parameters were calculated. The C_{max} in CSF and brain tissues following IT were respectively 1.5 and 0.4-fold higher than those following IV. After IT, the AUC in CSF and brain tissues increased by 0.5 and 1.2 times compared with IV. Furthermore, the C_{max} and AUC in plasma following IT were respectively 45.9% and 33.1% lower than those following IV. Conclusion: This novel intra-cochlear administration might serve as a potential and promising alternative to TCM delivery with enhanced brain-targeted efficiency.

keywords: *Panax notoginseng* saponins intratympanic administration ginsenoside Rb₁ ginsenoside Rg₁ sanchinoside R₁

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