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GC-FID测定大鼠静脉注射新型醒脑静后龙脑的血药浓度及药动学研究

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中文摘要:目的: 建立大鼠血浆中龙脑浓度的GC-FID测定方法,探讨新型醒脑静静脉注射后龙脑在大鼠体内的药代动力学过程。方法: 大鼠以10.00 mg·kg^{-1}(以艾片量计)剂量尾静脉注射新型醒脑静后,0.5,1,3,5,8,12,20,30,45 min 眼底采血,分离血浆,十八烷为内标,乙酸乙酯萃取,GC-FID测定血浆中龙脑浓度,以Kinetica软件拟合药动学参数。 结果: 龙脑血药浓度在1.67~16.67 mg·L^{-1}线性关系良好,r=0.999 6,测得低、中、高浓度萃取回收率分别为(92.81±1.11)%,(85.38±0.86)%,(84.58±0.58)%;日内、日间精密度RSD均小于3.0%。静脉注射新型醒脑静后,龙脑在大鼠体内药动学符合二室开放模型,主要药动学参数为$t_{1/2\alpha}$=(1.18±0.20) min,$t_{1/2\beta}$=(22.27±6.85) min,$C_{max(Calc)}$=(18.76±2.10) mg·L^{-1},MRT=(23.84±7.67) min^{-1},AUC =(100.00±15.85) mg·min·L^{-1}。 结论: 建立的GC-FID适用于龙脑血浆药物含量测定及药代动力学研究,新型醒脑静中龙脑在体内分布迅速,代谢较快。

中文关键词:GC-FID 醒脑静 龙脑 血药浓度 二室模型

Study on pharmacokinetics of borneol in rats injected with novel-Xingnaojing by GC-FID

Abstract: Objective: To develop a GC-FID method for the determination of borneol concentration in rat plasma and to investigate the pharmacokinetics after injection of novel-Xingnaojing. Method: Novel-Xingnaojing was injected via by caudal vein injection. The blood samples were collected by posterior orbital venous plexus approach at 0. 5, 1, 3, 5, 8, 12, 20, 30, 45 min. The drug in plasma was extracted with ethyl acetate and then detected by GC-FID, octadecane was used as the internal standard. The pharmacokinetic parameters were calculated by the software of Kinetica. Result: The calibration curve was good linear in the range of 1. 67-16. 67 mg·L^{-1}. The extraction recoveries of low, medium and high concentration were (92. 81±1. 11)%, (85. 38±0. 86)% and (84. 58±0. 58)%, respectivley. And the RSDs of within-day and between-day were below 3. 00%. Plasma concentration of borneol was consistent with the two-compartment open model. The pharmacokinetic parameters were that the $t_{1/2\alpha}$ was (1. 18 ± 0. 20) min, the $t_{1/2\beta}$ was (22. 27 ± 6. 85) min, the $C_{max(Calc)}$ was (18. 76 ± 2. 10) mg·L^{-1}, the MRT was (23. 84±7. 67) min^{-1}, and the AUC was (100. 00±15. 85) mg·min·L^{-1}. Conclusion: The GC-FID method developed can be applied to determination and pharmacokinetics. The borneol in novel-Xingnaojing is distributed and metabolized fast after being administrated.

keywords:GC-FID Xingnaojing borneol plasma concentration two-compartment model

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