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论著

乳酸司帕沙星脂质体的制备及其体外角膜渗透性和抗菌性

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摘要 摘要：目的 制备乳酸司帕沙星（SPLX）脂质体，评估其体外角膜渗透性和抗菌作用。方法 采用pH梯度法制备SPLX脂质体(磷脂：胆固醇：药物质量比为18∶6∶1)，Franz扩散池和兔角膜进行渗透实验，高相液效色谱法测定药物浓度并计算渗透参数，二倍稀释法检测其对金黄色葡萄球菌、铜绿假单胞菌、大肠杆菌、枯草芽孢杆菌的最小抑菌浓度（MICs）和最小杀菌浓度（MBCs），并测定时间-杀菌率。结果 pH梯度法制备的SPLX脂质体包封率为（81.61±1.98）%，明显高于薄膜分散法(11.48±0.86)%和逆向蒸发法(18.64±1.05)%（P均<0.01）。SPLX脂质体对角膜的表观渗透系数和膜内药物滞留量比SPLX溶液提高了1.65和4.98倍。SPLX脂质体对金黄色葡萄球菌、铜绿假单胞菌、大肠杆菌和枯草芽孢杆菌的MICs分别是SPLX溶液的1/4、1/2、1/1和1/17倍，MBCs是SPLX溶液的1/4、1/2、1/1和1/4倍，且SPLX脂质体对细菌的杀菌起效时间比SPLX溶液快。结论 pH梯度法可以制得高包封率的SPLX脂质体，脂质体有助于提高SPLX对角膜的渗透性和抗菌作用。

关键词 乳酸司帕沙星脂质体； pH梯度法； 包封率； 角膜渗透性； 抗菌性

分类号

Preparation of Liposomal Sparfloxcain Lactate and Its Corneal Penetration and Antibacterial Activity in vitro

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Abstract ABSTRACT:Objective To prepare sparfloxcain lactate（SPLX）loaded liposomes and study its corneal penetration and bacterial inhibitory in vitro. Methods Liposomal SPLX（mass ratio of phospholipids/ cholesterol/ drug at 18∶6∶1）was prepared by pH-gradients. The transcorneal penetration experiments of liposomal SPLX were performed in modified Franz′ s cells with the rabbit′ s corneal. The concentration of SPLX was determined by high-performance liquid chromatography. The penetration parameters were calculated. The in vitro antibacterial activities on S. aureus，P. aeruginusa, E. coli, and B. subtilis were determined by two fold dilutions. Results The entrapment efficiency of SPLX in the liposomes by pH-gradients was（81.61±1.98）%，which was significantly higher than that by film dispersion method (11.48±0.86)% and reverse evaporating method (18.64±1.05)%（both P<0.01). The permeability coefficient and corneal deposition quantity of SPLX liposomes were 1.65-and 4.98-folds higher as compared with those of free drug solutions. The minimal inhibitory concentrations (MICs) of liposomal SPLX against S. aureus，P. aeruginosa, E. coli, and B. subtilis were 1/4, 1/2, 1/1, 1/17 times lower than those of free drug, respectively, and the minimal bactericide concentrations (MBCs) were 1/4, 1/2, 1/1, 1/4 times lower than those. In addition, the time-kill values of liposomal SPLX were better than those of free. Conclusion The pH gradient technique is suitable for preparing SPLX liposomes, which can improve the transcorneal penetration and antibacterial activity of SPLX in vitro.

Key words liposomal sparfloxcain lactate；pH-gradients method；encapsulation efficiency；corneal permeability；antibacterial activity

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