

论文

阳离子脂质材料和聚乙二醇对脂质体细胞转染率及膜流动性的影响

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摘要:

目的制备包封荧光素钠(FS)的脂质体,考察阳离子脂质材料(DC-choI)和聚乙二醇(PEG)对脂质体包封率、细胞转染率及膜流动性的影响。方法以FS作为模型物质,制备并分离脂质体,测定脂质体包封率;通过观察荧光光谱的变化考察FS与脂质体膜之间的相互作用;以HepG₂ 2.2.15为细胞模型观察脂质体对FS细胞转染率的影响;通过荧光偏振技术考察阳离子脂质材料和PEG对脂质体膜流动性的影响。结果阳离子脂质材料和PEG能提高脂质体包封率(0.64%~86.57%)、细胞转染率(2.18%~48.46%)及脂质体膜流动性,PEG分子质量的增大有利于包封率、转染率的提高,并增加脂质体膜的流动性。结论在脂质体处方中加入阳离子脂质材料和高分子量的PEG有利于提高包封率、细胞转染率及增加脂质体膜的流动性。

关键词: 阳离子脂质体 聚乙二醇 细胞转染率 荧光素钠 膜流动性

Cationic lipid and polyethylene glycol enhance liposomes-mediated cell transfection and increase the fluidity of liposomes membranes

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Abstract:

AimTo prepare fluorescein sodium (FS) cationic liposomes and investigate the influence of cationic lipid (DC-choI) and polyethylene glycol (PEG) with different molecule weight (MW) on cationic liposome incorporation efficiency, cellular delivery and fluidity of liposome membrane. MethodsUsing FS as a model material for encapsulation, the liposomes were prepared and separated (by sephadex G-50 1 cmx20 cm column), and the liposome incorporation efficiencies was measured. The interaction between the FS and cationic liposomes was investigated by measuring the change of fluorescent spectrum. The cellular uptake of different liposome forms by choosing HepG₂ 2.2.15 as an In Vitro cell culture assay model, and the influence of PEG on the fluidity of liposome membrane with the technique of fluorescence polarization were investigated. Results Cationic lipid and different PEGs showed great effects on increaseing liposome incorporation efficiency (from 0.64% to 86.57%), cellular uptake (from 2.18% to 48.46%) and fluidity of liposome membrane. The effect of PEG was MW dependent, and with the increase of MW, the incorporation efficiency and transfection was improved, and the fluidity of liposome membrane increased. ConclusionAddition of cationic lipid and high MW PEG into cationic liposomes can enhance the cellular delivery and fluidity of cationic liposomes. Also, they can improve the incorporation efficiency of cationic liposomes.

Keywords: polyethylene glycol transfection efficiency fluorescein sodium fluidity of membrane cationic liposomes

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2. 赵惟;马会利;齐宪荣.靶向肿瘤新生血管的阿霉素阳离子脂质体的体外研究[J]. 药学学报, 2007,42(9): 982-988

3. 王健松;朱家壁;吕瑞勤;沈伟.肺靶向阿奇霉素脂质体的制备及其在小鼠体内的分布[J]. 药学学报, 2005,40(3): 274-278

4. 石靖;齐宪荣;杨莉;费然;魏来.大豆糖苷修饰阳离子脂质体的体外肝细胞靶向性[J]. 药学学报, 2006,41(1): 19-23

5. 支德福, 王冰, 崔韶辉, 杨宝灵, 赵不凋, 赵轶男, 姜云霞, 于世钧, 张树彪.两种阳离子脂质体介导基因转染的比较研究[J]. 药学学报, 2009,44(5): 553-557

6. 沈雁 涂家生 庞卉 朱家壁 .凝胶电泳法及荧光光度法测定siRNA阳离子脂质体的含量和包封率[J]. 药学学报, 2009,44(4): 430-435

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