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## 聚乙二醇修饰的阳离子脂质体作为siRNA传递系统的处方优化

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**中文摘要:**研究摩尔分数为0%~5%的聚乙二醇(PEG)修饰的阳离子脂质体作为siRNA传递系统的优劣。制备了两组高低电荷的空白阳离子脂质体,分别含有摩尔分数为40%和20%的1,2-二油酰基-3-三甲氨基丙烷(DOTAP),以人胰腺癌细胞株Hs-766T作为细胞模型,比较了细胞膜表面结合量及内容量分别随时间和细胞外给药浓度变化的动力学曲线;结果显示4 h时细胞表面结合达到稳态,高电荷脂质体组与细胞的结合量明显高于低电荷脂质体组,PEG的加入使脂质体与细胞表面的不饱和型结合转变为可饱和型。采用共聚焦显微镜定性观察载siRNA的阳离子脂质体在6 h的细胞内分布情况,结果表明摩尔分数为40% DOTAP与0%~2% PEG组合有效地将siRNA转运至细胞质,而40% DOTAP与5% PEG组合对转运无效。

**中文关键词:**[阳离子脂质体](#) [聚乙二醇修饰](#) [细胞膜表面结合](#) [细胞内吞](#) [基因传递系统](#)

## Formulation optimization of PEGylated cationic liposomes as siRNA delivery system

**Abstract:** PEGylated cationic liposomes containing 0%-5% (mole fraction) 1,2-distearoyl-sn-glycero-3-phosphoethanolamine-N-[methoxy(polyethylene glycol)-2000] (PEG) were studied as siRNA delivery system. Two groups of cationic liposomes containing 1,2-dioleoyl-3-trimethylammoniumpropane (DOTAP) with mole fraction of 20% and 40% respectively were prepared. The kinetic changes on tumor cellular membrane binding and internalization vs different time and different extracellular liposomal concentration were compared. Binding reached the equilibrium at 4 h for all tested liposomes. Cationic liposomes containing 40% (mole fraction) of DOTAP showed higher cell-association amount than those containing 20% (mole fraction) of DOTAP. Cell-membrane binding time course was changed from nonsaturable to saturable kinetics after PEGylation. Cationic liposomes containing 40% (mole fraction) of DOTAP and 0%-2% (mole fraction) of PEG were shown to successfully transfer siRNA to cytosol under confocal microscope, while those with 5% (mole fraction) PEG failed.

**keywords:** [cationic liposomes](#) [PEGylation](#) [cell-membrane binding](#) [internalization](#) [gene delivery system](#)

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