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PCL-PEG-PCL载姜黄素纳米粒子的制备以及体外药物释放的考察

Curcumin Loaded PCL-PEG-PCL Nanoparticle: Preparation, Characterization and *in Vitro* Release Study

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中文关键词： 聚己内酯-聚乙二醇-聚己内酯 姜黄素 体外释放

英文关键词:PCL-PEG-PCL curcumin *in vitro* release

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作者	单位	E-mail
郑施施[1]，李星熠[2]，王增寿[1]*	1.温州医学院附属第二医院药剂科，浙江 温州325027；2.温州医学院眼视光医院生物医学工程研究院，浙江 温州325027	wangzs@mail.wz.zj.cn

中文摘要:

目的 制备一种生物可降解、生物相容性良好的姜黄素纳米粒子，并对其体外药物释放行为进行考察。方法 采用开环聚合法制备生物可降解的PCL-PEG-PCL三嵌段聚合物，然后采用乳液挥发法制备负载姜黄素的PCL-PEG-PCL纳米粒子，通过透射电镜观察所制备纳米粒子的形貌特征，动态光散射(DLS)测定粒径，采用HPLC测定纳米粒子的包封率和载药量，同时考察其体外药物释放行为。结果 姜黄素纳米粒子具有球形结构，粒径在200 nm左右，载药量为(14.23±0.35)%，3 d体外累积释药量65%。结论 所制备的姜黄素纳米粒子具有较高的载药量和包封率，同时体外药物释放实验证实姜黄素纳米粒子具有良好的缓释功能。

英文摘要:

OBJECTIVE To develop a novel biodegradable, biocompatible curcumin loaded PCEC (PCL-PEG-PCL) nanoparticles for potential application in the drug delivery system. METHODS PCEC copolymer was synthesized by the ring-opening polymerization method and its nanoparticles (blank and curcumin loaded PCEC nanoparticles) were prepared by the emulsification-evaporation method. The developed curcumin loaded PCEC nanoparticles were characterized by scanning electron microscopy (SEM), dynamic light scattering (DLS) and etc. Drug loading capacity/efficiency was determined by HPLC. *In vitro* release behavior of curcumin from nanoparticles was also investigated. RESULTS The developed curcumin loaded PCEC nanoparticle showed almost spherical in shape with uniform mean particle size about 200 nm. The drug loading capacity of curcumin was appromimately (14.23±0.35)%. In vitro release study showed that 65% of total curcumin was released from nanoparticle after 3 days. CONCLUSION The developed PCEC nanoparticle is an excellent carrier for the curcumin with great drug loading and encapsulation efficiency. *In vitro* release study indicates that the curcumin could slowly release from the nanoparticle, which might have great potential application in drug delivery system.

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