

载纳米粒的原位凝胶制剂中纳米粒的释放和胶凝温度的考察

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摘要

目的 制备一种纳米粒-凝胶复合制剂, 考察纳米粒的加入对胶凝温度的影响以及纳米粒从凝胶中的释放特性。方法 用乳化超声法制备固体脂质纳米粒, 并将其载入泊洛沙姆407(F127)形成的凝胶中, 考察纳米粒的加入对不同浓度F127溶液胶凝温度的影响。采用无膜溶出模型研究不同振荡频率下纳米粒的释放与凝胶溶蚀之间的关系。结果 纳米粒的加入使不同浓度的F127溶液的胶凝温度普遍提高了11℃; 凝胶溶蚀和纳米粒释放对时间均呈现良好的线性关系($r > 0.99$); 加快振荡频率可加快凝胶溶蚀和纳米粒的释放; 在不同振荡频率下, 纳米粒释放和凝胶溶蚀呈现良好的线性关系。结论 纳米粒的加入会提高F127溶液的胶凝温度, 纳米粒的释放主要受凝胶溶蚀的影响, 随时间呈零级动力学特征。

关键词 [药剂学](#) [纳米粒](#) [原位凝胶](#) [胶凝温度](#) [释放](#) [凝胶溶蚀](#)

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Release characteristics and gelation temperature investigation of solid lipid nanoparticles loaded in situ gels

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Abstract

Objective To prepare solid lipid nanoparticles (SLNs) loaded in situ gels and investigate the influence of SLNs on gelation temperature (GT) and SLNs release characteristics from gels. Methods SLNs were prepared by emulsion-ultrasonication method and loaded into F127 gels. Influence of SLNs on GT of gels was investigated at various F127 concentrations. Using a membraneless model, the correlation between SLNs release and gel dissolution under various shaking frequencies was studied. Results The gelation temperature could be increased by 11℃ by adding SLNs into the gel. SLNs release and gel dissolution was maintained at a constant rate and a good linear correlation was found between them. Increasing the shaking frequency enhanced gel dissolution and SLNs release. Conclusions Addition of SLNs will increase GT of F127 gels. SLNs release from F127 gels is mainly controlled by gel dissolution and follows zero-order kinetics.

Key words [pharmaceutics](#) [nanoparticles](#) [in situ gel](#) [gelation temperature](#) [release](#) [gel dissolution](#)

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