中国现代应用药学
Chinese Journal of Modern Applied Pharmacy
全国性科技期刊
全国中文核心期刊
中国科技论文统计源期刊

江永南,莫红缨.淫羊藿苷纳米纤维膜自组装囊泡的制备及表征[J].中国现代应用药学,2012,29(6):509-512

淫羊藿苷纳米纤维膜自组装囊泡的制备及表征

Preparation and Characterization of Self-assembly Vesicle of Icariin Nanofiber

投稿时间： 2011-09-28 最后修改时间： 2012-03-07

DOI：

中文关键词： 淫羊藿苷纳米纤维膜 静电纺丝 自组装囊泡

英文关键词:icariin nanofiber electrospinning self-assembly vesicle

基金项目:广东食品药品职业学院自然科学研究项目(2008Z010)

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中文摘要:

目的 采用静电纺丝制备淫羊藿苷纳米纤维膜，并通过自组装技术形成纳米囊泡，改善淫羊藿苷在体内的相容性及吸收性能。方法 通过溶解度实验筛选合适溶剂，以静电纺丝技术制备淫羊藿苷纳米纤维膜，采用扫描电镜对纤维膜表面形态进行观察，采用 X射线晶体衍射(XRD)和差示扫描量热分析(DSC)检测纤维膜中药物的存在状态，通过红外光谱分析药物与纤维材料之间的相互作用。并通过透射电镜观察纳米纤维膜自组装纳米囊泡的性能。结果 甲醇与二甲基乙酰胺混合溶剂的溶解性及纤维成型性较好；载药纤维直径分布均匀(400~600 nm)、表面光滑无药物颗粒，药物与聚合物之间通过氢键作用，具有良好的相容性，水中溶解试验发现纳米纤维膜能自组装成纳米囊泡。结论 药物以无定形态高度分散于纳米纤维中，电纺制备工艺简单易行；且淫羊藿苷纳米纤维膜能自组装成纳米囊泡。

英文摘要:

OBJECTIVE To improve the compatibility and absorption properties of icariin *in vivo* by preparing electrospun icariin nanofiber and forming self-assembly nano-vesicles. METHODS Solubility test in solvent was performed to screen suitable solvent system. Icariin nanofibers was prepared by electrospinning. SEM and TEM were used to observe fiber membrane surface and self-assembly vehicle morphology respectively. XRD, DSC and IR were applied to characterize the drug-loaded nanofilber. RESULTS Methanol and dimethylacetamide were selected as the solvent mixture for providing good solubility and formation of drug-loaded fiber. The electron scan microscope showed that diameter of fiber was (400-600 nm) and the fiber surface was smooth without drug absorption. The polymers were well compatible with drug. Hydrogen bonds played a key interaction between drug and polymers. Nano-vehicle was self-assembled by dispersing the drug-loaded nanofiler into water. CONCLUSION Preparation of icariin nanofiber membrane by electrospinning was simple and icariin was highly dispersed in nanofiberse in amorphous form. Nanofibers can be self-assembled in water to form nano-vehicles.

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