

论文

浸没凝胶相分离法制备聚己内酯多孔支架

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摘要:

为了制备结构和性能满足骨组织工程支架要求的聚己内酯(PCL)多孔支架材料, 采用浸没凝胶相分离法, 以冰醋酸和丙酮为混合溶剂, 水为凝固剂, 壳聚糖(CS)颗粒为添加剂制得一系列PCL 多孔支架。探讨了溶剂组成、PCL 浓度、CS添加量对PCL 多孔支架结构和性能的影响。结果表明: 添加CS颗粒有利于形成多孔三维支架, 随着CS含量的增加, 孔隙率略微下降, 抗压强度提高。随着 PCL 质量分数的增加, 孔隙率明显下降, 但抗压强度增大。当溶剂组成中丙酮含量为50 wt%~60 wt%, PCL 质量分数不高于10 wt %时, 通过改变 CS用量, 可制得孔隙率和力学性能满足骨组织工程要求的相互贯通的三维多孔支架材料。

关键词: 聚己内酯 壳聚糖 多孔支架 浸没凝胶相分离

Fabrication of poly( $\epsilon$ -caprolactone) porous scaffolds by immersion precipitation method

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Abstract:

To prepare the poly(  $\epsilon$ -caprolactone) (PCL) porous scaffolds whose structure and property could meet the needs of bone tissue engineering, a series of PCL porous scaffolds were prepared by means of the immersion precipitation method using acetic acid and acetone as the blend solvent, distilled water as the quenching bath and chitosan (CS) as the additives. The effects of solvent, PCL concentration and the amount of CS on the structure and property were studied. The results show that the addition of CS is beneficial for forming three-dimensionally porous scaffolds. With the CS amount increasing, the porosity decreases slightly while the ompressive strength improves. The porosity decreases obviously with the increasing of PCL mass fraction. When the content of acetone is 50 wt% ~60 wt% and the content of PCL is below 10 wt% , three-dimensionally porous PCL scaffolds with satisfying porosity and mechanical property could form by adjusting the amount of CS.

Keywords: polycaprolactone chitosan porous scaffold immersion precipitation method

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2. 唐圣奎,熊杰,李妮,谢军军,肖红伟,张红萍.纳米羟基磷灰石/丝素蛋白/聚己内酯复合超细纤维的制备及表征[J]. 复合材料学报, 2010,27(2): 31-37

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