材料研究学报 >>2011 >>25 >>(2)

材料研究学报 2011, 25(2) 135-140 DOI: ISSN: 1005-3093 CN: 21-1328/TG

研究论文

壳聚糖固载环糊精--海藻酸钠凝胶球的制备和载药性能

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摘要: 使用环糊精和对甲苯磺酰氯制备单--(6--O--对甲苯磺酰基)--β--环糊精, 将其与壳聚糖反应后得到可溶于醋酸溶液的壳聚糖固载环糊精, 使用一步法与海藻酸钠形成凝胶球(ALg--CDS)。用FTIR、UV、TG--DTA、XRD和SEM对产物进行表征, 研究了凝胶球在模拟肠液和胃液中的溶胀行为及载药释放性能。结果表明,ALg--CDS凝胶球在肠液中的溶胀率比在胃液中的大; 对酮洛芬的吸附过程符合Lagergren二级动力方程, 且ALg--CDS凝胶球的载药量(4.19 mg/mg)优于ALg--CS(3.76 mg/mg), ALg--CDS凝胶球比ALg--CS有更好的缓释效果, 环糊精的引入提高了载药量和缓释性能。

关键词: 有机高分子材料 壳聚糖 环糊精 海藻酸钠 凝胶球 载药性能

Synthesis and Drug Release Performance of Chitosan Immobilized Cyclodextrin – Sodium Alginate

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Abstract: An acid soluble chitosan immobilized cyclodextrin (CDS) was synthesized by grafting p－toluenesulfonyl－β−cyclodextrin onto chitosan, then formed gel with alginate sodium (ALg－CDS). The structure of ALg－CDS was characterized by FTIR, UV, TG－DTA, XRD and SEM, and using ketoprofen as a modal drug, the release behavior from ALg－CDS and ALg－CS in simulated intestinal fluid and simulated gastric fluid had been investigated. The results show that the swelling ratio of ALg－CDS in simulated intestinal fluid was higher than that in simulated gastric fluid. ALg－CDS (4.19 mg/mg) has better drug－loading capacity than that of ALg－CS (3.76 mg/mg), and represented more stable release of the entrapped ketoprofen in simulated intestinal fluid because of cyclodextrin, the adsorption data was in line with the Lagergren second－order kinetics.

Keywords: organic polymer materials, chitosan, &beta &ndash cyclodextrin, alginate sodium, hydrogel, controlled release

收稿日期 2010-11-12 **修回日期** 2010-12-13 **网络版发布日期** 2011-04-18

DOI:

基金项目:

福建省重点科技项目2009H0030、福建省自然科学基金E0810019和2009J01029及科技部科技人员服务企业基金资助项目。

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