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研究论文

聚缩醛药物载体的合成表征及其降解动力学的NMR研究

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摘要 在对甲苯磺酸催化下, 将聚乙二醇2000(PEG2000)和氨基保护的丝胺醇与三甘醇二乙烯基醚三元共聚, 再脱去丝胺醇的氨基保护基团, 合成了4种氨基含量不同的聚缩醛PA1, PA2, PA3和PA4, 用^{1}H NMR表征了其结构. 同时, 利用^{1}H NMR监测了聚缩醛PA3在pH值为7.4, 6.5和5.7的磷酸缓冲液及pH值为4.7, 4.1和3.8的醋酸缓冲液中的降解行为. 结果表明, PA3在酸性缓冲液介质中的降解反应符合一级反应动力学方程, 且随着介质pH值的减小降解速率常数增大, 降解半衰期减小.

关键词 聚缩醛合成 降解动力学 一级动力学 ^{1}H NMR

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Synthesis and Characterization of Polyacetals and NMR Study on Its Degradation Kinetics

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Abstract With *p*-TSA as catalyst, four different types of polyacetals(PA1, PA2, PA3, PA4) were synthesized with amino-protected serinol, tri(ethylene glycol) divinyl ether and PEG2000 in different molar ratios. The structure of the resultant polyacetal was characterized with ^{1}H NMR.The degradation process of the copolymers was monitored *via* ^{1}H NMR in pH=7.4, 6.5, 5.7 PBS and pH=4.7, 4.1, 3.8 acetic buffer, respectively. It was found that the degradation reaction in acidic buffer of PA3 obeyed the first order kinetics equation. With decreasing pH values of the buffer solution, the degradation rate constant increases and the half-life decreases.

Key words Synthesis of polyacetals Degradation kinetics First order kinetics ^{1}H NMR

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