

Synthesis and characterization of novel polyanhydrides with tailored erosion mechanisms. ^[1]

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Abstract

We have designed a new synthesis route to create polyanhydrides based on monomers that contain hydrophilic entities within highly hydrophobic backbones. The method results in polyanhydrides that can be easily processed into drug-containing tablets. The synthesis, characterization, and erosion studies of polyanhydride copolymers based on 1,6-bis(p-carboxyphenoxy)hexane (CPH), which is highly hydrophobic, and 1,8-bis(p-carboxyphenoxy)-3,6-dioxaoctane (CPTEG), which has hydrophilic oligomeric ethylene glycol segments in the monomer unit, was performed using a combination of molecular spectroscopy, thermal analysis, gravimetry, and scanning electron microscopy. The studies demonstrate that by increasing the CPH content in the CPTEG:CPH copolymers, the erosion of the system can be tailored from bulk-eroding to surface-eroding mechanism. These systems have promise as protein carriers.

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