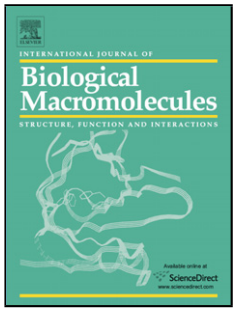

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Cellulose crosslinked pH-responsive polyurethanes for drug delivery: α-hydroxy acids as drug release modifiers

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Abstract

Cellulose crosslinked waterborne polyurethanes (PUs) based on poly ε-caprolactone with lactic acid/ glycolic acid/ dimethylol-propionic acid as a drug release modifiers cum chain extenders were prepared. PUs were loaded with felodipine and drug release was monitored at different pH values. The structure of the polymers was characterized by FTIR, DSC & TGA and SEM. The encapsulation of dug inside PU matrix and the morphology of polymer after drug release were studied by using SEM. All the PUs were observed to degrade under highly basic conditions. The PUs act as pH sensitive drug carriers with an added advantage of modulated release rate as a function of acid chain extenders. The rate of release of the drug was significantly faster at pH 7.4 as compared to gastric pH 1.2, with same incubation time. The PUs reported in the present study may be suitable for medical applications like vaginal drug delivery and colon specific drug delivery.