

عنوان مقاله:

Development of Antibiotic Releasing Electrospun Nanofibrous Mats Based on Gelatin

محل انتشار:

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خلاصه مقاله:

This work aimed to prepare pH-sensitive nanofibrous mats as a drug releasing system using a green method. Gelatin nanofibers were first prepared by electrospinning and then cross-linked with glutaraldehyde. To evaluate the capability of this product as a drug delivery system, vancomycin was loaded into the nanofibrous mats in different doses as a model antibiotic drug. The chemical structure of the prepared material was investigated by (Fourier transform-infrared) FT-IR. Field emission scanning electron microscopy (FE-SEM) observations showed that uniform bead-free nanofibers with an average diameter of ۱۵۷ nm were successfully fabricated. The drug release studies revealed that the relative rate of drug release in buffer media with pH = ۲.۰ was higher than that in a buffer solution with pH = ۷.۴. The drug release mechanism of samples was determined by Korsmir-Pepas model. Moreover, the incorporation of vancomycin into the nanofibers provided an effective antibacterial activity against Escherichia coli and Staphylococcus aureus microorganisms. The developed antibiotic loaded nanofibrous mats can be considered as a promising novel antimicrobial wound dressing material.

کلمات کلیدی:

antibacterial property, Drug delivery, electrospinning, gelatin, nanofibers

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