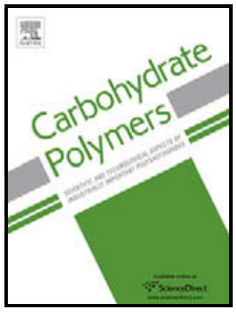

Title: Optimization, synthesis, and characterization of coaxial electrospun sodium carboxymethyl cellulose-graft-methyl acrylate/poly(ethylene oxide) nanofibers for potential drug-delivery applications

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Optimization, synthesis, and characterization of coaxial electrospun sodium carboxymethyl cellulose-graft-methyl acrylate/poly(ethylene oxide) nanofibers for potential drug-delivery applications

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Highlights:

- Nanofibers for drug delivery were synthesized using thermoplastic carboxymethyl cellulose.
- Nanofiber mats were fabricated via coaxial electrospinning.
- The in vitro sustained drug release of the anti-infection drugs has been investigated.
- Drug loaded nanofibers were effective against *S. aureus* and *E. coli* bacteria.
- The nanofibers were non-toxic.

Abstract

In this study, nanofiber drug carriers were fabricated via coaxial electrospinning, using a new, degradable core–shell nanofiber drug carrier fabricated via coaxial electrospinning. Fabrication of the shell was carried out by graft polymerization of sodium carboxymethyl cellulose (NaCMC) with methyl acrylate (TCMC) and poly(ethylene oxide) (PEO). Tetracycline hydrochloride (TCH) was used as a drug model incorporated within the nanofibers as the core, and their performance as a drug carrier scaffold was evaluated. The loading of TCH within PEO nanofibers and the loading of TCH within the TCMC nanofibers were characterized via different techniques. The structure morphology of the obtained nanofibers was viewed under scanning electron microscope (SEM). The changes in the polymer structure before and after grafting and confirmation of incorporation