J Nanomed Nanotechnol 2018, Volume 9
DOI: 10.4172/2157-7439-C7-086

16TH WORLD MEDICAL NANOTECHNOLOGY CONGRESS

September 03-04, 2018 Tokyo, Japan

Cellulose acetate/poly (vinyl alcohol) hybrid nanofibers containing tetracycline hydrochloride and phenytoin sodium: Morphology, drug release, antibacterial and cell culture studies

Mohammad Mirjalili[1], Hamed Sourian Reyhanipour[1], Ramin Khajavi[2], Mohammad Esmaeil Yazdanshenas[1] and Payam Zahedi[3]
[1]Islamic Azad University of Yazd, Iran
[2]Islamic Azad University South Tehran Branch, Iran
[3]University of Tehran, Iran

The objective of this work was to fabricate electrospun hybrid nanofibers based on Cellulose Acetate (CA) and Poly Vinyl Alcohol (PVA) containing Tetracycline hydrochloride (TC) and Phenytoin Sodium (PHT-Na), respectively. The performance evaluation of the samples was investigated in terms of morphology, drug release, cell cytotoxicity, adhesion, antibacterial property, as well as wettability. The results showed that the CA/PVA hybrid nanofibers have a uniform shape and a narrow diameter distribution (160-180 nm). The release trend of TC from CA significantly decreased in hybrid nanofibers owing to the gelation of PVA in an aqueous solution and the release mechanism followed the Higuchi model. Besides the improvement in cell growth and the viability of CA/PVA hybrid samples, their antibacterial activity against E. coli and S. aureus stood at ~89% and ~98%, respectively. Furthermore, the obtained result from water contact angle showed a good hydrophilic property for the samples with value of 45° which made them promising materials used in biomedical applications potentially.

Dr.Mirjalili@iauyazd.ac.ir