

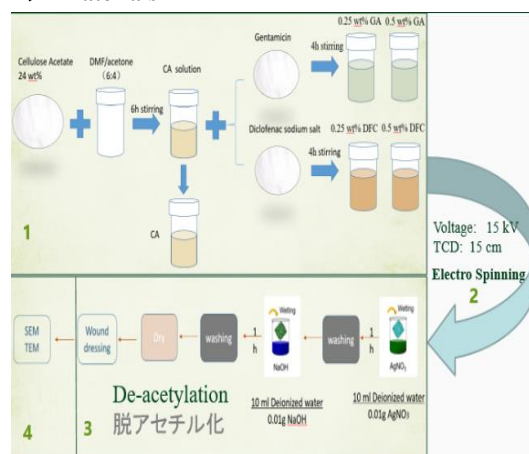
Fabrication of functional nanofibers applicate in wound dressings for diabetics

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In this study, the dual functional wound dressings for diabetic patients were fabricated with the help of gentamicin/cellulose acetate and diclofenac sodium salt/ cellulose acetate by electrospinning. The resultant nanofibers were functionalized with silver nanoparticles (AgNPs) on its surface by a simple facile wetting process. Herein, gentamicin and diclofenac sodium salt were used for the objective to heal the infection inflammation and Ag NPs were loaded for the antibacterial properties.

Experimental

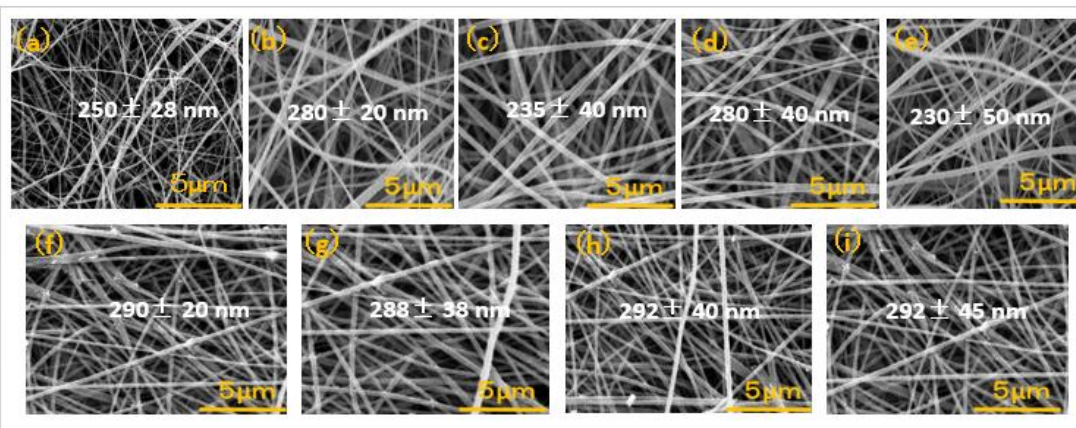
1、 Materials



The 24 wt% CA was mixed in DMF and Acetone (6:4) and stirred for 6 hr. Then, different ratios of gentamicin and diclofenac sodium salt were added and stirred for 4 hr. The solution was loaded to electrospinning for development of nanofibers with a high-voltage supply of 15 kV. The distance from the needle tip to the collector was 15 cm. It was wetted with 0.01 g/10 ml of AgNO₃ for 1 h, washed with deionized water; Then wetted with 0.01 g/10 ml of NaOH for 1 h, washed with deionized water and dried at room temperature.

Results and discussion

1、 SEM



In order to investigate the morphology of the CA NF, CA/GA NF, CA/DFC NF, CA/GA/ Ag NF and CA/DFC/Ag NF SEM images were studied as shown in Figure. It was confirmed that nanofibers diameter was not affected by the addition of gentamicin and diclofenac salt as shown in the figure but it was affected by the synthesis of Ag nanoparticles on the surface of CA/GA and CA/DFC NF as shown in the figure f-i that this diameter is higher than neat CA NF and CA/GA and CA/DFC NF.

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