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## Preparation and properties of polymeric nanofiber containing polyamidoamine as wound dressings

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In recent years, healthcare professionals are confronted with patients who suffer from healing and covering of wounds and burns. During healing, wound dressing protects from wounds and injuries and contributes to repair and recovery of skin and skin tissues. Due to biocompatibility, biodegradability and their similarity to macromolecules known to man, some natural polymers, including polysaccharides, proteins and peptides, as well as some synthetic polymers such as polyglycolic acid, polylactic acid, polyacrylic acid, polyvinyl alcohol is widely used in the treatment of wounds and burns. In this study, Polyvinyl Alcohol (PVA)/Carboxymethylcellulose (CMC)/Polyamidoamine (PAMAM)/Tetracycline (Tet) nanofibers was prepared as an electro-spinning wound dressing. First, the antibacterial effect of PAMAM on two *E. coli* and *S. aureus* bacteria was investigated and according to the results of PVA/CMC/15% PAMAM samples were selected as optimal. Then, the release strength of different levels of tetracycline antibiotics (1, 3, 5 and 7% by weight) was investigated to prevent nanofiber-dressed wound infection. The morphology of composite nanofibers was studied with the Field Emission Electron Microscopy (FESEM). The chemical structure of the nanofibers was studied by Infrared Spectroscopy (FTIR) and the results of its release profile from all nanofibers were showed that its highest release occurred within the first 12 hours. Fiber membranes containing 1, 3 and 5% by weight of tetracycline have shown drug release for more than 28 days and for nanofibers containing 7% tetracycline over 14 days. Regarding the results of the release nanofiber wound dressings of the PVA/CMC/15% PAMAM/5% Tet and the surface morphology of this nanofiber, it can be stated that the amount of by weight of Tet is optimal. FTIR spectroscopy results showed the successful placement of tetracycline, polyamidoamine in nanofibers.

### Biography

Mohammad Mirjalili is the Vice President of Research and Technology, Islamic Azad University, Yazd Branch and an Associate Professor of Textile Engineering and Polymer Department. He has completed his MSc in Textile Chemistry. He has continued his Postgraduate studies from the Islamic Azad University, South Tehran Branch related to dyeing modification of wool fabric with reactive dyes. He has completed his PhD in Textile Chemistry from Islamic Azad University South Tehran Branch. He has conducted more than 13 project and 9 doctoral research as well as project related to textile chemistry. He has published more than 30 scientific papers and presented at a number of national and international conferences. His scientific work is related to synthesis of dyes for textile, industrial wastewater treatment plant, nanotechnology, natural dyes, drug release, texture engineering and medical engineering.

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