عنوان مقاله:

Surface modification of Polyurethane as a Novel Skin Dress

محل انتشار:

اولین کنفرانس بین المللی مواد پیشرفته (سال: 1391)

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خلاصه مقاله:

The aim of this study is to design and fabricate an artificial skin dress for the purpose of skin healing. A multilayer skin dressing included castor oil-based polyurethane synthesized as the outer layer and two biopolymeric layers of heparin and chitosan as the inner layers were fabricated. The surface of polyurethane was activated using two steps oxygen radio frequency (RF) plasma. The surface of the modified PU films characterized by attenuated total reflection Fourier transform infrared (ATR-FTIR) spectroscopy, and water drop contact angle measurements. The ATR-FTIR spectrogram of the modified films showed new characteristic peaks of PU. Also, heparin and chitosan were successfully immobilized on PU films. In vitro cell culture study on the chitosan/heparin immobilized PU and poly (acrylic acid)-grafted PU films showed compatibility of modified surfaces as well as virgin film with L929 fibroblast cells. Cell adhesion and proliferation of cells on the chitosan/heparin immobilized surfaces showed better behavior compared with poly (acrylic acid)-grafted PU. It was concluded that chitosan/heparin-immobilized surfaces can have a good potential to be used as a skin replacement

کلمات کلیدی:

Chitosan, Heparin, Polyurethane, Surface modification, Two-step plasma treatment