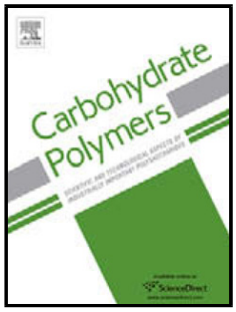

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CELLULOSE ACETATE BASED 3-DIMENSIONAL ELECTROSPUN SCAFFOLDS FOR SKIN TISSUE ENGINEERING APPLICATIONS

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Highlights

- 3D CA/PULL scaffolds were produced via electrospinning for the first time.
- PULL was used for providing 3-dimensionality to the scaffolds.
- Hydroplilic PULL content of the scaffolds were removed toincrease porosity.

Abstract

Skin defects that are not able to regenerate by themselvesare among the major problems faced. Tissue engineering approach holds promise for treating such defects. Development of tissue-mimicking-scaffolds that can promote healing process receives an increasing interest in recent years. In this study, 3-dimensional electrospun cellulose acetate (CA) pullulan (PULL) scaffolds were developed for the first time. PULL was intentionally used to obtain 3D structures with adjustable height.It was removed from the electrospun mesh to increase the porosity and biostability. Different ratios of the polymers were electrospun and analyzed with respect to degradation, porosity, and mechanical properties. It has been observed that fiber diameter, thickness and porosity of scaffolds increasedwith increased PULL content, on the other hand this resulted with higher degradation of scaffolds. Mechanical strength of scaffolds was improved after PULL removal suggesting their suitability as cell carriers. Cell culture studies were performed with the selected scaffold group (CA/PULL:50/50) using mouse fibroblastic cell line (L929). In vitro cell culture tests showed that cells adhered, proliferated and populated