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عنوان مقاله:

Engineering aspects in lung tissue regeneration: monitoring strategies

محل انتشار:

اولین کنگره بین المللی مهندسی بافت و پزشکی بازساختی ایران (سال: 1397)

تعداد صفحات اصل مقاله: 1

نویسندگان:

Seyed Hossein Mahfouzi - *Department of Life Science Engineering, Research Center for New Technologies in Life Science Engineering, University of Tehran, Iran*

Seyed Hamid Safiabadi-Tali - *Department of Biochemical and Pharmaceutical Engineering, College of Engineering, University of Tehran, Iran*

Ghassem Amoabediny - *Department of Life Science Engineering, Faculty of New Sciences and Technologies, University of Tehran, Iran*

Mostafa Ghanei - *Chemical Injuries Research Center and Department of Pulmonary Medicine, Baqiyatallah University of Medical Sciences, Tehran, Iran*

خلاصه مقاله:

Introduction Lung tissue engineering is a promising field with the goal ofdeveloping functional substitutable tissues fortransplantation or in vitro monitoring of drug toxicity inmodel disease tissues. A prerequisite to meet the goals of lung tissue engineering is tomaintain cell survival and growth within the scaffolds byproviding appropriate culture conditions. To obtain efficient engineered tissues, monitoring cell viability is one of the significantdifficulties that should be overcome. Objectives This study aimed to establish monitoring strategies which were required to assess the effectof different stimuli and feeding and aeration strategies oncell survival and growth. Methods In this research, two different monitoring systemswere developed based on respiration activity. Human umbilical cord vein endothelial cells (HUVECs) were seeded into rat acellular lung scaffolds, and then, cell viability was monitored during the culture period (3-day and 10-day periods). Results The monitoring systemsprovided cell growth profiles representing essential information on cell viability and growth states during the culture period. MTT analysis, H&E staining, SEM imaging, andglucose consumption measurement proved the consistency of the results obtained by the monitoring systems. ConclusionThe monitoring strategies provided useful information which helpscontrol, optimize, and modify the lung regeneration process and eventually produce a functional implantable lung

کلمات کلیدی:

Acellular lungs, Monitoring strategy, Tissue engineering, Regenerative medicine, Lung regeneration

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