

## عنوان مقاله:

Reinforcement of a decellularized extracellular matrix-derived hydrogel using nanofibers for cardiac tissue engineering

## محل انتشار:

مجله بین المللی تحقیقات پیشرفته زیست شناختی و زیست پزشکی، دوره 8، شماره 3 (سال: 1399)

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## خلاصه مقاله:

The role of heart disease in increasing worldwide death and the limited availability of organs for transplantation have encouraged multiple strategies to fabricate functional and implantable constructs. One of these strategies is to develop a biologically similar heart tissue scaffold, in which two types of fiber and hydrogel are commonly used. Toward this goal, taking advantage of both hydrogels properties and fibers features with excellent mechanical properties can be considered as a promising method. The purpose of this study is to develop a fiber/hydrogel composite of gelatin, poly-caprolactone (PCL), cardiac extracellular matrix (ECM), and chitosan. The fibrous scaffolds of PCL and gelatin were characterized by SEM, water drop contact angle test, FTIR, and mechanical tests. The results showed that the average diameter of nanofibers, hydrophilicity and mechanical properties of the fibrous scaffolds increased with increasing the gelatin content in the spinning solution. Furthermore, the results of mechanical tests indicated that by integrating fibers with gelatin to PCL mass ratio of 2 in the hydrogel of chitosan and ECM with a mass ratio equal to 1, we obtained a construct with similar mechanical properties to native heart tissue, which may be proposed as an appropriate scaffold for heart tissue engineering.

## کلمات کلیدی:

Composite scaffold, Mechanical properties, Nanofiber, Extracellular matrix, Cardiac tissue engineering

## لینک ثابت مقاله در پایگاه سیویلیکا:

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