

نام و نام خانوادگی: سیده مطهره عبدالهیی

عنوان پایان نامه: بررسی تاثیر اسفنج کلاژن استخراج شده از پوست ماهی حاوی اگزوپلی ساکارید در ترمیم زخم سوختگی

درجه دو عمقی در رت

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چکیده پایان نامه:

Skin defects are among the most prevalent and serious problems worldwide; it is necessary to provide appropriate coverage in order to reduce possible mortality risk and accelerate wound healing. In this study, we designed and synthesized collagen (Col) and collagen/exopolysaccharide (Col/EPS 1-3%) sponges that collagen derived from Rainbow trout (*Oncorhynchus mykiss*) skin's incorporated with exopolysaccharide produced *Rhodotorula mucilaginosa* sp. GUMS16 for promoting Grade 3 burn wound healing. The physicochemical characterizations of the Col/EPS sponges included morphology analysis, FTIR spectroscopy, Thermal property, Tensile properties, hydrophilicity behavior, and biological properties including biodegradation, MTT assay, cell morphology, and in vivo studies including macroscopic appearance and pathological features that were done by Hematoxylin and eosin (H&E) and Masson's Trichrome staining. Morphological studies using SEM indicated that the presence of EPS did not affect the minimum porosity dimensions while raising the EPS amount significantly reduced the maximum porosity dimensions. TGA, FTIR spectroscopy, and tensile properties results confirmed the successful incorporation of the EPS into collagen sponges, and the addition of EPS to the collagen sponges had no effect on their mechanical performance. Furthermore, the biological results showed that increasing EPS did not affect collagen biodegradability and cell viability assessments showed that the Col/EPS 1% exhibits the highest cell activity. Moreover, in vivo use of Col/EPS 1% on the burn wound on rat models displayed a faster healing rate and Histopathological examination revealed that Col/EPS1% treatment accelerated wound healing, which was supported by greater re-epithelialization and dermal remodeling, less inflammatory cells, more abundant fibroblast cells, and collagen accumulation. Our finding suggested that Col/EPS 1% promotes dermal wound healing by antioxidant and anti-inflammatory activities and can be a potential medical process in the treatment of burn wounds.