

عنوان مقاله:

Fabrication of polyvinyl alcohol-graphene nanosheet nanocomposite loading of omega- ω fatty acids for ceramic engineering

محل انتشار:

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خلاصه مقاله:

Objective(s): Many people all around the world encounter major problems due to nervous system injuries. Among the various methods of treating, neural tissue engineering has attracted a lot of attention from nerve science researchers. **Materials and Methods:** There are various methods for fabrication of soft tissue, however the electrospinning method (ELS) is a simple and cost-effective method that can produce porous fiber scaffolds to simulate the environment of the extracellular matrix (ECM). In this study, an ELS technique was used to fabricate polyvinyl alcohol (PVA) tissues and graphene nanosheet (Gr-NS) added with omega- ω fatty acids (O ω FA) was loaded in these tissues that support nerve tissue regeneration. For this purpose, PVA and Gr-NS for biaxial ELS, PVA containing 0.5 wt%, and 1 wt% of Gr-NS was used.. Then, the morphology of these scaffolds was observed by optical microscopy and scanning electron microscopy (SEM) technique. **Results:** The results show after loading of O ω FA, the fiber diameter reaches $0.573 \pm 0.12 \mu\text{m}$, which is within the range of dimensions required for nerve tissue engineering. FTIR analysis indicates that Gr-NS and O ω FA have been well loaded in the scaffolds. The results of water absorption and biodegradation tests demonstrated that the sample with 0.5% Gr-NS has 211.98% and 16.54% water absorption and biodegradation after 48 hr and 6 days, respectively. **Conclusion:** Finally, the results of this study indicate that scaffolds loaded with 0.5% Gr-NS have a homogeneous, porous, and integrated structure which can be effective in .nerve tissue engineering

کلمات کلیدی:

Graphene nanosheet, Neural tissue engineering, Omega- ω Fatty Acids, Polyvinyl alcohol, Treatment

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