Fabrication Strategies of Scaffolds for Delivering Active Ingredients for Tissue Engineering

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Abstract

Designing scaffolds with optimum properties is an essential factor for tissue engineering success. They can be seeded with isolated cells or loaded with drugs to stimulate the body ability to repair or regenerate the injured tissues by acting as centers for new tissue formation. Recently, scaffolds gained a significant interest as principal candidates for tissue engineering due to overcoming the autograft or allograftôs associated problems. The advancement of the tissue engineering field relies mainly on the introduction of new biomaterials for scaffoldsô fabrication. This review presents and criticizes different scaffoldsô fabrication techniques with particular emphasis on the fibrous, injectable in situ forming, foam, 3D freeze-dried, 3D printed, and 4D scaffolds. This article highlights on scaffoldsô composition which would be beneficial for developing scaffolds that could potentially help to meet the demand for both drug delivery and tissue regeneration.

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