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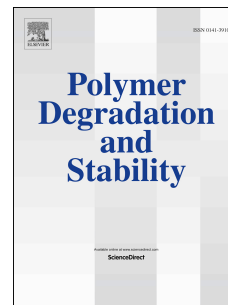
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Preparation, characterization, degradation and biocompatibility of different silk fibroin based composite scaffolds prepared by freeze-drying method for tissue engineering application

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ABSTRACT

Silk fibroin/gelatin/nanohydroxyapatite (SF/GE/nHAp) composite scaffolds were prepared from the mixture of silk fibroin, gelatin and nHAp in different inorganic/organic weight ratios by employing the freeze-drying approach. The prepared nHAp and composite scaffolds were investigated using BET, FT-IR, SEM, and XRD studies. The composite scaffolds had 45–60% porosities with well-defined interlinked porous networks. In addition, the investigation of the cell proliferation, adhesion and viability using MTT, DMEM solution, and mouse preosteoblast cell confirmed the cytocompatible nature of the composite scaffolds with improved cell proliferation and attachment. All these results essentially showed that this composite could be a potential candidate for bone tissue engineering application.

Keywords: Silk fibroin, Gelatin, Nanohydroxyapatite, Composite scaffold, Tissue engineering

1. Introduction

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