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Articles

Solvent-free polymer/bioceramic scaffolds for bone tissue engineering: fabrication, analysis, and cell growth

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Abstract

This stud… d
polycapr… lt molding
and porc… c solvents is
desirabl… HA particles
(~5 µm … perties for
thes… gen due to
its simil… ntrolled by
limiting … f HA in the
fabricate… echanical
testing w… nd the pore
size dist… nning
electron microscopy (SEM) was used to examine the effect on scaffold morphology

caused by the addition of HA particles. Both μCT and SEM results showed that HA could be incorporated into PCL scaffolds without negatively affecting scaffold morphology or pore formation. Energy-dispersive X-ray spectroscopy (EDS) and elemental mapping demonstrated a uniform distribution of HA within PCL/HA scaffolds. Murine calvaria-derived MC3T3-E1 cells were used to determine whether cells could attach on scaffolds and grow for up to 21 days. SEM images revealed an increase in cell attachment with the incorporation of HA into the scaffolds. Similarly, DNA content analysis showed a higher cell adhesion to PCL/HA scaffolds.

Keywords: bone polycaprolactone hydroxyapatite scaffolds tissue engineering cell culture

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