

## Electrospun Hydroxyethyl Cellulose Nanofibers Functionalized With Calcium Phosphate Coating for Bone Tissue Engineering

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### ABSTRACT

The aim of this study is to develop a facile and efficient scaffold from electrospun hydroxyethyl cellulose (HEC) functionalized with bone-like calcium phosphate (CaP). The HEC/PVA nanofibers were fabricated by electrospinning and mineralized by incubating in 10× simulated body fluid (SBF) for different period of times. After 24 h of incubation, the nanofibers were uniformly coated by a thin layer of mineral deposit. SEM, FTIR, and FESEM-EDS analyses confirm the deposition of CaP on the nanofibers. The nanostructured biomaterial maintained its fibrous and porous structure after mineralization. The XRD results suggest that the deposited mineral phase is a mixture of calcium phosphate hydrate and apatite. The mechanical properties of CaP coated scaffolds show similar tensile strength and elastic modulus with that of trabecular and proximal femoral bones. The cytocompatibility of the CaP coated HEC/PVA scaffolds were evaluated using human osteosarcoma cells. The CaP coated HEC/PVA scaffolds support cellular attachment and proliferation of osteosarcoma cells and will be a promising candidate for bone tissue engineering.

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