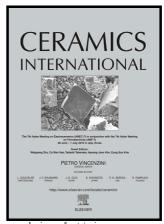
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Three-dimensional coating of porous zein/PLLA coaxial nanofiber membranes on surfaces of calcium phosphate cement

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Three-dimensional coating of porous zein/PLLA coaxial nanofiber membranes on surfaces of calcium

phosphate cement

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Abstract

Calcium phosphate cement (CPC) is an ideal artificial bone material used widely in hard tissue

regeneration due to its excellent physical and chemical performance. However, CPCs are not able to

match the high rate of new bone tissue growth during initial implantation given its poor degradability and

low biological compatibility, leading to their limited clinical application. To overcome these limitations,

we developed a self-made electrospinning auxiliary receiver to obtain a three dimensional membrane

coating of porous zein/PLLA coaxial nanofibers on CPC surfaces. To show the feasibility of the

composite material for hard tissue regeneration, it was characterized by SEM, porosity, hydrophilicity,

mechanical properties, FTIR spectroscopy, and in vitro cell culture where the composite material showed

improved induction of tissue regeneration.

Keywords: Three-dimensional coating, Porosity, Electrospinning, Zein, Calcium phosphate cement

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