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Calcium phosphate /poly (Ethylene glycol) bone cement: Cell culture performance (Article)

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Abstract

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Calcium phosphate cement (CPC) for injectable bone cement application has been developed in this study. The CPC was produced using a novel wet chemical precipitation method derived hydroxyapatite (HA) powder. The calcium and phosphorus precursors used to synthesize HA powder were calcium hydroxide, $Ca(OH)_2$, and di-ammonium hydrogen phosphate, $(NH_4)_2HPO_4$. The HA powder was mixed with distilled water at certain powder-to-liquid (P/L) ratios. In this study, the P/L ratios were varied at 1.3 and 1.7. PEG was added into CPC with the P/L ratio of 1.3, and it was adjusted at 1 and 5 wt%. The results of this study revealed that higher P/L ratio contributed to the decreased in porosity of CPC. Meanwhile, the addition of PEG increased the porosity of CPC. This is significant for cells adhesion and proliferation, such that cell proliferate faster and better adhesion with the incorporation of PEG into CPC. The cell culture on CPC has proven that the fabricated CPC shows no toxic reaction and cells grow well. © BEIESP.

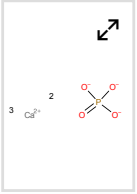
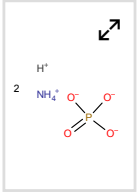
SciVal Topic Prominence

Topic: Calcium phosphate | Bone cement | Cement CPC

Prominence percentile: 96.253

Chemistry database information

Substances



P
tetracalcium phosphate
hydroxyapatite

Author keywords

Calcium phosphate cement | Injectable | Polymeric additive | Vero cell culture | Wet chemical precipitation

Funding details

Funding sponsor	Funding number	Acronym

Metrics

Field-Weighted Citation Impact

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Effect of poly (Ethylene Glycol) on the injectability, setting behavior, and mechanical properties of calcium phosphate bone cement
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Antiwashout behavior of calcium phosphate cement incorporated with Poly(ethylene glycol)
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Novel Injectable Calcium Phosphate Bone Cement from Wet Chemical Precipitation Method
Hablee, S. , Sopyan, I. , Mel, M. (2017) IOP Conference Series: Materials Science and Engineering

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