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Development and In Vitro Analysis of a New Biodegradable PLA/Hydroxyapatite (HAp) Composite for Biomedical Applications

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Abstract

The development of new drugs or formulations for the treatments of different musculoskeletal disorders (MSDs) has now being a focus of pharmaceutical and scientific societies. Targeted and multidelivery of drug and key minerals to support bone repair and regeneration at the defect site, from flexible biodegradable devices at the rate within the therapeutic window, seem to be an effective strategy. However, the drug delivery vehicles available are neither flexible and degradable nor able to deliver both pharmaceutical drug and minerals effectively. The use of biodegradable polymer and bioceramic for composite development with enough flexibility and potential for slow in situ drug delivery for biomedical applications could be one of the real options to mitigate MSDs problem. In vitro analysis of the developed devices is a vital step towards clinical trial and commercialization of the implant. Different approach and results have been compared to draw guidelines for the development and testing of thin film composite applications as a slow drug delivery vehicle.

Keywords

Polylacticacid Hydroxyapatite Biocomposite Drug delivery Antibiotics in vitro analysis Stem cells Biofilms

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