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Novel injectable neutral solutions of chitosan form biodegradable gels in situ

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Abstract

A novel approach to provide, thermally sensitive neutral solutions based on chitosan/polyol salt combinations is described. These formulations possess a physiological pH and can be held liquid below room temperature for encapsulating living cells and therapeutic proteins; they form monolithic gels at body temperature. When injected in vivo the liquid formulations turn into gel implants in situ. This system was used successfully to deliver biologically active growth factors in vivo as well as an encapsulating matrix for living chondrocytes for tissue engineering applications. This study reports for the first time the use of polymer/polyol salt aqueous solutions as gelling systems, suggesting the discovery of a prototype for a new family of thermosetting gels highly compatible with biological compounds.



Keywords

Chitosan; Glycerophosphate; Thermosetting gels; Chondrocytes; Bone protein

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