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Oxysterols as promising small molecules for bone tissue engineering: Systematic review

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Abstract

BACKGROUND

Bone tissue engineering is an area of continued interest within orthopaedic surgery, as it promises to create implantable bone substitute materials that obviate the need for autologous bone graft. Recently, oxysterols – oxygenated derivatives of cholesterol – have been proposed as a novel class of osteoinductive small molecules for bone tissue engineering. Here, we present the first systematic review of the *in vivo* evidence describing the potential therapeutic utility of oxysterols for bone tissue engineering.

AIM

To systematically review the available literature examining the effect of oxysterols on *in*

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Scaffolds have been used as vehicles for the controlled delivery of **small-molecule drugs**, proteins, and nucleic acid for **engineering** various **musculoskeletal tissues**, such as **bone**, skin, nerve, cartilage, ligament, and **muscle** [34]. For **bone tissue-engineering applications**, scaffolds are usually biocompatible, 3D,...

Cited by: 93 **Author:** Cato T. Laurencin, Keshia M. Ashe, Nicol...
Publish Year: 2014

The performance of bone tissue engineering scaffolds in in ...

https://journals.sagepub.com/doi/10.1177/0885328216656476

Bone tissue engineering is an excellent alternative for the regeneration of large **bone** defects caused by trauma or **bone** pathologies. Scaffolds, stem cells, and bioactive **molecules** are the three key components of **bone** regeneration.

Cited by: 9 **Author:** Marcos Ricardo Dantas Oliveira Ferraz de...
Publish Year: 2016

Small molecule delivery through ... - PubMed Central (PMC)

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4497775

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Delivery of **small molecules**. Despite the fact that emerging **small molecules** show promise in various orthopedic applications, their use is limited by their nonspecific adverse effects on nontarget tissues and organs [11,27].The key to success with utilizing **small molecules for bone** regeneration is designing suitable delivery systems to localize and sustain the controlled release of **small** ...

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The Use of Adipose Tissue-Derived Progenitors in Bone ...

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Sep 15, 2016 · **Bone tissue engineering** strategies using stem cells, growth factors, and scaffolds could overcome the problems with the treatment of extended **bone** defects. In this **review**, we give a short overview on **bone tissue engineering** with emphasis on the use of adipose **tissue**-derived stem cells and **small molecules**.

Cited by: 9 **Author:** Indranil Bhattacharya, Chafik Ghayor, ...
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Systematic scoping review of mandibular bone tissue ...

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Tissue engineering is a **promising** alternative that may facilitate **bony regeneration** in **small defects** in compromised **host tissue** as well as large mandibular defects. This **scoping systematic review** was therefore designed to assess in vivo research on its use in the reconstruction of mandibular defects in animal models.

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