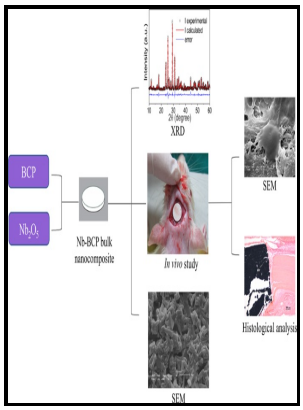
Observations of multinucleate giant cell reactions to calcium phosphate biomaterials

University of Birmingham - Osteoinduction with highly purified β



Description: -
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Notes: Thesis (M.Sc.) - University of Birmingham, Department of Anatomy, 1992.
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Polyhydroxyalkanoates (PHA): From production to nanoarchitecture

With calcium ions, the SNAREs interact and self-assemble into a ring conformation to form conducting channels. Mineral deposition in the extracellular matrices of vertebrate tissues: identification of possible apatite nucleation sites on type I collagen. Nano-sized surface structures provide important cues to regulate cell orientation and morphology.

Utilization of activated U937 monocytic cells as a model to evaluate biocompatibility and biodegradation of synthetic calcium phosphate

These findings highlight the critical role of macrophage polarization in biomaterial-dependent osteoinduction, which not only deepens our understanding of osteoinductive mechanisms but also provides a strategy to design bone substitutes by endowing materials with the proper immunomodulatory abilities to achieve the desired clinic performance. Scanning electron microscopy revealed the formation of nano-sized elongated HA crystals in CPC.

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This was consistent with another study showing that the presence of TCP or HA nanocrystals on a poly-caprolactone PCL nanofiber surface positively affected hBMSC differentiation toward an osteogenic commitment, achieving a high level of osteogenic differentiation, similar to that via osteogenic supplements.

In vivo cellular reactions to different biomaterials

These cell types release chemokines and cytokines that recruit tissue repair cells to the site of inflammation. This crystalline solid was converted to β-TCP by calcination at 750 °C for 1 h. Only a small amount of new bone spicules was found around the hybrids when one million cells were seeded, while substantial bone formation was observed throughout the whole hybrids when three million cells were seeded.

Macrophages, Foreign Body Giant Cells and Their Response to Implantable Biomaterials.

This feature makes these stem cells an extremely valuable and potent cell source. Recently, employing PHAs for nanoarchitecture has become a newly emerging trend among researchers.

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We conclude that HA and β- TCP are thought to have an inhibitory effect on growth of the myoblasts. The control group had the same CPC compositions with the same alginate-fibrin microbeads but without encapsulating cells. The insulin-like growth factors 2 IGF2 is a peptide hormone that binds to the insulin-like growth factor 1 receptor IGF1R and is abundantly stored in bone.

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The focus of this work is to elucidate the biological effects of various calcium phosphate bioceramics on skeletal muscles.

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