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Use of bone morphogenetic proteins in mesenchymal stem cell stimulation of cartilage and bone repair

Sonia Scarfi

Abstract

The extracellular matrix-associated bone Morphogenetic Proteins (BMPs) govern a plethora of biological processes. The BMPs are members of the TGF β protein superfamily, and they actively participate to kidney development, digit and limb formation, angiogenesis, tissue fibrosis and tumor development. Since their discovery, they have attracted attention for their fascinating perspectives in the regenerative medicine and tissue engineering fields. BMPs have been employed in many preclinical and clinical studies exploring their chondrogenic or osteoinductive potential in several animal model defects and in human diseases. During years of research in particular two BMPs, BMP2 and BMP7 have gained the podium for their use in the treatment of various cartilage and bone defects. In particular they have been recently approved for employment in non-union fractures as adjunct therapies. On the other hand, thanks to to their potentialities in biomedical applications, there is a growing interest in studying the biology of MSC, the rules underneath their differentiation abilities, and to test

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