

promising method for producing large scale amounts of recombinant BMPs, in pure and bioactive form, for novel biomedical applications.

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(P 168) Expression, Purification and Bioactivity of Recombinant Human Bone Morphogenetic Protein-4, -9, -10, -11 and -14 Produced in Escherichia Coli for Tissue Engineering Applications

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Bone morphogenetic proteins (BMPs) are cytokines from the TGF- β superfamily, with important roles during embryonic development and in inducing bone and cartilage in the adult body. In this contribution, we report the expression of recombinant human BMP-4, BMP-9, BMP-10, BMP-11 (or growth differentiation factor-11, GDF-11) and BMP-14 (GDF-5), using *Escherichia coli* pET-25b expression system. The BMPs were purified by affinity chromatography and its bioactivity accessed in C2C12 cell line, by screening the expression of osteogenic markers with RT-PCR. The expression of Smad-1, Smad-3, Smad-5, Runx2/cbfa1, Osterix, Bone sialoprotein, Osteopontin and ALP was increased with some or all of these BMPs, while Smad-7 was down-regulated, coinciding with the different changes in cell morphology. No cytotoxicity was observed and around 200 mg of BMPs were purified per Liter of batch. Ongoing work includes bioactivity assays in human adipose stem cells and with the effect of heparin on the BMP activity. The approach described here is a