9051 Mira Mesa Blvd, #910094
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BMP13 Human

Bone Morphogenetic protein-13 Human Recombinant
CYK0088

Product Overview

Name	BMP13 Human
Description	
Bone Morphogenetic protein-13 Human Recombinant	
Accession (Primary)	Q6KF10
Synonyms	
Growth Differentiation Factor 6, Growth/Differentiation Factor 16, Bone Morphogenetic Protein 13, BMP-13, BMP13, GDF-6, Klippel-Feil Malformation, Segmentation Syndrome 1, Klip-Feil Malformation, Klippel-Feil Syndrome, MCOPCB6, SCDO4, CDMP2, LCA17, MCOP4, GDF16, KFS1, KFSL, SGM1, KFM, KFS, GDF6.	
Introduction	
Growth/differentiation factors (GDF1-GDF15) belong to the BMP family of TGF-beta superfamily proteins. These factors are produced as inactive preproproteins which are subsequently cleaved and assembled into active secreted homodimers. BMP13 is a growth factor which controls proliferation and cellular differentiation in the retina and bone formation. BMP13 has a central role in regulating apoptosis during retinal development. GDF proteins are vital during embryonic development, particularly in the skeletal, nervous, and muscular systems. BMP13 gene mutations result in colobomata, which are congenital abnormalities in ocular development, and in Klippel-Feil syndrome (KFS), which is a congenital disorder of spinal segmentation.	
Source	
Escherichia Coli.	
Physical Appearance	
Sterile Filtered White lyophilized (freeze-dried) powder.	
Formulation	
BMP-13 protein was lyophilized from a 0.2 μm filtered concentrated solution in 30% Acetonitrile and 0.1% TFA.	
Stability	
Lyophilized BMP13 although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution BMP-13 should be stored at 4°C between 2-7 days and for future use below -18°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Please prevent freeze-thaw cycles.	
Purity	
Greater than 95.0% as determined by: (a) Analysis by HPLC. (b) Analysis by SDS-PAGE.	

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Amino acid sequence

TAFASRHGKR HGKKSRLRCS KKPLHVNFKE LGWDDWIIAP LEYEAYHCEG VCDFPLRSHL EPTNHAIIQT LMNSMDPGST PPSCCVPTKL TPISILYIDA GNNVVYKQYE DMVVESCGCR.

Biological Activity

The ED 50 as determined by inducing alkaline phosphatase production of murine ATDC5 cells is less than 2.0 µg/ml, corresponding to a specific activity of > 500IU/mg.

Solubility

It is recommended to reconstitute the lyophilized BMP13 in sterile 18M-cm H 2 O not less than 100 µg/ml, which can then be further diluted to other aqueous solutions.

Background

Bone Morphogenetic Protein-13 Human Recombinant: Unraveling its Potential in Tissue Engineering and Regenerative Medicine Abstract: Bone Morphogenetic Protein-13 (BMP-13) human recombinant is a pivotal member of the bone morphogenetic protein family, known for its crucial role in tissue development, regeneration, and repair. This research paper aims to provide a comprehensive analysis of BMP-13, including its characteristics, signaling pathways, and potential therapeutic applications. Furthermore, innovative methodologies for the production and optimization of BMP-13 human recombinant are proposed, shedding light on its future implications in the field of tissue engineering and regenerative medicine. Introduction: Tissue engineering and regenerative medicine hold great promise in addressing tissue repair and regeneration challenges. BMP-13, a prominent member of the BMP family, plays a vital role in orchestrating cellular responses during tissue development and healing. This paper explores the distinctive features of BMP-13 and presents novel approaches for the production and optimization of BMP-13 human recombinant, aiming to unlock its therapeutic potential in various regenerative contexts. Characteristics and Signaling Pathways: BMP-13 is a secreted growth factor belonging to the transforming growth factor-beta (TGF-β) superfamily. It exerts its biological effects by binding to specific cell surface receptors, initiating intricate intracellular signaling cascades. BMP-13 signaling pathways, including Smad-dependent and Smad-independent pathways, regulate critical processes such as cell differentiation, proliferation, and extracellular matrix synthesis, influencing tissue development and repair. Production of BMP-13 Human Recombinant: Efficient production methodologies are crucial for harnessing the therapeutic potential of BMP-13 human recombinant. Various recombinant protein expression systems, such as mammalian cells or baculovirus-insect cell systems, have been utilized for the production of functional BMP-13. Optimization strategies, including codon optimization, signal peptide engineering, and protein folding enhancement, have been employed to improve the yield and bioactivity of BMP-13 recombinant protein. Potential Therapeutic Applications: BMP-13 human recombinant holds immense promise in the field of tissue engineering and regenerative medicine. Its involvement in cartilage formation, osteogenesis, and tissue repair makes it a potential candidate for the treatment of musculoskeletal disorders, joint injuries, and cartilage defects. Furthermore, the ability of BMP-13 to modulate cell behavior and tissue remodeling indicates its wider therapeutic applications in diverse regenerative processes. Conclusion: BMP-13 human recombinant emerges as a crucial regulator in tissue engineering and regenerative medicine, offering significant potential for tissue repair and regeneration. Optimizing production

methodologies and further unraveling its signaling mechanisms will undoubtedly enhance its therapeutic applications. Given its involvement in cartilage and bone formation, as well as tissue repair, BMP-13 human recombinant represents a valuable tool for promoting tissue regeneration and addressing the unmet clinical needs in regenerative medicine.

References

Bibliography: Chubinskaya S, Segalite D, Pikovsky D, Hakimiyan A, Rueger DC. Effects induced by BMPS in cultures of human articular chondrocytes: comparative studies. Growth Factors. 2008;26(5):275-283. Lyons KM, Hogan BL, Robertson EJ. Colocalization of BMP 7 and BMP 2 RNAs suggests that these factors cooperatively mediate tissue interactions during murine development. Mech Dev. 1995;50(1):71-83. Vukicevic S, Luyten FP, Kleinman HK, Reddi AH. Differentiation of canalicular cell processes in bone cells by basement membrane matrix components: regulation by discrete domains of laminin. Cell. 1990;63(2):437-445. Zhu W, Rawlins BA, Boachie-Adjei O, et al. Combined bone morphogenetic protein-2 and -7 gene transfer enhances osteoblastic differentiation and spine fusion in a rodent model. J Bone Miner Res. 2004;19(12):2021-2032. Zhang W, Deng D, Lv D, et al. Role of bone morphogenetic protein 13 in osteogenic differentiation of rat dental follicle stem cells. Stem Cells Dev. 2012;21(11):library-1296.

Precautions

BMP13 Human is for research use only and not for use in diagnostic or therapeutic procedures.

Target Information: (Q6KF10)

Background

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exerts its biological effects by binding to specific cell surface receptors, initiating intricate intracellular signaling cascades. BMP-13 signaling pathways, including Smad-dependent and Smad-independent pathways, regulate critical processes such as cell differentiation, proliferation, and extracellular matrix synthesis, influencing tissue development and repair. Production of BMP-13 Human Recombinant: Efficient production methodologies are crucial for harnessing the therapeutic potential of BMP-13 human recombinant. Various recombinant protein expression systems, such as mammalian cells or baculovirus-insect cell systems, have been utilized for the production of functional BMP-13. Optimization strategies, including codon optimization, signal peptide engineering, and protein folding enhancement, have been employed to improve the yield and bioactivity of BMP-13 recombinant protein. Potential Therapeutic Applications: BMP-13 human recombinant holds immense promise in the field of tissue engineering and regenerative medicine. Its involvement in cartilage formation, osteogenesis, and tissue repair makes it a potential candidate for the treatment of musculoskeletal disorders, joint injuries, and cartilage defects. Furthermore, the ability of BMP-13 to modulate cell behavior and tissue remodeling indicates its wider therapeutic applications in diverse regenerative processes. Conclusion: BMP-13 human recombinant emerges as a crucial regulator in tissue engineering and regenerative medicine, offering significant potential for tissue repair and regeneration. Optimizing production methodologies and further unraveling its signaling mechanisms will undoubtedly enhance its therapeutic applications. Given its involvement in cartilage and bone formation, as well as tissue repair, BMP-13 human recombinant represents a valuable tool for promoting tissue regeneration and addressing the unmet clinical needs in regenerative medicine.

References for protein:

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