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BMP 5 Human

Bone Morphogenetic protein-5 Human Recombinant
CYK0083

Product Overview

Name	BMP 5 Human
Description	
Bone Morphogenetic protein-5 Human Recombinant	
Accession (Primary)	P22003
Synonyms	
Bone morphogenetic protein 5, BMP-5, BMP5, MGC34244.	
Introduction	
BMP5 belongs to the bone morphogenetic protein family which is part of the transforming growth factor-beta superfamily. This superfamily is comprised of large families of growth and differentiation factors. Bone morphogenetic proteins were initially identified by their ability of demineralizing bone extract to induce endochondral osteogenesis in vivo in an extraskeletal site. BMP5 is an essential signaling molecule within the trabecular meshwork and optic nerve head, and may play a potential role in glaucoma pathogenesis. It was shown that BMP-5 increases the levels of osteopontin, BMP-2, alkaline phosphatase and core binding factor alpha 1 mRNAs in human periodontal (HPL) ligament cells. The BMP5 protein is expressed in normal synovial tissue and reduced in osteoarthritis and rheumatoid arthritis. BMP5 may have a role in certain cancers given that it is differentially regulated during the formation of different tumors.	
Source	
Escherichia Coli.	
Physical Appearance	
Sterile Filtered colorless solution.	
Formulation	
The BMP-5 solution contains 10mM Sodium Citrate buffer (pH3.5) and 10% Glycerol.	
Stability	
Store at 4°C if entire vial will be used within 2-4 weeks. Store, frozen at -20°C for longer periods of time. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Avoid multiple freeze-thaw cycles.	
Purity	
Greater than 95.0% as determined by SDS-PAGE.	
Amino acid sequence	

MAANKRKNQN RNKSSSHQDS SRMSSVGDYN TSEQKQACKK HELYVSFRDL GWQDWIIAPE GYAAFYCDGE CSFPLNAHMN ATNHAIVQTL VHLMFPDHVP KPCCAPTKLN AISVLYFDDS SNVILKKYRN MVVRSCGCH.

Background

Bone Morphogenetic Protein-5 Human Recombinant: Unleashing the Potential for Tissue Engineering and Regenerative Medicine Abstract: Bone Morphogenetic Protein-5 (BMP-5) human recombinant is a pivotal member of the bone morphogenetic protein family, known for its crucial role in tissue development, repair, and regeneration. This research paper provides an in-depth analysis of BMP-5, including its characteristics, signaling pathways, and potential therapeutic applications. Additionally, innovative methodologies for the production and optimization of BMP-5 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 for addressing the challenges of tissue repair and regeneration. BMP-5, a prominent member of the BMP family, plays a vital role in orchestrating cellular responses during tissue development and healing. This paper explores the unique features of BMP-5 and presents novel approaches for the production and optimization of BMP-5 human recombinant, aiming to unlock its therapeutic potential in various regenerative contexts. Characteristics and Signaling Pathways: BMP-5 is a secreted growth factor that belongs to the transforming growth factor-beta (TGF-β) superfamily. It exerts its biological effects by binding to specific cell surface receptors, initiating intracellular signaling cascades. BMP-5 signaling pathways, including Smad-dependent and Smad-independent pathways, regulate crucial processes such as cell differentiation, proliferation, and extracellular matrix synthesis, thereby influencing tissue development and repair. Production of BMP-5 Human Recombinant: Efficient production methodologies are crucial for harnessing the therapeutic potential of BMP-5 human recombinant. Recombinant protein expression systems, including mammalian cells or baculovirus-insect cell systems, have been utilized for the production of functional BMP-5. Optimization strategies, such as codon optimization, signal peptide engineering, and protein folding enhancement, have been employed to improve the yield and bioactivity of BMP-5 recombinant protein. Potential Therapeutic Applications: BMP-5 human recombinant holds tremendous potential in the field of tissue engineering and regenerative medicine. It plays a crucial role in bone formation, cartilage regeneration, and wound healing, making it a promising candidate for the treatment of skeletal disorders, osteochondral defects, and tissue injuries. Furthermore, the ability of BMP-5 to modulate cell behavior and tissue remodeling highlights its broader therapeutic applications in diverse regenerative processes. Conclusion: BMP-5 human recombinant emerges as a key regulator in tissue engineering and regenerative medicine, with significant implications for tissue repair and regeneration. Optimizing production methodologies and further elucidating its signaling mechanisms will enhance its therapeutic applications. With its involvement in bone and cartilage formation, as well as wound healing, BMP-5 human recombinant represents a promising tool for promoting tissue regeneration and addressing the challenges of tissue repair in various clinical contexts.

References

Bibliography: Celeste AJ, Iannazzi JA, Taylor RC, et al. Identification of transforming growth factor beta family members present in bone-inductive protein purified from bovine bone. Proc Natl Acad Sci U S A. 1990;87(24):9843-9847. Luyten FP, Cunningham NS, Ma S, et al. Purification and partial amino acid sequence of

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Precautions

BMP 5 Human is for research use only and not for use in diagnostic or therapeutic procedures.

Target Information: (P22003)

Background

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References for protein:

Bibliography: Celeste AJ, Iannazzi JA, Taylor RC, et al. Identification of transforming growth factor beta family members present in bone-inductive protein purified from bovine bone. Proc Natl Acad Sci U S A. 1990;87(24):9843-9847. Luyten FP, Cunningham NS, Ma S, et al. Purification and partial amino acid sequence of osteogenin, a protein initiating bone differentiation. J Biol Chem. 1989;264(23):13377-13380. Lyons KM, Pelton RW, Hogan BL. Organogenesis and pattern formation in the mouse: RNA distribution patterns suggest a role for bone morphogenetic protein-2A (BMP-2A). Development. 1990;109(4):833-844. Reddi AH, Cunningham NS. Initiation and promotion of bone differentiation by bone morphogenetic proteins. J Bone Miner Res. 1993;8 Suppl 2:S499-502. Solloway MJ, Robertson EJ. Early embryonic lethality in Bmp5;Bmp7 double mutant mice suggests functional redundancy within the 60A subgroup. Development. 1999;126(8):1753-1768.