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Product Information

HumanKine™ Bone Morphogenic Protein 4, human recombinant, expressed in HEK 293 cells

Catalog Number **H4916**
Storage Temperature –20 °C

Synonym: BMP-4

Product Description

HumanKine™ BMP-4 is expressed in human 293 cells as a glycosylated 34 kDa homodimer.[1] Production in human 293 cells offers authentic glycosylation. Glycosylation contributes to stability in cell growth media and other applications. Mature human and mouse BMP-4 are 98% and 100% identical, respectively, to mature rat BMP-4 in their amino acid sequence.

Bone Morphogenetic Proteins (BMP) are members of the TGF-β superfamily of cytokines that affect bone and cartilage formation.[2-4] Similar to other TGF-β family proteins, BMPs are highly conserved across animal species. Mature BMPs are 30–38 kDa proteins that assume a TGF-β-like cysteine knot configuration. Unlike TGF-β, BMPs do not form latent complexes with their propeptide counterparts. Most BMPs are homodimers, but bioactive natural heterodimers have been reported.

BMPs create an environment conducive for bone marrow development by stimulating the production of specific bone matrix proteins and altering stromal cell and osteoclast proliferation.[5,6] In addition to stimulating ectopic bone and cartilage development, BMPs may be an important factor in the development of the viscera, with roles in cell proliferation, apoptosis, differentiation, and morphogenesis.[2,7] BMPs also appear to be responsible for normal dorsal/ventral patterning.

BMP-4 specifies the development of ventral structures (*e.g.*, skin from ectoderm and connective tissue/blood from mesoderm). Dorsal structures (nervous system and muscle) apparently appear when BMP-4 signals are interrupted through the activities of binding proteins.[8] BMPs are found in tissues that induce bone or cartilage growth, such as demineralized bone and urinary epithelium.

Cellular responses to BMP-4 are mediated by the formation of hetero-oligomeric complexes of type I and type II serine/threonine kinase receptors,[9] which play significant roles in BMP binding and signaling. Two BMP type I receptors and one BMP type II receptor have been identified. Both BMP type I receptors bind BMP-4 with high-affinity in the absence of BMP receptor type II.

This product is lyophilized from a PBS solution.

ED_{50}: ≤20 ng/mL

The specific activity was determined by the dose-dependent induction of alkaline phosphatase production in the ATDC-5 cell line (mouse chondrogenic cell line).

Purity: ≥95% (SDS-PAGE)

Endotoxin level: ≤1 EU/μg

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Briefly centrifuge the vial before opening. It is recommended to reconstitute the protein in sterile 4 mM HCl containing 0.1% endotoxin-free recombinant human serum albumin.

Storage/Stability

Store the product at –20 °C. The lyophilized product remains active for one year at –20 °C.

Upon reconstitution, the cytokine can be stored at 2–8 °C for short term only, or at –20 °C to –80 °C in aliquots for long term. Avoid repeated freeze-thaw cycles.

References

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