

Product Information

Bone Morphogenetic Protein 6, human recombinant, expressed in mouse NSO cells

Catalog Number **B2805**

Storage Temperature $-20\text{ }^{\circ}\text{C}$

Synonym: BMP-6

Product Description

Bone Morphogenetic Protein 6 (BMP-6) is produced from a DNA sequence encoding the human BMP-2 signal peptide and propeptide (amino acid residues 1–282) fused to the human BMP-6 mature subunit (amino acid residues 382–513) expressed in mouse myeloma NSO cells.¹ Mature human BMP-6, generated after the proteolytic removal of the signal peptide and the propeptide, is a disulfide-linked homodimeric protein, containing two 132 amino acid residue subunits. Each subunit has a calculated molecular mass of ~15 kDa. Due to glycosylation, the recombinant protein migrates as a doublet of ~18 kDa and 23 kDa protein under reducing conditions in SDS-PAGE. Mature human and mouse BMP-6 share 96% amino acid sequence identity.

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. It was found that lovostatin (Mevinolin, Catalog Number M2147), widely used for lowering cholesterol, also increases bone formation by turning on a gene (*bmp-2*) that promotes local bone formation.⁵ BMPs are involved in embryogenesis and morphogenesis of various tissues and organs. They create an environment conducive for bone marrow development by stimulating the production of specific bone matrix proteins and altering stromal cell and osteoclast proliferation.^{6,7} In addition to stimulating ectopic bone and cartilage development, BMPs may be an important factor in the development of the viscera.

BMPs regulate the growth, differentiation, chemotaxis, proliferation, and apoptosis of various cell types, including mesenchymal cells, epithelial cells, hematopoietic cells, and neuronal cells.^{2,8} BMPs also appear to be responsible for normal dorsal/ventral patterning and can be found in tissues that induce bone or cartilage growth such as demineralized bone and urinary epithelium.

BMP-6 is an autocrine stimulator of chondrocyte differentiation⁹ and has been implicated in the development of embryonic kidney and urinary systems. It is involved in liver growth and differentiation,¹⁰ keratinocyte differentiation,¹¹ and a regulator for neuronal tissue development. BMP-6 expression is localized to muscle cells in the developing human fetal intestine,¹² expanding its role as a regulator of developing tissues. Cellular responses to BMP-6 are mediated by the formation of hetero-oligomeric complexes of type I and type II serine/threonine kinase receptors,¹³ which play significant roles in BMP binding and signaling. Two BMP type I receptors and one BMP type II receptor have been identified.

Recombinant, Human Bone Morphogenetic Protein 6 is lyophilized from 200 μL of a 0.2 μm filtered solution in 40% acetonitrile and 0.1% trifluoroacetic acid (TFA) containing 50 μg of bovine serum albumin as a carrier protein.

This product is measured by its ability to induce alkaline phosphatase expression in ATDC5 chondrogenic cells.¹⁴

ED₅₀: 0.05–0.15 $\mu\text{g}/\text{mL}$

The ED₅₀ is defined as the effective concentration of growth factor that elicits a 50% increase in cell growth in a cell based bioassay.

Purity: >95% (SDS-PAGE, visualized by silver stain)

Endotoxin: <0.1 ng/ μg protein (LAL, Limulus amoebocyte lysate method)

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

Reconstitute the contents of the vial using sterile 4 mM hydrochloric acid containing at least 0.1% human serum albumin or bovine serum albumin. Prepare a stock solution of $\geq 10 \mu\text{g/mL}$.

Storage/Stability

Store the product at -20°C .

Upon reconstitution, store at $2-8^\circ\text{C}$ for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Do not store in a frost-free freezer.

References

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