

BMP-5 Protein, Human, Recombinant (hFc)

General Information

Synonyms:	bone morphogenetic protein 5
Protein Construction:	A DNA sequence encoding the carboxy-terminal domain (Gln 324-His 454) (the mature chain) of human BMP5 (NP_066551.1) was expressed with the fused Fc region of human IgG1 at the N-terminus. Predicted N terminal: Glu 20
Species:	Human
Expression Host:	HEK293 Cells
Accession:	M9VUD0
Molecular Weight:	41.5 kDa (predicted); 50-55 kDa (reducing condition, due to glycosylation)

QC Testing

Biological Activity:	Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 95 % as determined by SDS-PAGE.
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Bone Morphogenetic Protein 5 (BMP-5) is a member of the structurally and functionally related bone morphogenetic proteins (BMPs) which constitute a novel subfamily of the transforming growth factor β (TGF- β) superfamily. In agreement with a possible role in the control of cell death, BMP-5 exhibited a regulated pattern of expression in the interdigital tissue. Transcripts of BMP-5 and BMP-5 protein were abundant within the cytoplasm

of the fragmenting apoptotic interdigital cells in a way suggesting that delivery of BMPs into the tissue is potentiated during apoptosis. Gain-of-function experiments demonstrated that BMP-5 has the same effect as other interdigital BMPs inducing apoptosis in the undifferentiated mesoderm and growth in the prechondrogenic mesenchyme. BMP-5 is a member of the 60A subgroup of BMPs, other members of which have been shown to stimulate dendritic growth in central and peripheral neurons. The signaling pathway that mediates the dendrite-promoting activity of BMP-5 may involve binding to BMPR-IA and activation of Smad-1, and relative levels of BMP antagonists such as noggin and follistatin may modulate BMP-5 signaling. Since BMP-5 is expressed at relatively high levels not only in the developing but also the adult nervous system, these findings suggest the possibility that BMP-5 regulates dendritic morphology not only in the developing but also the adult nervous system. BMP-5 may play important roles not only in myocardial differentiation but also in the formation and maintenance of endocardial cushion tissue. Additionally, a high expression level of BMP-5 has been detected in certain tumors of mesenchymal origin.

Reference

- Yamagishi T, et al. (2001) Expression of bone morphogenetic protein-5 gene during chick heart development: possible roles in valvuloseptal endocardial cushion formation. *Anat Rec.* 264(4): 313-6.
- Beck HN, et al. (2001) Bone morphogenetic protein-5 (BMP-5) promotes dendritic growth in cultured sympathetic neurons. *BMC Neurosci.* 2:12.
- Zuzarte-Lus V, et al. (2004) A new role for BMP5 during limb development acting through the synergic activation of Smad and MAPK pathways. *Dev Biol.* 272(1): 39-52.

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