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Human Recombinant BMP-4

Bone morphogenetic protein 4

Catalog #78211	20 µg
Catalog #78211.1	100 µg
Catalog #78211.2	500 µg
Catalog #78211.3	1000 µg

Product Description

Bone morphogenetic protein 4 (BMP-4) is a member of the highly conserved transforming growth factor β (TGF-β) superfamily. Mature BMP-4 is a disulfide-linked homodimeric protein consisting of two 116-amino-acid residue subunits and is generated by the proteolytic removal of the signal peptide and propeptides (Xiao et al.). BMP-4 binds to type I and type II receptors on cells. This binding results in the phosphorylation of receptor 1, which in turn results in the phosphorylation of Smad proteins, which then go on to act as transcription factors (Zhang et al.). BMPs have been shown to be key regulators of embryogenesis and are known to play a role in the growth and differentiation of various cell types, including embryonic stem cells (ESCs), induced pluripotent stem cells (iPSCs), mesenchymal cells, epithelial cells, hematopoietic cells, and neuronal cells (Chadwick et al.; Graham et al.; Jones et al.; Lengerke et al.; Zhang et al.).

Product Information

Alternative Names: BMP-2B, BMP2B1, MCOPS6, OFC11, ZYME

Accession Number: P12644

Amino Acid Sequence: SPKHHSQRAR KKNKNCRRHS LYVDFSDVGW NDWIVAPPGY QAFYCHGDCP FPLADHLNST NHAIVQTLVN SVNSSIPKAC CVPTELSAIS MLYLDEYDKV VLKNYQEMVV EGCGCR

Predicted Molecular Mass: 13.1 kDa monomer; 26.2 kDa dimer

Species: Human

Product Formulation: Lyophilized from a sterile-filtered solution containing 0.1% trifluoroacetic acid.

Source: CHO

Purity: ≥ 95%

Specifications

Activity: The specific activity is ≥ 6.7 x 10^4 units/mg (EC50 ≤ 15 ng/mL) as determined by alkaline phosphatase activity induced in ATDC-5 cells.

Endotoxin Level: Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 1 EU/µg protein.

Preparation and Storage

Stability and Storage: Store at -20 to -80°C. Stable as supplied for 12 months from date of receipt.

Preparation: Centrifuge vial before opening. Reconstitute the product in 10 mM sterile hydrochloric acid to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex.

OPTIONAL: After reconstitution, if product will not be used immediately, dilute with concentrated bovine serum albumin (BSA) to a final BSA concentration of 0.1%. The effect of storage of stock solution on product performance should be tested for each application. As a general guide, do not store at 2 - 8°C for more than 1 month or at -20 to -80°C for more than 3 months. Avoid repeated freeze-thaw cycles.

Data

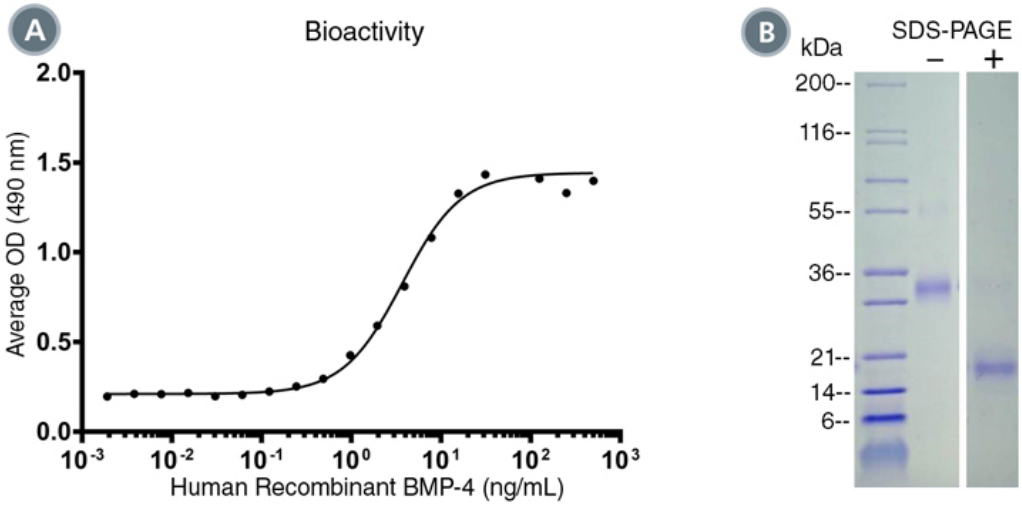

Figure 1. Biological Activity and Molecular Mass of Human Recombinant BMP-4

(A) The biological activity of Human Recombinant BMP-4 was tested by its ability to induce alkaline phosphatase production in ATDC-5 cells. Alkaline phosphatase production was measured using a fluorometric assay method. The EC50 is defined as the effective concentration of the growth factor at which alkaline phosphatase activity is at 50% of maximum. The EC50 in the above example is 3.99 ng/mL.

(B) Human Recombinant BMP-4 was resolved with SDS-PAGE under reducing (+) conditions and non-reducing (-) conditions and visualized by Coomassie Blue staining. The predicted molecular mass is 13.1 kDa (monomer) or 26.2 kDa (dimer), but these migrate to an apparent molecular mass of 20 kDa or 34 kDa, respectively, due to variable glycosylation.

Related Products

For a complete list of cytokines or peptide pools, as well as related products available from STEMCELL Technologies, visit www.stemcell.com/cytokines or contact us at techsupport@stemcell.com.

References

Chadwick K et al. (2003) Cytokines and BMP-4 promote hematopoietic differentiation of human embryonic stem cells. Blood 102(3): 906–15.

Graham A et al. (1994) The signalling molecule BMP4 mediates apoptosis in the rhombencephalic neural crest. Nature 372(6507): 684–6.

Jones C et al. (1991) Involvement of bone morphogenetic protein-4 (BMP-4) and Vgr-1 in morphogenesis and neurogenesis in the mouse. Development 111(2): 531.

Lengerke C et al. (2009) Hematopoietic development from human induced pluripotent stem cells. Ann N Y Acad Sci 1176(1): 219–27.

Xiao YT et al. (2007) Bone morphogenetic protein. Biochem Biophys Res Commun 362(3): 550–3.

Zhang P et al. (2008) Short-term BMP-4 treatment initiates mesoderm induction in human embryonic stem cells. Blood 111(4): 1933–41.