Cytokines

Human Recombinant BMP-2

Bone morphogenetic protein 2

Catalog #	78004	50 µg
	78004.1	100 µg
	78004.2	1000 µg

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Product Description

Bone morphogenetic protein 2 (BMP-2) is a member of the transforming growth factor beta (TGF-β) superfamily. BMP-2 is a disulfide-linked homodimer, acts as a ligand for complexes of type I and II BMP receptors, and primarily activates SMAD1/5/8 signaling (Nohe et al.). BMP-2 is a potent differentiation factor and directs human pluripotent stem cells (hPSCs) towards various cell types including extra-embryonic endoderm, mesenchymal cells, and chondrocytes (Pera et al.). Although BMP-2 expression is low in healthy cartilage, its expression is upregulated at the site of cartilage damage (Blaney Davidson et al.). BMP-2 induces bone and cartilage formation in vitro and is able to induce chondrogenesis in human mesenchymal stem cells (Schmitt et al.).

Product Information

Alternative Names:	BDA2, BMP-2A, BMP2, Bone morphogenetic protein 2A
Accession Number:	P12643
Amino Acid Sequence:	MQAKHKQRKR LKSSCKRHPL YVDFSDVGWN DWIVAPPGYH AFYCHGECPF PLADHLNSTN HAIVQTLVNS VNSKIPKACC VPTELSAISM LYLDENEKVV LKNYQDMVVE GCGCR
Predicted Molecular Mass:	26 kDa
Species:	Human
Cross Reactivity:	Mouse, Rat, Monkey
Formulation:	Lyophilized after dialysis against acetic acid.
Source:	E. coli

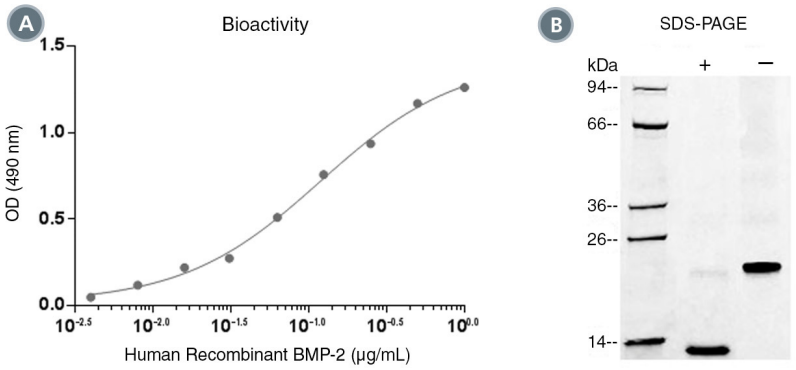
Specifications

Activity:	The specific activity is ≥ 5 x 10^3 units/mg (EC50 ≤ 0.2 µg/mL) as determined by the alkaline phosphatase activity induced in ATDC-5 cells.
Purity:	≥ 95%
Endotoxin Level:	Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 0.2 EU/µg protein.

Preparation and Storage

Storage:	Store at -80°C.
Stability:	Stable as supplied for 12 months from date of receipt.
Preparation:	Centrifuge vial before opening. Reconstitute the product in sterile 20 mM acetic acid or 5 mM hydrochloric acid to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. As a general guide, do not store at 2 - 8°C for more than 1 month or at -20°C for more than 3 months. Avoid repeated freeze-thaw cycles.

Data



(A) The biological activity of Human Recombinant BMP-2 was tested by its ability to promote alkaline phosphatase production of 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 production is at 50% of maximum. The EC50 in the above example is 0.09 µg/mL.
(B) 2 µg of Human Recombinant BMP-2 was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human Recombinant BMP-2 has a predicted molecular mass of 26 kDa.

Related Products

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

References

Blaney Davidson EN et al. (2007) Elevated extracellular matrix production and degradation upon bone morphogenetic protein-2 (BMP-2) stimulation point toward a role for BMP-2 in cartilage repair and remodeling. Arthritis Res Ther 9(5): R102.
Nohe A et al. (2001) The mode of bone morphogenetic protein (BMP) receptor oligomerization determines different BMP-2 signaling pathways. J Bio Chem 277: 5330–8.
Pera MF et al. (2004) Regulation of human embryonic stem cell differentiation by BMP-2 and its antagonist noggin. J Cell Sci 117(Pt 7): 1269–80.
Schmitt B et al. (2003) BMP2 initiates chondrogenic lineage development of adult human mesenchymal stem cells in high-density culture. Differentiation 71(9-10): 567–77.