

DESCRIPTION

Source Mouse myeloma cell line, NS0-derived
Gln382-His513
Accession # P22004

N-terminal Sequence Analysis Gln382

Structure / Form Disulfide-linked homodimer

Predicted Molecular Mass 15 kDa (monomer)

SPECIFICATIONS

SDS-PAGE 18 kDa, reducing conditions

Activity Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. Nakamura, K. *et al.* (1999) Exp. Cell Res. **250**:351.
The ED₅₀ for this effect is typically 0.02–0.15 µg/mL.

Endotoxin Level <0.10 EU per 1 µg of the protein by the LAL method.

Purity >95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

Formulation Lyophilized from a 0.2 µm filtered solution in Acetonitrile and TFA with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 100 µg/mL in sterile 4 mM HCl containing at least 0.1% human or bovine serum albumin.

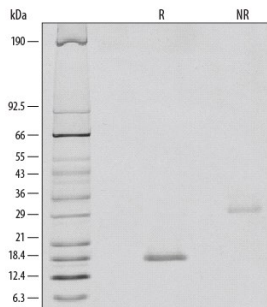
Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

- 12 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

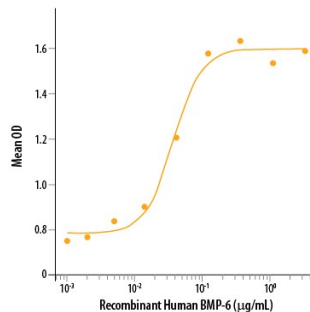
DATA

SDS-PAGE



1 µg/lane of Recombinant Human BMP-6 was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by silver staining, showing major bands at 18 kDa and 32 kDa, respectively.

Bioactivity



Recombinant Human BMP-6 (Catalog # 507-BP) induces alkaline phosphatase production in the ATDC5 mouse chondrogenic cell line. The ED₅₀ for this effect is typically 0.02–0.15 µg/mL.

BACKGROUND

Bone Morphogenetic Protein 6 (BMP-6), also known as Vgr-1, is a member of the BMP subfamily of TGF- β superfamily proteins. BMPs are involved in a wide range of processes including embryogenesis, tissue morphogenesis, cell differentiation and migration, and tumorigenesis (1). Human BMP-6 is synthesized as a 513 amino acid (aa) precursor protein that is cleaved at the dibasic cleavage site (RxxR) to release the 18 kDa C-terminal mature protein. Biologically active BMP-6 consists of a disulfide-linked homodimer of the mature protein, although it can also form heterodimers with mature BMP-2 (2, 3). Mature human BMP-6 shares 96% and 98% aa sequence identity with mouse and rat BMP-6, respectively. Cellular responses to BMP-6 are mediated by hetero-oligomeric complexes of type I (Activin RIA/ALK-2 and BMPR-IA/ALK-3) and type II (Activin RIIA and BMPR-II) serine/threonine kinase receptors (4, 5). BMP-6 induces the expression of Noggin and is subsequently antagonized by Noggin (6). BMP-6 induces a wide range of cellular responses. It promotes osteoblast differentiation from mesenchymal stem cells (7), chondrocyte maturation (8), Ang II-induced aldosterone production in the adrenal cortex (4), hormone production and responsiveness in ovarian granulosa cells (9), iNOS and TNF- α production in macrophages (5), the cell death of B cells (10), and neurite outgrowth (11). BMP-6 expression is induced in astrocytes surrounding sites of brain injury where it functions as a neuroprotectant (11, 12). It enhances tumor progression by promoting local angiogenesis and differentiation of immune tolerizing M2 macrophages (13-15). Through interactions with the BMP coreceptor RGM-C/Hemojuvelin, BMP-6 plays an important role in iron homeostasis by promoting Hcpidin expression and preventing serum iron overload (16). Heterodimers of BMP-2 and BMP-6 show increased potency at inducing osteoblastic calcium deposition, chondrogenesis, and *in vivo* bone formation compared to either BMP-2 or BMP-6 homodimers (3).

References:

1. Bragdon, B. *et al.* (2010) Cell Signal. **23**:609.
2. Celeste, A.J. *et al.* (1990) Proc. Natl. Acad. Sci. USA **87**:9843.
3. Israel, D.I. *et al.* (1996) Growth Factors **13**:291.
4. Inagaki, K. *et al.* (2006) Endocrinology **147**:2681.
5. Hong, J.H. *et al.* (2008) Immunology **128**:e442.
6. Haudenschild, D.R. *et al.* (2004) Cancer Res. **64**:8276.
7. Lavery, K. *et al.* (2008) J. Biol. Chem. **283**:20948.
8. Grimsrud, C.D. *et al.* (1999) J. Bone Miner. Res. **14**:475.
9. Shi, J. *et al.* (2009) Fertil. Steril. **92**:1794.
10. Kersten, C. *et al.* (2005) BMC Immunol. **6**:9.
11. Yabe, T. *et al.* (2002) J. Neurosci. Res. **68**:161.
12. Zhang, Z. *et al.* (2006) Neuroscience **138**:47.
13. Dai, J. *et al.* (2005) Cancer Res. **65**:8274.
14. Kwon, S.J. *et al.* (2014) Prostate **74**:121.
15. Lee, J.-H. *et al.* (2013) Cancer Res. **73**:3604.
16. Andriopoulos, B. Jr. *et al.* (2009) Nat. Genet. **41**:482.