Biotinylated Recombinant Human BMP-6

Catalog Number: BT507B

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived Gln382-His513 Accession # P22004
N-terminal Sequence Analysis	No results obtained. Gln382 expected
Structure / Form	Disulfide-linked homodimer, biotinylated via amines
Predicted Molecular Mass	15 kDa (unlabeled)

SPECIFICATIONS

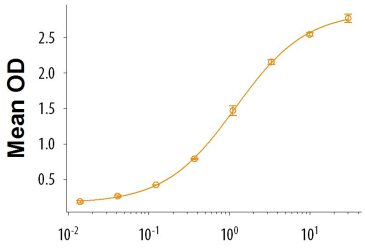
SDS-PAGE	18, 23 and 36 kDa, reducing conditions
Activity	Measured by its binding ability in a functional ELISA. In a Streptavidin coated plate (Catalog # CP004), when Biotinylated Recombinant Human BMP-6 is used at 0.25 µg/mL, it binds Recombinant Human Activin RIA/ALK-2 Fc Chimera (Catalog # 637-AR) with an ED_{50} of 0.2-1.2 µg/mL 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 ED_{50} for this effect is 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 HCl with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in 4 mM HCl.
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

Bioactivity



When Biotinylated Recombinant Human BMP-6 (Catalog # BT507B) is used at 0.25 µg/mL, it binds Recombinant Human Activin RIA/ALK-2 Fc Chimera (Catalog # 637-AR) with an ED_{50} of 0.2-1.2 µg/mL.

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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 Hepcidin 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:

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