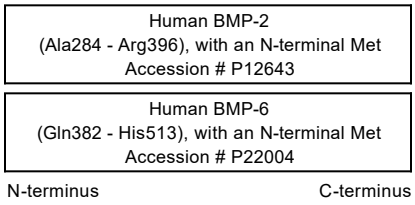
Recombinant Human BMP-2/BMP-6 Heterodimer

Catalog Number: 7145-BP

DESCRIPTION

Source	*E. coli*-derived



N-terminal Sequence Analysis	Ala284 (BMP-2) & Met (BMP-6)
Structure / Form	Disulfide-linked heterodimer
Predicted Molecular Mass	12.8 kDa (BMP-2) & 15 kDa (BMP-6)

SPECIFICATIONS

SDS-PAGE	11 kDa & 14 kDa, reducing conditions
Activity	Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. Binnerts, M.E. *et al.* (2004) Biochem. Biophys. Res. Commun. **315(2)**:272. The ED_{50} for this effect is 4-20 ng/mL.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain.
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 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.

BACKGROUND

Bone Morphogenetic Protein 6 (BMP-6), also known as Vgr-1, and BMP-2 are members of the BMP family of structurally and functionally related proteins and represent a subfamily of the transforming growth factor β (TGF-β) superfamily. BMPs are involved in a wide range of processes including embryogenesis, tissue morphogenesis, cell differentiation and migration, and tumorigenesis. Cellular responses to BMPs are mediated by hetero-oligomeric complexes of type I and type II serine/threonine kinase receptors (1 - 4). Human BMP-2 is synthesized as a 396 amino acid (aa) preproprotein that contains a 23 aa signal sequence, a 259 aa prosegment, and a 114 aa mature region (5). Human BMP-6 is synthesized as a 513 aa precursor protein that contains a 20 aa signal sequence, a 354 aa prosegment, and a 139 aa mature region (6). BMP prosegments are removed by proteolysis, enabling the glycosylated 18 kDa mature BMPs to form active disulfide-linked homodimers or heterodimers (1, 2). Mature human BMP-2 shares 100% aa sequence identity with mouse and rat BMP-2, and mature human BMP-6 shares 96% and 98% aa sequence identity with mouse and rat BMP-6, respectively. They share 48% aa sequence identity with each other. Both BMP-2 and BMP-6 induce osteogenic and chondrogenic differentiation in mesenchymal stem cells (4). 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 (7, 8). BMP-2/6 heterodimers also show increased activity at inducing trophoectodermal and endodermal differentiation of embryonic stem cells compared to either homodimer (9).

References:

1. Chen, D. *et al.* (2004) Growth Factors **22**:233.
2. Bragdon, B. *et al.* (2010) Cell Signal. **23**:609.
3. Singh, A. and R.J. Morris (2010) Cytokine Growth Factor Rev. **21**:299.
4. Lavery, K. *et al.* (2008) J. Biol. Chem. **283**:20948.
5. Wozney, J. *et al.* (1988) Science **242**:1528.
6. Celeste, A.J. *et al.* (1990) Proc. Natl. Acad. Sci. **87**:9843.
7. Isaacs, M.J. *et al.* (2010) Mol. Endocrinol. **24**:1469.
8. Israel, D.I. *et al.* (1996) Growth Factors **13**:291.
9. Valera, E. *et al.* (2010) PLoS ONE **5**:e11167.

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