

**DESCRIPTION**

<b>Source</b>	Chinese Hamster Ovary cell line, CHO-derived mouse BMP-4 protein Ser293-Arg408 Accession # P21275
<b>N-terminal Sequence Analysis</b>	Ser293
<b>Structure / Form</b>	Disulfide-linked homodimer
<b>Predicted Molecular Mass</b>	13.1 kDa (monomer)

**SPECIFICATIONS**

<b>SDS-PAGE</b>	18-26 kDa, reducing conditions
<b>Activity</b>	Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. Nakamura, K. <i>et al.</i> (1999) Exp. Cell Res. <b>250</b> :351. The ED <sub>50</sub> for this effect is 5-40 ng/mL.
<b>Endotoxin Level</b>	<0.01 EU per 1 µg of the protein by the LAL method.
<b>Purity</b>	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
<b>Formulation</b>	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**

<b>Reconstitution</b>	Reconstitute at 100 µg/mL in sterile 4 mM HCl containing at least 0.1% human or bovine serum albumin.
<b>Shipping</b>	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
<b>Stability &amp; Storage</b>	<b>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</b> <ul style="list-style-type: none"> <li>• 12 months from date of receipt, -20 to -70 °C as supplied.</li> <li>• 1 month, 2 to 8 °C under sterile conditions after reconstitution.</li> <li>• 3 months, -20 to -70 °C under sterile conditions after reconstitution.</li> </ul>

**BACKGROUND**

BMP-4 is a TGF-β superfamily ligand that is widely expressed from early embryogenesis through adulthood. It plays an important role in mesenchyme formation, epidermal determination, suppression of neural induction, the development of multiple organs, and tissue repair (1-5). The mouse BMP-4 precursor contains a 273 amino acid (aa) propeptide and a 116 aa mature protein (6). The propeptide is cleaved intracellularly by furin or proprotein convertase 6, enabling the 15 kDa mature BMP-4 monomer to form an active disulfide linked homodimer or heterodimer with BMP-7 (7-9). Mature mouse and human BMP-4 share 98% aa sequence identity. Mouse BMP-4 shares 85% aa sequence identity with mouse BMP-2 and 35%-54% with other mouse BMPs. Compared to BMP-4 homodimers, BMP-4/BMP-7 heterodimers exhibit a greater potency in inducing osteogenic differentiation (9). In *Xenopus*, the heterodimers can also induce the formation of mesoderm, whereas BMP-4 homodimers only provide ventralizing signals for existing mesoderm (10). BMP-4 signals through tetrameric complexes composed of type I (primarily Activin RIA or BMPRI-IA) and type II (primarily Activin RIIA or BMPRII) receptors (11, 12). The bioavailability of BMP-4 is regulated by its interaction with multiple proteins and glycosaminoglycans (13-15).

**References:**

1. Zhang, P. *et al.* (2008) Blood **111**:1933.
2. Gambaro, K. *et al.* (2006) Cell Death Differ. **13**:1075.
3. Simic, P. and S. Vukicevic (2005) Cytokine Growth Factor Rev. **16**:299.
4. Sadlon, T.J. *et al.* (2004) Stem Cells **22**:457.
5. Frank, D.B. *et al.* (2005) Circ. Res. **97**:496.
6. Oida, S. *et al.* (1995) DNA Seq. **5**:273.
7. Cui, Y. *et al.* (1998) EMBO J. **17**:4735.
8. Cui, Y. *et al.* (2001) Genes Dev. **15**:2797.
9. Aono, A. *et al.* (1995) Biochem. Biophys. Res. Commun. **210**:670.
10. Nishimatsu, S. and G.H. Thomsen (1998) Mech. Dev. **74**:75.
11. Chen, D. *et al.* (2004) Growth Factors **22**:233.
12. Lavery, K. *et al.* (2008) J. Biol. Chem. April 24 epub.
13. Rosen, V. (2006) Ann. N.Y. Acad. Sci. **1068**:19.
14. Jones, C.M. and J.C. Smith (1998) Dev. Biol. **194**:12.
15. Takada, T. *et al.* (2003) J. Biol. Chem. **278**:43229.