

## DESCRIPTION

<b>Source</b>	<i>E. coli</i> -derived Ala284-Arg396 Accession # P12643 This form is not detected using human BMP-2 Quantikine ELISA (R&D Systems Catalog # DBP200).
<b>N-terminal Sequence Analysis</b>	Ala284
<b>Structure / Form</b>	Disulfide-linked homodimer
<b>Predicted Molecular Mass</b>	12.8 kDa (monomer)

## SPECIFICATIONS

<b>Activity</b>	Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. Nakamura, K. <i>et al.</i> (1999) <i>Exp. Cell Res.</i> <b>250</b> :351. The ED <sub>50</sub> for this effect is typically 0.3-1 µg/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 under reducing conditions and visualized by silver stain.
<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

Human BMP-2 is one of at least 15 structurally and functionally related BMPs, which are members of the transforming growth factor  $\beta$  (TGF- $\beta$ ) superfamily. BMPs were originally identified as protein regulators of cartilage and bone formation. However, they have since been shown to be involved in embryogenesis and morphogenesis of various tissues and organs. BMPs have also been shown to regulate the growth, differentiation, chemotaxis and apoptosis of various cell types, including mesenchymal cells, epithelial cells, hematopoietic cells and neuronal cells. Similarly to other TGF- $\beta$  family proteins, BMPs are highly conserved across animal species. At the amino acid sequence level, mature human, mouse and rat BMP-2 are 100% identical. BMP-2 is synthesized as a large precursor protein that is cleaved at the dibasic cleavage site (RXXR) to release the carboxy-terminal domain. Biologically active BMP-2 is a disulfide-linked homodimer of the carboxy-terminal 114 amino acid residues that contains the characteristic seven conserved cysteine residues involved in the formation of the cysteine knot and the single interchain disulfide bond. Cellular responses to BMP-2 have been shown to be mediated by the formation of hetero-oligomeric complexes of type I and type II serine/threonine kinase receptors. One BMP type II and two BMP type I receptors have been identified. In contrast to the TGF- $\beta$  type I receptor, which does not bind the ligand in the absence of the TGF- $\beta$  receptor type II, both BMP receptor type I and type II can bind BMP-2 with high-affinity in the absence of BMP receptor type II.

### References:

1. Kawabata, M. *et al.* (1998) *Cytokine and Growth Factor Reviews* **9**:49
2. Ebendal, T. *et al.* (1998) *J. Neurosci. Res.* **51**:139.
3. Reddi, A.H. (1998) *Nature Biotechnology* **16**: 247.