

**DESCRIPTION**

**Source** *E. coli*-derived  
Gln272-Arg386, with an N-terminal Met  
Accession # AAI63048.1

**N-terminal Sequence Analysis** Met

**Structure / Form** Disulfide-linked homodimer

**Predicted Molecular Mass** 13 kDa (monomer)

**SPECIFICATIONS**

**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 ED<sub>50</sub> for this effect is 100-400 ng/mL.

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

**Purity** >97%, by SDS-PAGE under reducing conditions and visualized by silver stain.

**Formulation** Lyophilized from a 0.2 µm filtered solution in Acetonitrile and TFA. See Certificate of Analysis for details.

**PREPARATION AND STORAGE**

**Reconstitution** Reconstitute at 100 µg/mL in sterile 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.

**BACKGROUND**

BMP-2 is one of at least 20 structurally and functionally related BMPs, which are members of the transforming growth factor β (TGF-β) superfamily (1, 2). BMPs were originally identified as protein regulators of cartilage and bone formation. However, they are also involved in embryogenesis and morphogenesis of various tissues and organs. BMPs 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-β 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, while mature human BMP-2 and zebrafish BMP-2a are 85% identical. Zebrafish have another homolog of BMP-2a, BMP-2b, which is 88% identical to BMP-2a in the mature region and corresponds to the *swirl* mutant. The combined expression pattern of zBMP-2a/2b/4 coincides with areas where BMP-2/4 expression would be found in other vertebrates (3). Biologically active BMP-2a is a disulfide-linked homodimer of the carboxy-terminal 115 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-2a have been shown to be mediated by the formation of hetero-oligomeric complexes of type I and type II serine/threonine kinase receptors (4). In contrast to the TGF-β type I receptor, which does not bind the ligand in the absence of the TGF-β receptor type II, both BMP receptor type I's can bind BMP-2 with high affinity in the absence of BMP receptor type II.

**References:**

1. Ryoo, H.M. *et al.* (2006) *Gene* **366**:51.
2. Chen, D. *et al.* (2004) *Growth Factors* **22**:233.
3. Martinez-Barbera, J. *et al.* (1997) *Gene* **198**:53.
4. Miyazono, K. *et al.* (2005) *Cytokine Growth Factor Rev.* **16**:251.