

**DESCRIPTION**

**Source** Chinese Hamster Ovary cell line, CHO-derived  
Ser319-Arg428  
Accession # AAD56961

**N-terminal Sequence Analysis** Ser319

**Structure / Form** Disulfide-linked homodimer

**Predicted Molecular Mass** 12.1 kDa

**SPECIFICATIONS**

**SDS-PAGE** 13 kDa, reducing conditions

**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 0.4-1.6 ng/mL.

**Endotoxin Level** <0.01 EU per 1 µg of the protein by the LAL method.

**Purity** >90%, by SDS-PAGE under reducing conditions and visualized by silver stain.

**Formulation** 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**

**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 9 (BMP-9), also known as growth and differentiation factor 2 (GDF-2), is a member of the BMP family of TGF-β superfamily proteins that signal through heterodimeric complexes composed of type I and type II BMP receptors. BMP-9 regulates the development and function of a variety of embryonal and adult tissues (1, 2). Mouse BMP-9 consists of a 22 amino acid (aa) signal sequence, a 296 aa propeptide, and a 110 aa mature protein. Unlike other BMP family propeptides, the BMP-9 propeptide does not interfere with the biological activity of BMP-9, and remains associated with the mature peptide after proteolytic cleavage (3). Mouse and human BMP-9 share 96% aa sequence identity. Within the mature protein, mouse BMP-9 shares 64% aa sequence identity with mouse BMP-10 and approximately 50% aa sequence identity with other BMPs. BMP-9 is expressed by non-parenchymal cells in the liver where it promotes lipid metabolism and inhibits glucose production (4 - 6). It exerts a prolonged hypoglycemic effect which may be due to an enhancement of insulin release (6). BMP-9 interacts with the high affinity ALK-1 receptor on liver endothelial cells (3 - 5). It induces a cholinergic neuronal phenotype as well as the differentiation of mesenchymal stem cells into the chondrogenic lineage (7 - 11). At low concentrations, BMP-9 is a proliferative factor for hematopoietic progenitor cells, but at higher concentrations it enhances TGF-β1 production, and inhibits hematopoietic progenitor colony formation (12). BMP-9 also inhibits angiogenesis and the invasiveness of prostate carcinoma cells (13, 14).

**References:**

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