

## Recombinant Canine BMP7 Protein DataSheet

Catalog Number: GR122142

### Background

Bone morphogenetic protein 7 (BMP7, also known as osteogenic protein-1 or OP-1) is a protein that is encoded by the *BMP7* gene<sup>[1]</sup> and belong to BMP family and the TGF- $\beta$  superfamily. Like other members of the BMP family of proteins, it plays a key role in the transformation of mesenchymal cells into bone and cartilage. It is inhibited by noggin and a similar protein, chordin, which are expressed in the Spemann-Mangold Organizer. BMP7 may be involved in bone homeostasis. It is expressed in the brain, kidneys and bladder.<sup>[2]</sup> BMP7 induces the phosphorylation of SMAD1 and SMAD5, which in turn induce transcription of numerous osteogenic genes.<sup>[3]</sup> It has been demonstrated that BMP7 treatment is sufficient to induce all of the genetic markers of osteoblast differentiation in many cell types.<sup>[2]</sup> Human recombinant BMP7 has surgical uses and is marketed under the brand name OP1. It can be used to aid in the fusion of vertebral bodies to prevent neurologic trauma.<sup>[4]</sup> Also in the treatment of tibial non-union, frequently in cases where a bone graft has failed.<sup>[5]</sup> BMP7 also has the potential for treatment of chronic kidney disease.<sup>[6][7]</sup> BMP7 administration has been proposed as a possible treatment for human infertility.<sup>[8]</sup> It was discovered that mice injected with BMP7 increased their production of "good" brown fat cells.<sup>[9]</sup>

### References

1. Hahn GV, et al. (November 1992). *Genomics* 14 (3): 759–62.
2. Chen D, et al. (December 2004). *Growth Factors* 22 (4): 233–41.
3. Freedman BI, et al. (2009). *J. Bone Miner. Res.* 24 (10): 1719–27.
4. Reddi AH (2000). *Pediatr. Nephrol.* 14 (7): 598–601
5. Gautschi OP, et al. (2009). *J Musculoskelet Neuronal Interact* 9 (1): 53–60.
6. Elshaier AM, et al. (2009). *Arthritis Rheum.* 60 (1): 143–54.
7. Yerges LM, et al. (2009). *J. Bone Miner. Res.* 24 (12): 2039–49.
8. Dudas PL, et al. (2009). *Nephrol. Dial. Transplant.* 24 (5): 1406–16.
9. Sengle G, et al. (2008). *J. Mol. Biol.* 381 (4): 1025–39.

### Related products

1. GR238016 50 ml Reagent Reservoir, 100/case, 5 packs/case (pack of 20)
2. GR238004 Tissue Culture 96-well Microplate, individually packed, Case of 50
3. GR238019 1.5 ml Microcentrifuge tube with screw cap and free-standing, pack of 500
4. GR238007 125 ml leak-resistant HDPE bottle, colorless, pack of 24
5. GR238002 Microplate 12x8-Well Strip High Binding, Case of 50
6. GR238003 Microplate 12x8-Well Strip Medium Binding, Case of 50
7. GR238032 42592 Costar Stripwell Microplate 1 x 8 Flat Bottom, High Binding, Case of 100
8. GR238001 468667 Thermo Microplate 12x8-Well Strip Nunc Maxisorp F8, Case of 60
9. GR238031 96-well microplate sealer plastic, pack of 100



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**Description**

**Source:** E. coli derived  
**Compositions:** Ser31 –Lys187  
**Accession #** P34819  
**N-terminal Sequence Analysis:** Ser31  
**Structure/Form:** Disulfide-linked homodimer  
**Predicted Molecular Mass:** 17 kDa (monomer)

**Specifications**

**SDS-PAGE:** 32 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 ED50 for this effect is typically 0.2-0.7 µg/mL.  
**Endotoxin Level:** <0.01 EU per 1 µg of the protein by the LAL method.  
**Purity:** >95%, by SDSPAGE under reducing conditions and visualized by silver stain.  
**Formulation:** Lyophilized from a 0.2 µm filtered solution in Acetonitrile with BSA as a carrier protein.

**Preparation and Storage**

**Reconstitution:** Reconstitute at 50 µg/mL in sterile 4 mM HCl containing 0.1% BSA.  
**Shipping:** The product is shipped at ambient temperature or with wet ice. Upon receipt, store it immediately at the temperature recommended below.  
**Stability & Storage:** Use a manual defrost freezer and avoid repeated freeze thaw cycles.

- 6 months from date of receipt, -20 to -70°C as supplied.
- 3 months, -20 to -70°C under sterile conditions after reconstitution.

**DECLARATION**

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN HUMANS AND ANIMALS.

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