## DESCRIPTION

**Source**  
Chinese Hamster Ovary cell line, CHO-derived human BMP-7 protein  
Ser293-His431  
Accession # P18075

**N-terminal Sequence Analysis**  
Ser293

**Structure / Form**  
Disulfide-linked homodimer

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

## SPECIFICATIONS

**SDS-PAGE**  
18-20 kDa, reducing conditions

**Activity**  
The ED$_{50}$ for this effect is 0.1-0.6 µg/mL.

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

**Purity**  
>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

**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 100-200 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.

## DATA
Bioactivity of Human BMP-7
Recombinant human BMP-7 (Catalog # 354-BP/CF) induces alkaline phosphatase production in the ATDC5 mouse chondrogenic cell line. The ED_{50} for this effect is 0.1-0.6 µg/mL.

Cell Culture

Adult Stem Cell-derived Liver Organoids Cultured using Recombinant Human BMP-7 Protein. Adult stem cell-derived liver organoids were cultured using Cultrex UltiMatrix RGF Basement Membrane Extract (Catalog # BME001-05) and liver organoid initiation medium, which includes Recombinant Human BMP-7 (Catalog # 354-BP/CF), Recombinant Human HGF (Catalog # 294-HG), Recombinant Human EGF (Catalog # 236-EG), Recombinant Human FGF-10 (Catalog # 345-FG), Recombinant Human Noggin (Catalog # 6057-NG), Recombinant Human R-Spondin 1 (Catalog # SR0001-NS), and Recombinant Human Wnt-3a (Catalog # 9138-WN), along with the other reagents listed in the liver organoid initiation medium recipe in the human liver organoid culture protocol. After 3 days, liver organoid expansion medium was added for 7-10 days, followed by liver organoid differentiation medium, which includes Recombinant Human BMP-7 (Catalog # 354-BP/CF), Recombinant Human HGF (Catalog # 294-HG), Recombinant Human EGF (Catalog # 236-EG), and Recombinant Human FGF-19 (Catalog # 969-FG), along with the other reagents listed in the liver organoid differentiation medium recipe in the human liver organoid culture protocol. Differentiated human liver organoids were stained using a (A) Mouse Anti-Human Serum Albumin Monoclonal Antibody (Catalog # MAB1455; red) and a (B) Goat Anti-Human HNF-3beta Antigen Affinity-purified Polyclonal Antibody (Catalog # AF2400; red) and counterstained with DAPI (Catalog # 5748; blue).
Bone morphogenetic protein 7 (BMP-7), also known as osteogenic protein 1 (OP-1), is a widely expressed TGF-β superfamily member with important functions during embryogenesis, in the adult, and in disease (1, 2). Human BMP-7 is synthesized with a 29 amino acid (aa) signal sequence, a 263 aa propeptide, and a 139 aa growth factor domain (3, 4). The growth factor domain of human BMP-7 shares 98% aa sequence identity with mouse and rat BMP-7. The BMP-7 propeptide is cleaved intracellularly but remains in association with the growth factor domain. BMP-7 is subsequently secreted as a tetramer that consists of two propeptides and two disulfide-linked growth factor domains (5, 6). Mature BMP-7 can also form disulfide-linked heterodimers with BMP-2 or BMP-4, complexes that show increased potency and range of activity compared to BMP-7 homodimers (7-9). The presence of the propeptides in the BMP-7 tetramer does not diminish the bioactivity of the growth factor domains (6). Secreted BMP-7 is immobilized in the extracellular matrix as a result of interactions between the propeptide and matrix Fibrillin (5). BMP-7 exerts its biological effects through the type 2 receptors Activin RIIA, Activin RIIB, and BMPR-II and the type 1 receptors Activin RIA, BMPR-IA, and BMPR-IB (2, 6). BMP-7 plays a role in a variety of organ systems. It promotes new bone formation and nephron development (10, 11), inhibits the branching of prostate epithelium (12), and antagonizes epithelial-mesenchymal transition (EMT) (13-15). In pathological conditions, BMP-7 inhibits tumor growth and metastasis (14), ameliorates fibrotic damage in nephritis (13), and promotes neuroregeneration following brain ischemia (16).

References: