# Recombinant Human BMP-7

Catalog Number: 354-BP

## DESCRIPTION

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| **Source** | Chinese Hamster Ovary cell line, CHO-derived<br>Ser293-His431<br>Accession # P18075 |
| **N-terminal Sequence Analysis** | Ser293 |
| **Structure / Form** | Disulfide-linked homodimer |
| **Predicted Molecular Mass** | 15.7 kDa (monomer) |

## SPECIFICATIONS

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| **SDS-PAGE** | 18-20 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.<br>The $ED_{50}$ for this effect is typically 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 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

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| **Reconstitution** | Reconstitute at 100 µg/mL in sterile 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.**<br>● 12 months from date of receipt, -20 to -70 °C as supplied.<br>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.<br>● 3 months, -20 to -70 °C under sterile conditions after reconstitution. |

## BACKGROUND

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 often remains associated with the mature C-terminus. Based on in vivo and in vitro studies, BMP-7 has the potential to be secreted as a disulfide-linked mature homodimer, or particularly as a heteromeric complex that consists of two propeptides noncovalently associated with a mature disulfide-linked homodimer (5, 6). The presence of the propeptides in BMP-7 appears to stabilize the molecule and provide a docking mechanism for extracellular storage on molecules such as fibrillin-1 and -2 (5, 6). The propeptides themselves do not impart latency to the complex. BMP-7 binding to type II receptors rapidly displaces the prodomain:mature molecule interaction and has no effect on activity. But it is suggested that immobilized BMP-7 (via prodomain:fibrillin) is inactive, allowing for possible long-term storage of the molecule (6). BMP-7 interacts with 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 may also be processed into a disulfide-linked heterodimer with either BMP-2 or BMP-4. Such complexes may show increased potency and range of activity compared to BMP-7 homodimers (7-9). 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:**


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