### DESCRIPTION

**Source**

E. coli-derived

<table>
<thead>
<tr>
<th>Human BMP-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Ala284 - Arg396)</td>
</tr>
<tr>
<td>Accession # NP_001191</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Human BMP-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Ser293 - His431)</td>
</tr>
<tr>
<td>Accession # NP_001710</td>
</tr>
</tbody>
</table>

**N-terminal Sequence Analysis**

Ala284 & Ser293

**Structure / Form**

Disulfide-linked heterodimer

**Predicted Molecular Mass**

12.9 kDa (BMP-2), 15.8 kDa (BMP-7)

### 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 10-40 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 with BSA as a carrier protein. See Certificate of Analysis for details.

### PREPARATION AND STORAGE

**Reconstitution**

Reconstitute at 10 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.

- 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

Human BMP-7, also known as osteogenic protein 1 (OP-1), and BMP-2 are members of the BMP subgroup of the TGF-β superfamily and signal through heterodimeric complexes composed of type I and type II BMP receptors. BMP-2 and BMP-7 influence a variety of morphogenetic processes, particularly during skeletal and renal development (1 - 3). The human BMP-2 cDNA encodes a 396 amino acid (aa) precursor that contains a 23 aa signal sequence, a 259 propeptide, and a 114 aa mature protein (4). The human BMP-7 cDNA encodes a 431 aa precursor that contains a 29 aa signal sequence, a 263 aa propeptide, and a 139 aa mature protein (5). BMP propeptides are removed by proteolysis, enabling mature BMPs to form active disulfide linked homodimers or heterodimers (1). Human and mouse BMP-2 and BMP-7 are 100% and 98% identical, respectively, at the amino acid level. Human BMP-2 shares 85% aa sequence identity with human BMP-4 and less than 51% aa sequence identity with other BMPs. Human BMP-7 shares approximately 60% - 70% aa sequence identity with BMP-5, -6, and -8, and less than 50% aa sequence identity with other BMPs. BMP-2 and BMP-7 are co-expressed in some embryonic tissues (6, 7) and associate into a functional 38 kDa osteogenic dimer (8). In <i>in vitro</i> osteoblast differentiation assays and <i>in vivo</i> bone formation models, a BMP-2/BMP-7 heterodimer is significantly more potent than either homodimer (9 - 12). Considering that BMP-2 preferentially binds BMPRIA/ALK-3 and BMPRIB/ALK-6, while BMP-7 is selective for ALK-2, the observed increase in heterodimer activity may be due to the triggering of additional receptor subtypes.

### References