

DESCRIPTION

Source *E. coli*-derived human BMP-2/BMP-7 Heterodimer protein

Human BMP-2
(Ala284 - Arg396)
Accession # NP_001191

Human BMP-7
(Ser293 - His431)
Accession # NP_001710

N-terminus

C-terminus

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 ED₅₀ for this effect is 15.0-120 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 Supplied as 0.2 µm filtered solution in 30%(v/v) Acetonitrile and 0.1%(v/v) TFA with 50 µg BSA per 1 µg as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Shipping The product is shipped with dry ice or equivalent. 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, -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after opening.
- 3 months, -20 to -70 °C under sterile conditions after opening.

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 morphogenic 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 vitro* osteoblast differentiation assays and *in vivo* bone formation models, a BMP-2/BMP-7 heterodimer is significantly more potent than either homodimer (9 - 12). Considering that BMP-2 preferentially binds BMPRII/ALK-3 and BMPRII/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:

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