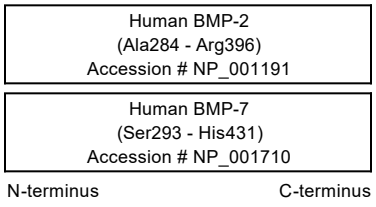
Recombinant Human BMP-2/BMP-7 Heterodimer

Catalog Number: 3229-BM

DESCRIPTION

Source

E. coli-derived



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_{50} 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 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 *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 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:

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