Recombinant Human BMP-10

Catalog Number: 2926-BP/CF

DESCRIPTION

Source	Chinese Hamster Ovary cell line, CHO-derived Asn317-Arg424 Accession # O95393
N-terminal Sequence Analysis	Asn317
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	12.2 kDa (monomer)

SPECIFICATIONS

SDS-PAGE	13 kDa, reducing conditions
Activity	Measured by its ability to induce alkaline phosphatase production by MC3T3-E1 mouse preosteoblast cells. The ED_{50} for this effect is 15-60 ng/mL.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>97%, 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 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.

BACKGROUND

BMP-10, along with BMP-9, GDF-5, -6, and -7, belongs to a subgroup of TGF-β superfamily proteins that signal through heterodimeric complexes composed of type I and type II BMP receptors (1-3). Proteolytic removal of the propeptide from the 60 kDa proprotein yields a 12 kDa mature BMP-10 which forms disulfide-linked non-glycosylated homodimers (4, 5). Mature human BMP-10 shares 98% amino acid sequence identity with mouse and rat BMP-10 and 49% - 63% with human BMP-9, GDF-5, -6, and -7. BMP-10 is critical for the proper development of the heart but is not expressed until after cardiac patterning or looping are completed (6-8). BMP-10 production appears at the onset of trabeculation and chamber formation and is restricted to the right atrium in the adult heart (6-8). Homozygous BMP-10 knockout mice die *in utero* due to arrested cardiac development (7). BMP-10 is required for the expression of the cardiogenic transcription factors NKX2.5 and MEF2C in developing myocardium and the growth of embryonic cardiomyocytes (7, 10). NKX2.5 itself negatively regulates BMP-10 expression in cardiac myocytes (10). Multiple human congenital heart defects result from mutations in NKX2.5 and require BMP-10 expression (10). In mice, genetic knockout of ErbB leads to a similar phenotype but appears not to involve BMP-10, and knockout of the calcium channel subunit FKBP12 induces BMP-10 over-expression (7). BMP-10 in the postnatal heart promotes increased cardiomyocyte and heart size (8). BMP-10 has been shown to signal through ALK-1, BMPR-IA, BMPR-IB, and BMPR-II in transfectants and non-cardiac cell lines (4, 5). A functional BMP-10 receptor in the heart has not yet been identified, although deletion of BMPR-IA causes similar cardiac morphogenetic abnormalities (11). In dermal endothelial cells, BMP-10 induces migration, proliferation, and gene expression typically associated with ALK-1 (5).

References:

1. Chen, D. *et al.* (2004) Growth Factors **22**:233.
2. Miyazono, K. *et al.* (2005) Cytokine Growth Factor Rev. **16**:251.
3. Schneider, M.D. *et al.* (2003) Cytokine Growth Factor Rev. **14**:1.
4. Mazerbourg, S. *et al.* (2005) J. Biol. Chem. **280**:32122.
5. David, L. *et al.* (2007) Blood **109**:1953.
6. Neuhaus, H. *et al.* (1999) Mech. Dev. **80**:181.
7. Chen, H. *et al.* (2004) Development **131**:2219.
8. Chen, H. *et al.* (2006) J. Biol. Chem. **281**:27481.
9. Srivastava, D. and E.N. Olson (2000) Nature **407**:221.
10. Pashmforoush, M. *et al.* (2004) Cell **117**:373.
11. Gaussin, V. *et al.* (2002) Proc. Natl. Acad. Sci. **99**:2878.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449