BMP-4 Protein, Human (His)

Cat. No.:	HY-P7007A
Synonyms:	rHuBMP-4; BMP-2B
Species:	Human
Source:	E. coli
Accession:	P12644 (S293-R408)
Gene ID:	652
Molecular Weight:	18-21 kDa

PROPERTIES

AA Sequence	S P K H H S Q R A R K K N K N C R R H S L Y V D F S D V G W N D W I V A P P G Y Q A F Y C H G D C P F P L A D H L N S T N H A I V Q T L V N S V N S S I P K A C C V P T E L S A I S M L Y L D E Y D K V V L K N Y Q E M V V E G C G C R
Biological Activity	Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. The ED_{50} this effect is 17.27 ng/mL, corresponding to a specific activity is 5.790×10^4 units/mg.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 μm filtered solution of 50 mM Tris-HCL, 300 mM NaCl, pH 7.4, 5% trehalose, 5% mannitol and 0.01% Tween 80 or PBS, 300 mM NaCl, pH 7.4, 5% trehalose, 5% mannitol and 0.01% Tween 80.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	Bone Morphogenetic Protein 4 (BMP-4) is a ligand protein with pleiotropic, belongs to TGFβ family. BMP-4 involves in the vasculature circulation and can activate receptors on vascular cells[1]. BMP-4/TGFβ signaling can be terminated by inhibitory SMADs including SMAD6 and SMAD7, which are activated and induced by BMP signaling and switch off BMP signaling via multiple mechanisms[4]. BMP-4 is widely found in different animals, while the sequence in human is highly similar to Rat (96.81%), and mouse (97.54%).

BMP-4 is expressed by endothelial cells (ECs) in response to hypoxia and promotes vascular SMC proliferation. Therefore it inhibits the proliferation of smooth muscle cells (SMCs) isolated from the proximal pulmonary artery while induces proliferation of SMCs isolated from distal pulmonary arteries[5].
BMP-4 appears to be a marker and driver of vascular calcification, particularly in atherosclerosis[6].
BMP-4 induces angiogenesis, endothelial cells (ECs) proliferation, and migration[7].
BMP-4 is differentially expressed in calcified atherosclerotic plaques[8], serves as the linkers between atherosclerotic vascular calcification with mechanisms of normal bone formation[9].
BMP-4 increases plaque formation via their pro-inflammatory and pro-atherogenic effects, promoting oxidative stress, endothelial dysfunction and osteogenic differentiation[3].

REFERENCES

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