BMP-2 Protein, Human/Mouse/Rat

Cat. No.:	HY-P7006
Synonyms:	rHuBMP-2; BMP2A; BMP-2A; BMP2
Species:	Human;Rat;Mouse
Source:	E. coli
Accession:	P12643 (Q283-R396)
Gene ID:	650
Molecular Weight:	Approximately 26 kDa under non-reducing conditions

PROPERTIES

AA Sequence	Q A K H K Q R K R L K S S C K R H P L Y V D F S D V G W N D W I V A P P G Y H A F Y C H G E 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 K I P K A C C V P T E L S A I S M L Y L D E N E K V V L K N Y Q D M V V E G C G C R
Biological Activity	1. Measured by its ability to induce alkaline phosphatase production by ATDC-5 Cells. The ED_{50} for this effect is typically <0.2 μg/mL. 2. Measured by its ability to induce alkaline phosphatase production by C2C12 cells. The ED_{50} for this effect is typically <1 μg/mL.
Appearance	Lyophilized powder
Formulation	Lyophilized after extensive dialysis against 50 mM acetic acid.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in 20 mM HAc or diluted with 5 mM HCl.
Storage & Stability	Stored at -20°C for 2 years from date of receipt. 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 2 (BMP-2) is a ligand protein with pleiotropic, belongs to TNFβ family. BMP-2 formats BMP/TGF β signaling to involve in vascular and valvular homeostasis, which is a critical process of embryonic development[1]. BMP-2/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-2 is widely found in different animals, while the sequence in human is similar to Rat (91.86%), and mouse (92.13%).

BMPs exhibits critical contributions to the pathophysiology of atherosclerosis, pulmonary vascular disease, and vascular and valvular calcification[1].
BMP-2 binds different receptor, such as type I receptors (ALK-2/-3/-6) and type II receptors (BMPR2, ACVR2A), to regulate various calcification type including Atherosclerosis, Chronic Kidney Disease, Diabetes, Valvular Calcification[1].
BMP-2 promotes monocyte infiltration and inflammation of atherosclerotic legions[5].
It is linked to increased plaque formation via pro-inflammatory and pro-atherogenic effects, promoting oxidative stress, endothelial dysfunction and osteogenic differentiation[6].
BMP-2 is overexpressed in ossified regions of human calcified valves by myofibroblasts and pre-osteoblasts in areas densely infiltrated with B- and T-lymphocytes[2].
And it serves as the linkers between atherosclerotic vascular calcification with mechanisms of normal bone formation[3].
BMP-2 induces angiogenesis, endothelial cells (ECs) proliferation, and migration[7].
And BMP-2 also enhances the expression of the osteoblast and chondrocyte master transcriptional regulator RUNX2 to promote the mineralization of cultured human coronary vascular SMCs in a manner that was dependent on oxidative stress and endoplasmic reticulum (ER) stress[8].

REFERENCES

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Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite F, Monmouth Junction, NJ 08852, USA