

BMP-2 Protein, Human/Mouse/Rat (Tag Free)

Cat. No.:	HY-P7006B
Synonyms:	rHuBMP-2; BMP2A; BMP-2A; BMP2
Species:	Rat;Mouse;Human
Source:	E. coli
Accession:	P12643 (Q283-R396)
Gene ID:	650
Molecular Weight:	Approximately 12-13 kDa

PROPERTIES

AA Sequence	<p>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</p> <p>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> <p>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</p>
Biological Activity	Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. The ED ₅₀ for this effect is ≤0.5 µg/mL, corresponding to a specific activity is ≥2×10 ³ U/mg.
Appearance	Lyophilized powder
Formulation	Lyophilized from sterile 50 mM Tris-HCL, 200 mM NaCl, 500 mM arginine, pH 8.0 or 50 mM Tris-HCL, 200 mM NaCl, 500 mM arginine, pH 8.0, 5% trehalose.
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 ddH ₂ O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
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	<p>Bone Morphogenetic Protein 2 (BMP-2) is a ligand protein with pleiotropic, belongs to TNFβ family. BMP-2 formats BMP/TGFβ 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].</p> <p>BMP-2 is widely found in different animals, while the sequence in human is similar to Rat (91.86%), and mouse (92.13%).</p>
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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 (BMP2, ACVR2A), to regulate various calcification type including Atherosclerosis, Chronic Kidney Disease, Diabetes, Valvular Calcification^[1].

BMP-2 promotes monocyte infiltration and inflammation of atherosclerotic lesions^[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].

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

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