

Product Data Sheet

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	QAKHKQRKRL KSSCKRHPLY VDFSDVGWND WIVAPPGYHA FYCHGECPFP LADHLNSTNH AIVQTLVNSV NSKIPKACCV PTELSAISML YLDENEKVVL KNYQDMVVEG CGCR	
Biological Activity	Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. The ED_{50} for this effect is $\leq 0.5 \ \mu g/mL$, corresponding to a specific activity is $\geq 2 \times 10^3 \ U/mg$.	
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.	
Reconsititution	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.	

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].

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

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