Animal-Free BMP-8a Protein, Human (His)

Cat. No.:	HY-P700031AF
Synonyms:	BMP-8; OP-2; Osteogenic Protein-2
Species:	Human
Source:	E. coli
Accession:	AAP74559.1 (A264-H402)
Gene ID:	353500
Molecular Weight:	Approximately 16.61 kDa

PROPERTIES

AA Sequence	M A V R P L R R R Q P K K S N E L P Q A N R L P G I F D D V H G S H G R Q V C R R H E L Y V S F Q D L G W L D W V I A P Q G Y S A Y Y C E G E C S F P L D S C M N A T N H A I L Q S L V H L M K P N A V P K A C C A P T K L S A T S V L Y Y D S S N N V I L R K H R N M V V K A C G C H
Biological Activity	Measure by its ability to induce alkaline phosphatase production by ATDC5 cells. The ED_{50} for this effect is 10-19.4 ng/mL.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a solution containing 20 mM sodium citrate, 0.2 MNaCl, pH 3.5.
Endotoxin Level	<0.1 EU per 1 μg of the protein by the 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	"BMP-8 is a pleiotropic ligand protein act as a reproductive system regulator. BMP-8 is encoded by a pair of genes, BMP8A and BMP8B, belonging to TNF-β family. GMP-8 initiates the canonical BMP signaling cascade by associating with type I receptor BMPR1A and type II receptor BMPR2. Both BMP8A and BMP8B are enriched in the ovary and activate canonical BMP signaling in different cells, including spermatogonia, P19 and 293T cells[1]. BMP-8 is widely found in different animals, while the sequences of BMP-8A and BMP-8B in human are highly different from Mouse with similarities of 85.96% and 74.44%, respectively. As for BMP8A, which is mainly secreted by granulosa cells within growing ovarian follicles. BMP8A encodes a secreted ligand

of the TGF-β superfamily of proteins to bind various TGF-beta receptors, leading to recruitment and activation of SMAD family transcription factors and regulate gene expression. The encoded preproprotein is proteolytically processed to generate each subunit of the disulfide-linked homodimer[2]. BMP-8A protein activates the SMAD1/5/8 and the SMAD2/3 pathways in granulosa cells, to inhibit gonadotropin-induced progesterone production and steroidogenesis-related gene expression[1]. BMP8A protein plays a role in development of the reproductive system by sustaining spermatogenesis by activating both SMAD1/5/9 and SMAD2/3 in spermatogonia. BMP-8A protein also activates Nrf2 and Wnt pathways in clear cell renal cell carcinoma (ccRCC) to promote cell proliferation and inhibit apoptosis[2].
As for BMP8B, which protein is secreted by brown/beige adipocytes and enhances energy dissipation, serves as an interconnected regulator of neuro-vascular remodeling in AT and is potential targets in obesity[3]. BMP8B increases brown adipose tissue thermogenesis through both central and peripheral actions[4]. Thus BMP8B contributes to adrenergic-induced remodeling of the neuro-vascular network in adipose tissue, therefore through the adipocytes to 1) secrete neuregulin-4 (NRG4), which promotes sympathetic axon growth and branching in vitro, and 2) induce a pro-angiogenic transcriptional and secretory profile that promotes vascular sprouting[3]. BMP8B also involve in activation of caspase-3 and -9, and apoptosis to inhibit pancreatic cancer cell growth[5].
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REFERENCES

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