

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

Cat. No.:	HY-P700032AF
Synonyms:	Bone Morphogenetic Protein 8b; Osteogenic Protein 2; OP-2; BMP8
Species:	Human
Source:	E. coli
Accession:	P34820 (A264-H402)
Gene ID:	656
Molecular Weight:	Approximately 16.48 kDa

PROPERTIES

AA Sequence	<div> <div> A V R P L R R R Q P H E L Y V S F Q D L A T N H A I L Q S L N N V I L R K H R N </div> <div> K K S N E L P Q A N G W L D W V I A P Q V H L M M P D A V P M V V K A C G C H </div> <div> R L P G I F D D V H G Y S A Y Y C E G E K A C C A P T K L S </div> <div> G S H G R Q V C R R C S F P L D S C M N A T S V L Y D S S </div> </div>
Biological Activity	Measure by its ability to induce alkaline phosphatase production by ATDC5 cells. The ED ₅₀ for this effect is <21.8 ng/mL.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a solution containing 20 mM sodium citrate, 0.2 M NaCl, pH 3.5.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH ₂ O.
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>"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 BMPRI1A and type II receptor BMPRII2. 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.</p> <p>As for BMP8A, which is mainly secreted by granulosa cells within growing ovarian follicles. BMP8A encodes a secreted ligand</p>
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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^[4]. 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^[4].

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 adipose tissue (AT) and is potential targets in obesity^[2]. BMP8B increases brown adipose tissue thermogenesis through both central and peripheral actions^[5]. 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^[3].

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REFERENCES

- [1]. Wu FJ, et al. Human BMP8A suppresses luteinization of rat granulosa cells via the SMAD1/5/8 pathway. *Reproduction*. 2020 Mar;159(3):315-324.
- [2]. Pellegrinelli V, et al. Adipocyte-secreted BMP8b mediates adrenergic-induced remodeling of the neuro-vascular network in adipose tissue. *Nat Commun*. 2018 Nov 26;9(1):4974.
- [3]. Cheng Z, et al. BMP8B mediates the survival of pancreatic cancer cells and regulates the progression of pancreatic cancer. *Oncol Rep*. 2014 Nov;32(5):1861-6.
- [4]. Yu YP, et al. BMP8A promotes survival and drug resistance via Nrf2/TRIM24 signaling pathway in clear cell renal cell carcinoma. *Cancer Sci*. 2020 May;111(5):1555-1566.
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- [6]. Ohinata Y, et al. A signaling principle for the specification of the germ cell lineage in mice. *Cell*. 2009 May 1;137(3):571-84.

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

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