



Recombinant Human Soluble BMP Receptor Type-1A

20140922BB



FOR RESEARCH ONLY! NOT FOR HUMAN USE!

Cat.-no:	S01-021
Size:	100 µg
Lot. No.:	According to product label
Country of origin:	Germany

Scientific Background

Gene:	<i>BMPRIA</i>
Synonyms:	Bone morphogenetic protein receptor type-1A, Activin receptor-like kinase 3, CD292

The extracellular domain of human BMPR-1A was fused with a carboxy-terminal 6X histidine-tag. The monomeric glycoprotein was expressed in baculovirus infected insect cells.

Cellular responses to bone morphogenetic proteins (BMPs) have been shown to be mediated by the formation of hetero-oligomeric complexes of the type I and type II serine/threonine kinase receptors. BMP receptor 1A (BMPR-1A), also known as activin receptor-like kinase (ALK)-3, is a one of seven known type I serine/threonine kinases that are required for the signal transduction of TGF- β family cytokines. In contrast to the TGF- β receptor system in which the type I receptor does not bind TGF- β in the absence of the type II receptor, type I receptors involved in BMP signaling (including BMPR-1A, BMPR-1B/ALK-6, and ActR-I/ALK-2) can independently bind the various BMP family proteins in the absence of type II receptors. Recombinant soluble BMPR-1A binds BMP-2 and -4 with high-affinity in solution and is a potent BMP-2/4 antagonist in vitro. BMPR-1A is ubiquitously expressed during embryogenesis. In adult tissues, BMPR-1A mRNA is also widely distributed; with the highest expression levels found in skeletal muscle.

The extracellular domain of BMPR-1A shares little amino acid sequence identity with the other mammalian ALK type I receptor kinases, but the cysteine residues are conserved. Human and mouse BMPR-1A are highly conserved and share 98% sequence identity.

References

1. Wu MY and CS Hill Dev Cell 16:329, 2009
2. Nickel J et al, Cytokine Growth Factor Rev 20:367, 2009
3. de Caestecker M, Cytokine Growth Factor Rev 15:1, 2004
4. Schmal H et al, Cytotherapy 14(7):868-76, 2012
5. Liu R et al, BMC Musculoskelet Disord 15;10:51, 2009

Sequence

QNLD SMLHGTGMKSDSDQKKSENGVTLAPEDTLPFLKCYCSGHCPDDAINNT
CITNGHCFAIIEEDDQGETTLASGCMKYEGSDFQCKDSPKAQLRRTIECCRT
NLCNQYLQPTLPPVVGPFDFGDIRHHHHHH

Database References

Protein RefSeq:	NP_033888
Uniprot ID:	P36894
mRNA RefSeq:	NM_009758

Product Specifications

Expressed in	Insect cells
Purity	> 90% by SDS-PAGE & silver stain
Buffer	PBS
Stabilizer	None
Formulation	lyophilized
Length (aa):	135
MW:	23 kDa (Monomer)

Stability: Lyophilized samples are stable for greater than six months at -20°C to -70°C . Reconstituted sBMPR-1A should be stored in working aliquots at -20°C .

Reconstitution: The lyophilized sBMPR-1A is soluble in water and most aqueous buffers and should be reconstituted in PBS or medium to a concentration not lower than 50µg/ml.



AVOID REPEATED FREEZE AND THAW CYCLES!

Biological Activity: Measured by its ability to inhibit recombinant human BMP-2 induced alkaline phosphatase production by C2C12 myogenic cells. The ED₅₀ for this effect is typically 1-4 µg/ml in the presence of 500ng/ml of recombinant human BMP-2.



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Handling/Application

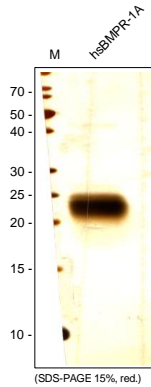


Fig. 1: SDS-PAGE analysis of recombinant human soluble BMPR-1A from insect cells. Sample was loaded in 15% SDS-polyacrylamide gel under reducing condition and stained with Silver stain.

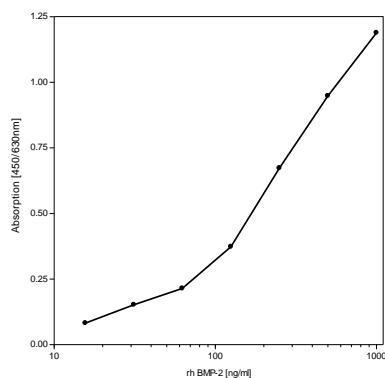


Figure 2: BMP-2 BioLISA using recombinant human soluble BMPR-1A [Cat# S01-021] for capturing and recombinant human BMP-2 [Cat# 200-01] as standard. A rabbit anti-human BMP-2 antibody [Cat# 102-PA106] in combination with an goat anti-rabbit Biotin antibody was used for detection.

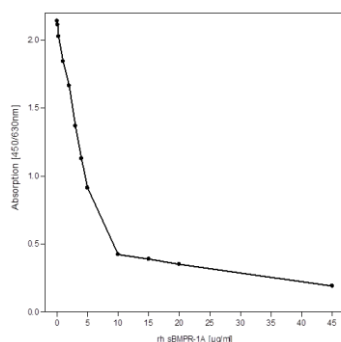


Figure 3: C2C12 cells were plated with 1500c/well in a 96well plate. Cells were stimulated with 0.5µg/ml BMP-2 [Cat# 20-001] and increasing amounts of recombinant human soluble BMPR-1A [Cat# S01-021] were added. The cells were incubated at 37°C, 5% CO2 for 4 days.