Recombinant Human Noggin Fc Chimera GMP

Catalog Number: 3344-GMP

DESCRIPTION

Source

Mouse myeloma cell line, NS0-derived

Manufactured and tested under cGMP guidelines.

N-terminal Sequence Analysis	Amino acid sequencing was blocked, suggesting it is consistent with Gln28 as the first N-terminal amino acid. Predicted N-terminal sequence: Gln28-His-Tyr-Leu-His-Ile-Arg-Pro-Ala-Pro
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	49.6 kDa (monomer)

SPECIFICATIONS

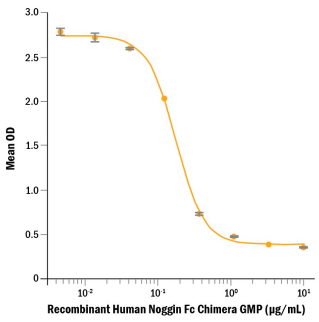
SDS-PAGE	58-62 kDa, reducing conditions 130-135 kDa, non-reducing conditions
Activity	Measured by its ability to inhibit BMP-4-induced alkaline phosphatase production by ATDC5 mouse chondrogenic cells. The ED_{50} for this effect is 0.1-0.4 µg/mL in the presence of 30 ng/mL of Recombinant Human BMP-4 (Catalog # 314-BP).
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>90%, by SDS-PAGE with silver staining, under reducing conditions.
Host Cell Protein	<5.0 ng per µg of protein when tested by ELISA.
Mycoplasma	Negative when tested in a ribosomal RNA hybridization assay.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** ● A minimum of 6 months when stored at ≤ -20 °C as supplied. Refer to lot specific COA for the Use by Date. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 3 months, ≤ -20 °C under sterile conditions after reconstitution.

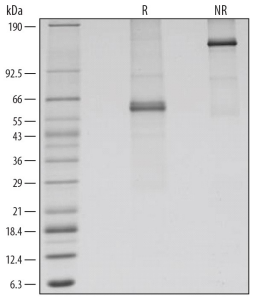
DATA

Bioactivity



GMP-grade Recombinant Human Noggin Fc Chimera (Catalog # 3344-GMP) inhibits BMP-4-induced alkaline phosphatase production in the ATDC5 mouse chondrogenic cell line. The ED_{50} for this effect is 0.1-0.4 µg/mL in the presence of 30 ng/mL of Recombinant Human BMP-4 (Catalog # 314-BP).

SDS-PAGE



1 µg/lane of GMP-grade Recombinant Human Noggin Fc Chimera (Catalog # 3344-GMP) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by silver staining, showing major bands at 60 kDa and 62 kDa (R) and 135 kDa (NR).

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Recombinant Human Noggin Fc Chimera GMP

Catalog Number: 3344-GMP

BACKGROUND

Noggin is a secreted homodimeric glycoprotein that is an antagonist of bone morphogenetic proteins (BMPs) (1, 2). Human Noggin cDNA encodes a 232 amino acid (aa) precursor protein; cleavage of a 19 aa signal peptide generates the 213 aa mature protein which contains an N-terminal acidic region, a central basic heparin-binding segment and a C-terminal cysteine-knot structure (2). Secreted Noggin probably remains close to the cell surface due to its binding of heparin-containing proteoglycans (3). Noggin is very highly conserved among vertebrates, such that mature human Noggin shares 99%, 99%, 98%, 97% and 89% aa sequence identity with mouse, rat, bovine, equine and chicken Noggin, respectively. Noggin binds some BMPs such as BMP-4 with high affinity and others such as BMP-7 with lower affinity, antagonizing BMP bioactivities by blocking epitopes on BMPs that are needed for binding to both type I and type II receptors (2, 4). During embryogenesis, Noggin antagonizes specific BMPs at defined times during neural tube, somite and cardiomyocyte growth and patterning (5-7). During skeletal development, Noggin prevents chondrocyte hyperplasia, thus allowing proper formation of joints (4). Mutations within the cysteine-knot region of human Noggin are linked to multiple types of skeletal dysplasias that result in apical joint fusions (8). Noggin is expressed in defined areas of the adult central nervous system and peripheral tissues such as lung, skeletal muscle and skin (1). During culture of human embryonic stem cells (hESC) without feeder layers or conditioned medium, but with addition of FGF basic, addition of Noggin to antagonize BMP activity allows hESC to maintain their undifferentiated, pluripotent state (9, 10).

References:

1. Valenzuela, D.M. *et al.* (1995) J. Neurosci. **15**:6077.
2. Groppe, J. *et al.* (2002) Nature **420**:636.
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4. Brunet, L. J. *et al.* (1998) Science **280**:1455.
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6. Itsykson, P. *et al.* (2005) Mol. Cell. Neurosci. **30**:24.
7. Yuasa, S. *et al.* (2005) Nat. Biotechnol. **23**:607.
8. Gong, Y. *et al.* (1999) Nat. Genet. **21**:302.
9. Xu, R.-H. *et al.* (2005) Nat. Methods **2**:185.
10. Wang, G. *et al.* (2005) Biochem. Biophys. Res. Commun. **330**:934.

MANUFACTURING SPECIFICATIONS

GMP Proteins

R&D Systems, a Bio-Techne Brand's GMP proteins are produced according to relevant sections of the following documents: WHO TRS, No. 822, 1992 Annex 1, Good Manufacturing Practices for Biological Products; USP Chapter 1043, Ancillary Materials for Cell, Gene and Tissue-Engineered Products and USP Chapter 92, Growth Factors and Cytokines Used in Cell Therapy Manufacturing.

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- Post-bottling lot-specific bioassay results (compliance with an established range) and results of microbial bioburden testing (using broth culture, Sabourand's dextrose and blood agar plates with results reported at 3 days and at 7 days)
- Host Cell Protein testing performed by ELISA
- Mycoplasma testing by ribosomal RNA hybridization assay

Additional testing and documentation requested by the customer can be arranged at an additional cost. Testing may include, but is not limited to, USP< 61> bioburden testing, positive identity testing, testing for adventitious agents and testing for residual host cell content.

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