Recombinant Human/Mouse/Rat GDF-8/Myostatin

Catalog Number: 788-G8/CF

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived GDF-8/Myostatin protein Asp268-Ser376 Accession # O08689
N-terminal Sequence Analysis	Asp268
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	12.4 kDa

SPECIFICATIONS

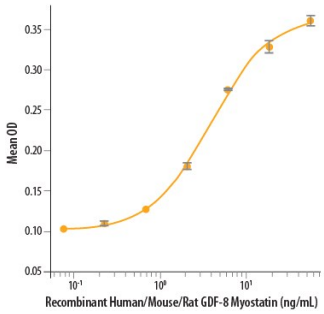
SDS-PAGE	12 kDa, reducing conditions 24 kDa, non-reducing conditions
Activity	Measured by its ability to induce hemoglobin expression in K562 human chronic myelogenous leukemia cells. Schwall, R.H. *et al.* (1991) Method Enzymol. **198**:340. The ED_{50} for this effect is 2-10 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>90%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in Acetonitrile and TFA. *1 mg pack size (01M) is supplied as a 0.2 µm filtered solution in Acetonitrile and TFA. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in sterile 4 mM HCl.
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.** ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 3 months, -20 to -70 °C under sterile conditions after reconstitution.

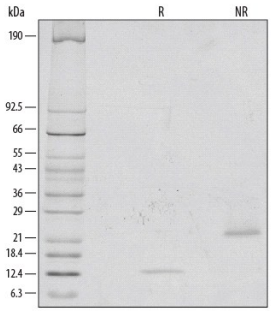
DATA

Bioactivity



Recombinant Human/Mouse/Rat GDF-8/Myostatin (Catalog # 788-G8/CF) induces hemoglobin expression in the K562 human chronic myelogenous leukemia cell line. The ED_{50} for this effect is 2-10 ng/mL.

SDS-PAGE



1 µg/lane of Recombinant Human/Mouse/Rat GDF-8/Myostatin was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by silver staining, showing the main bands at 12 kDa and 24 kDa, respectively.

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BACKGROUND

Growth Differentiation Factor 8 (GDF-8), also known as myostatin, is a member of the TGF-β superfamily that is expressed specifically in developing and adult skeletal muscle. GDF-8 cDNA encodes a 376 amino acid (aa) prepropeptide with a 24 aa residue signal peptide, a 223 aa residue amino-terminal propeptide, and a 109 aa residue carboxy-terminal mature protein. Mature GDF-8 contains the canonical 7-cysteine motif common to other TGF-β superfamily members. Similar to the TGF-βs, activins and BMP-11, GDF-8 also contains one extra pair of cysteine residues that is not found in other family members. The bioactive form of GDF-8 is a homodimer with an apparent molecular weight of approximately 25 kDa. GDF-8 is highly conserved across species. At the amino acid sequence level, mature human, mouse, rat and cow GDF-8 are 100% identical. Within the TGF-β superfamily, GDF-8 is most closely related to BMP-11, a mammalian protein that acts as a dorsal mesoderm and neural inducer in *Xenopus* explants. The two proteins share 90% amino acid sequence identity within their mature chain. A targeted disruption of GDF-8 in mouse results in large mice with a widespread increase in skeletal muscle mass, indicating that GDF-8 is a negative regulator of skeletal muscle growth. A mutation in the bovine GDF-8 gene has been shown to be responsible for the double-muscled phenotype in cattle breeds such as Belgian Blue cattle that is characterized by an increase in muscle mass. GDF-8 has also been shown to inhibit preadipocyte differentiation to adipocytes. Mature GDF-8 binds to activin type II receptors and the binding is antagonized by the activin-binding protein, follistatin. R&D Systems recombinant GDF-8 preparations have been shown to act similarly to Activin A in both the *Xenopus* animal cap and the K562 assays.

References:

1. Storm, E.E. *et al.* (1994) Nature **368**:639.
2. Sharma, M. *et al.* (1999) J. Cell Physiol. **180**:1.
3. McPherron, A.C. *et al.* (1997) Nature **387**:83.
4. Lee, S.J. *et al.* (2001) Proc. Natl. Acad. Sci. USA **98**:9306.
5. Kim, H.S. *et al.* (2001) Biochem. Biophys. Res. Commun. **281**:902.

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