Recombinant Mouse GDF-3

Catalog Number: 9009-GD/CF

DESCRIPTION

Source	Chinese Hamster Ovary cell line, CHO-derived Ala253-Gly366 Accession # Q07104
N-terminal Sequence Analysis	Ala253
Predicted Molecular Mass	13 kDa

SPECIFICATIONS

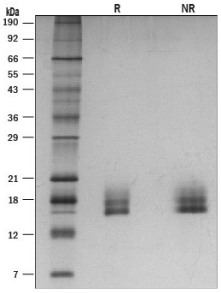
SDS-PAGE	14-23 kDa, reducing conditions
Activity	Measured by its ability to induce Smad2 phosphorylation in P19 mouse embryonal carcinoma cells. Mazerbourg, S. *et al.* (2004) Mol. Endocrinol. **18**:653. 50-100 ng/mL of Recombinant Mouse GDF-3 can effectively induce Smad2 phosphorylation.
Endotoxin 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 HCl. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in 4 mM HCl.
Shipping	The product is shipped with polar packs. 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.

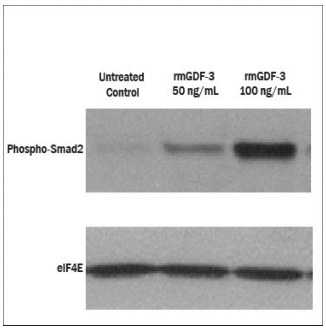
DATA

SDS-PAGE



1 µg/lane of Recombinant Mouse GDF-3 (Catalog # 9009-GD/CF) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by silver staining, showing R bands at 16 and 17 kDa and NR bands at 16 and 18 kDa.

Bioactivity



Recombinant Mouse GDF-3 (Catalog # 9009-GD/CF) Induces Smad2 phosphorylation in P19 mouse embryonic carcinoma cells. P19 cells were incubated with 50 and 100 ng/ml of Recombinant Mouse GDF-3 for 60 minutes. The cells were lysed and Western blots were performed with anti-phospho Smad2 and eIF4E which was served as a loading control.

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BACKGROUND

GDF-3 (previously called Vgr-2) is a TGF-β superfamily member belonging to the growth/differentiation factor family (1, 2). GDF-3 is expressed in undifferentiated embryonic stem (ES) cells, white adipose tissue and the brain (2-4). The 366 amino acid (aa) mouse GDF-3 contains a 22 aa signal sequence, a 230 aa propeptide and a 114 aa mature protein that contains one potential N-glycosylation site. The mature region contains a cysteine-knot structure that is conserved throughout family members. However, it lacks the fourth cysteine which is responsible for the formation of an inter-molecular disulfide bond, so GDF-3 may exist as a non-covalent homodimer (2, 5). Mature mouse GDF-3 shares 90% and 83% aa sequence identity with rat and human GDF-3, respectively. Most of GDF-3 is present as the uncleaved prepro form (6). The uncleaved and the mature forms both appear to have activity, but that activity may differ (5-8). All forms can oppose BMPs. In ES cells, inhibition of BMP2 signaling by GDF-3 maintains pluripotency (5, 7). GDF3 also influences early cell fate decisions; for example, deletion of mouse GDF-3 produces defects in the anterior visceral endoderm of the pre-gastrulation embryo (6-8). GDF-3 cooperates with GDF-1 in embryogenesis, and the mature protein has nodal-like activity (8, 9). Although GDF family members signal through BMP receptors (ALK1, 2, 3 and 6), which activate Smads 1, 5 and 8, GDF-3 signaling through ALK4 and ALK7, which activate Smads 2 and 3, has also been reported (9, 10). In adipocytes, GDF-3 is induced by a high fat diet, promoting adipogenesis and obesity (3, 10, 11).

References:

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