Recombinant Human/Mouse/Rat GDF-11/BMP-11

Catalog Number: 1958-GD

DESCRIPTION

Source	*E. coli*-derived GDF-11/BMP-11 protein Asn299-Ser407, with an N-terminal Met Accession # O95390
N-terminal Sequence Analysis	Met-Asn$_{299}$-Leu-Gly-Leu-Asp-(Cys)-Asp-Glu-His
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	12.6 kDa (monomer)

SPECIFICATIONS

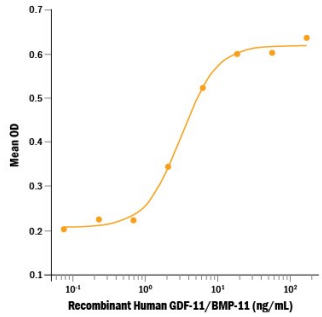
Activity	Measured by its ability to induce hemoglobin expression in K562 human chronic myelogenous leukemia cells. Schwall, R.H. *et al.* (1991) Method Enzymol. **198**:340. The ED$_{50}$ for this effect is 0.8-4.8 ng/mL.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>95%, 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 with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100-200 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.

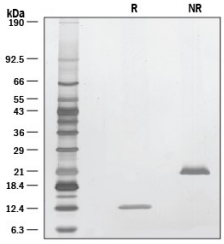
DATA

Bioactivity



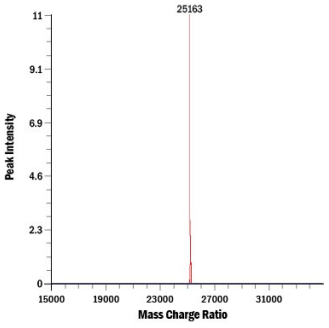
Bioactivity of Recombinant GDF-11 Protein Recombinant Human/Mouse/Rat GDF-11 protein Catalog # 1958-GD induces hemoglobin expression in the K562 human chronic myelogenous leukemia cell line. The ED$_{50}$ for this effect is 0.8-4.8 ng/mL.

SDS-PAGE



Bioactivity of Recombinant GDF-11 Protein 1 µg/lane of Recombinant Human/Mouse/Rat GDF-11 Catalog # 1958-GD protein was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by silver staining, showing bands at 13 kDa and 21 kDa, respectively.

Mass Spectrometry



Bioactivity of Recombinant GDF-11 Protein ESI analysis of Recombinant Human/Mouse/Rat GDF-11 protein Catalog # 1958-GD. The peak at 25163 Da corresponds to the calculated molecular mass of the disulfide-linked homodimer.

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BACKGROUND

Growth Differentiation Factor 11 (GDF-11), also known as BMP-11, is a member of the TGF-β superfamily and is highly related to GDF-8. GDF-11 encodes a 407 amino acid (aa) prepropeptide which contains a signal sequence for secretion and an RXXR proteolytic processing site to yield a 109 aa residue carboxy-terminal mature protein (1). Mature GDF-11 contains the canonical 7-cysteine motif common to other TGF-β superfamily members; however, like the TGF-βs, Activins and GDF-8, GDF-11 also contains one extra pair of cysteine residues. At the amino acid sequence level, mature human, mouse, rat and chicken GDF-11 are 99-100% identical. GDF-11 and GDF-8 share 90% amino acid sequence identity within the mature protein. As detected by in situ hybridization, GDF-11 is expressed in diverse regions of the mouse embryo: tailbud, somitic precursors, limbs, mandibular and branchial arches, dorsal neural tube, odontoblasts, nasal epithelium, and particular regions of the brain (1, 2). Targeted deletion of GDF-11, in mice, results in a spectrum of abnormalities including palatal malformation, vertebral defects, elongated trunks with a reduced or absent tail, missing or malformed kidneys, and an increased number of neurons in the olfactory epithelium (2-5). GDF-11 signals through the Activin type II receptors and induces phosphorylation of Smad2 to mediate axial patterning (6). Systemic GDF-11 levels decline with age and administration of higher levels of GDF-11 can reverse age-related cardiac hypertrophy (7). In addition, systemic administration of recombinant GDF-11 protein restores genomic integrity and health of muscle stem cells, neurovasculature and enhances neurogenesis (8, 9). R&D Systems recombinant GDF-11 preparations have been shown to act similarly to GDF-8 in both the Xenopus animal cap and the K562 assays.

References:

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