

**DESCRIPTION**

**Source** Chinese Hamster Ovary cell line, CHO-derived  
Asp254-Arg372  
Accession # NP\_001483

**N-terminal Sequence Analysis** Asp254

**Structure / Form** Disulfide-linked homodimer

**Predicted Molecular Mass** 12.6 kDa (monomer)

**SPECIFICATIONS**

**SDS-PAGE** 13 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 ng/mL of Recombinant Human GDF-1 can effectively induce Smad2 phosphorylation.

**Endotoxin Level** <0.10 EU per 1 µg of the protein by the LAL method.

**Purity** >95%, by SDS-PAGE under reducing conditions and visualized by silver stain.

**Formulation** Lyophilized from a 0.2 µm filtered solution in HCl with BSA as a carrier protein. See Certificate of Analysis for details.

**PREPARATION AND STORAGE**

**Reconstitution** Reconstitute at 100 µg/mL in 4 mM HCl containing at least 0.1% human or bovine serum albumin.

**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.

**BACKGROUND**

Growth and Differentiation Factor 1 (GDF-1) is a 12 - 15 kDa secreted protein in the TGF-β superfamily (1). It is the functional equivalent of frog, zebrafish, and chick Vg1 (2, 3). Human GDF-1 is synthesized as a preproprotein that contains a 29 amino acid (aa) signal peptide, a 224 aa propeptide, and a 119 aa mature peptide which is released following proteolysis at a dibasic cleavage site (4). Mature human GDF-1 shares 81% aa sequence identity with mouse and rat GDF-1. GDF-1 is expressed in the developing and adult nervous system, particularly in neurons of the cerebral cortex and hippocampus (4, 5). It is required during embryogenesis for development of left/right axis asymmetry, anterior/posterior axis asymmetry, and the notochord (2, 3, 6, 7). It cooperates with Nodal and GDF-3 in these activities and potentiates Nodal bioactivity through formation of a 27 kDa noncovalent GDF-1-Nodal heterodimer (3, 7, 8). The presence of Nodal is required for GDF-1 induced effects (8). GDF-1 signals through heteromeric receptor complexes containing Activin RIIA or Activin RII B, ALK4 or ALK7, and an EGF-CFC protein such as Cryptic or Cripto (7 - 9). Loss of function mutations in GDF-1 are associated with a variety of human cardiac development defects (10).

**References:**

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