

DESCRIPTION

Source	<i>E. coli</i> -derived Thr322-Arg450 Accession # Q7Z4P5
N-terminal Sequence Analysis	Thr322
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	14 kDa

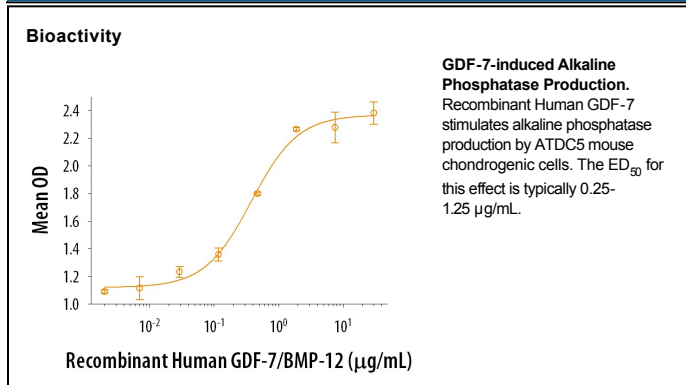
SPECIFICATIONS

SDS-PAGE	14 kDa, reducing conditions
Activity	Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. Nakamura, K. <i>et al.</i> (1999) Exp. Cell Res. 250 :351. The ED ₅₀ for this effect is typically 0.25-1.25 µg/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE with silver staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in HCl. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 500 µg/mL in 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. <ul style="list-style-type: none"> ● 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



BACKGROUND

Growth Differentiation Factor-7 (GDF-7; also called BMP-12 and CDMP-3) is a member of the BMP family of TGF- β superfamily proteins (1, 2). GDF7 is synthesized as a large precursor protein that consists of an N-terminal 19 amino acid (aa) signal sequence, a 302 aa pro region and a 129 aa C-terminal mature peptide. At the amino acid level, mature human GDF-7 shares 85% and 88% aa sequence identity with mature GDF-7 in mouse and rat, respectively. Mature human GDF-7 lacks a glycine repeat that is found in both mouse and rat GDF-7. Based on sequence similarity, GDF-7 is categorized with GDF-5 and -6, as a subgroup within the BMP family. GDF-7 functions as a homodimer and elicits its bioactivity by mediating the formation of a heterodimeric receptor complex consisting of a type 1 (BMPRII) and a type II (BMPRI or Activin RII) serine/threonine kinase receptor. GDF-7 signaling results in the phosphorylation and activation of cytosolic Smad proteins (Smad1, 5, and 8) (3, 4). GDF-7 is involved in tendon and ligament formation and repair (5-8). GDF-7 also regulates bone formation, mesenchymal stem cell differentiation, neuronal differentiation, and axon guidance in the central nervous system (9-12).

References:

1. Storm, E.E. *et al.* (1994) *Nature* **368**:639.
2. Hotten, G. *et al.* (1994) *Biochem Biophys Res Commun* **204**:646.
3. Nishitoh, H. *et al.* (1996) *J Biol Chem* **271**:21345.
4. Mueller, T.D. and J. Nickel (2012) *FEBS Lett* **586**:1846.
5. Fu, S.C. *et al.* (2003) *Life Sci* **72**:2965.
6. Gulati, B.R. *et al.* (2013) *Cells Tissues Organs* **198**:377.
7. Shen, H. *et al.* (2013) *PLoS One* **8**:e77613.
8. Sena, K. *et al.* (2003) *J Dent Res* **82**:166.
9. Butler, S.J. and J. Dodd (2003) *Neuron* **38**:389.
10. Watakabe, A. *et al.* (2001) *J Neurochem* **76**:1455.
11. Lou, J. *et al.* (2001) *J Orthop Res* **19**:1199.
12. Wang, Q.W. *et al.* (2005) *J Biosci Bioeng* **100**:418.