

Recombinant Human Insulin-like growth factor I (IGF-1) Active

Human recombinant protein expressed in *Nicotiana benthamiana*

RF0107

Alternative Names: IGF-IB; MGF; somatomedin-C

Molecular Formula: C379H574N118O109S7

UniProtKB: P05019

p.I: 7,84

Molecular Weight:

Recombinant human IGF-1 is a polypeptide chain containing 70 amino acids (49 - 118 P05019-1 IGF1_HUMAN) with a His tag at N-terminal (8.7 kDa).

Sequence:

HHHHHHHHGHPETLPGAELVDALQFVCGDRGFYFNKPTGYGSS
SRRAPQTGIVDECCFRSCDLRRLEMY

Formulation:

Lyophilized from a Tris HCl 0.25M buffer at pH 7.4 and 0.3M NaCl.

Description:

Insulin-like growth factor I (IGF-I) belongs to the insulin-like growth factor family of signaling molecules that play critical roles in cellular energy metabolism and in growth and development. IGF-I also known as somatomedin C, is secreted from the liver into circulation in a process regulated by pituitary growth hormone (GH) and so it mediates the growth-promoting activity of GH. IGF-1 shares a high degree of structural and functional homology with the insulin hormone.

IGF-I exerts its actions exclusively through the IGF-I receptor (IGF-IR). IGF-I induces endothelial cell migration and is involved in the regulation of angiogenesis. It is a mitogenic agent for a variety of cells including fibroblasts, osteoblasts, smooth muscle cells, fetal brain cells, neuroglial cells, and erythroid progenitor cells. It also plays an important role in some differentiation and anti-apoptotic functions, so it has a key role in tissue renewal and repair.

In tissues, IGF-I is produced by mesenchymal type cells and acts in a paracrine fashion and /or an autocrine fashion by binding to the IGF-IR. This binding activates the receptor tyrosine kinase that triggers the downstream responses and finally stimulates cell division.

His potent mitogenic activity is determinate by the availability of free IGF-1 to interact with IGF-1 receptors. Insulin and the IGFs elicit the same biological responses, either by cross-reacting with one of the receptors for the heterologous ligand or by concurrent activation of convergent effector pathways by binding to the homologous receptor.

Available sizes: 1 µg, 5 µg, 50 µg of active protein

Ext. Coeff. Abs (280nm) 0.1% (=1g/l) =0.554

Purity >97% by SDS-PAGE gel

Serological identification by WB with specific antibody

Endotoxin Level : < 0.04 EU / µg protein (LAL method)

Source:

Human recombinant protein expressed in *Nicotiana benthamiana*. It is produced by transient expression in non-transgenic plants and is purified by standard protein purification methods. This product contains no animal-derived components or impurities. Animal Free product.

Reconstitution Recommendation:

Lyophilized protein should be reconstituted in water following instructions of batch Quality Control sheet. At higher concentrations the solubility may be reduced and multimers generated. Optimal concentration should be determined for specific application.

Storage and Stability:

This lyophilized preparation is stable at 2-8° C for short term, long storage it should be kept at -20°C. Reconstituted protein should be stored in working aliquots at -20°C. Repeated freezing and thawing is not recommended.

References:

- Jones, J. H. and D. R. Clemmons, 1995. Insulin like growth factor and their binding proteins: biological functions. *Endocr. Rev.* 16:3-10.
- Rechler, M. M. and S.P. Nissley, 1985. The nature and regulation of the receptors for insulin-like growth factors. *Annu. Rev. Physiol.*; 47:425-42.
- Russo, V. C et al., 2005. The insulin-like growth factor system and its pleiotropic functions in brain. *Endocrine, Reviews* 26; 916-943.
- Rechler, M. M., and S. P. Nissley, 1986. Insulin-like growth factor (IGF)/somatomedin receptor subtypes: structure, function, and relationships to insulin receptors and IGF carrier proteins. *Horm Res.*, 24 (2-3):152-9.
- Clemmons, D. R. et al., 1995. Role of insulin-like growth factor binding proteins in the control of IGF actions. *Prog. Growth Factor Res.*, 6 (2-4):357-66.

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Product(s) expressed through a transient plant system are intrinsically Animal-free

Applications:

Functional studies, Cell assay, SDS-PAGE, Western Blot, Antibody Production.

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Upon this protein has not been tested in a particular technique this not necessarily excludes its use in such procedures.

Purity Confirmation:

The protein was resolved by SDS polyacrylamide gel electrophoresis and the gel was stained with coomassie blue (Figure 1, lane 2).

Serological Identification:

The protein was electrophoresed under reducing condition on a 15% SDS-polyacrylamide gel, transferred by electroblotting to a NC membrane and visualized by immune-detection with specific antibody IGF-1 (Figure 2, lane 2).

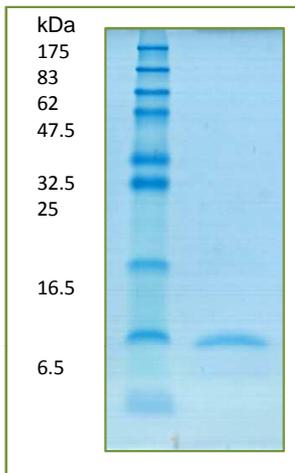


Figure 1. SDS-PAGE of recombinant IGF-1. Samples were loaded in 15% SDS-polyacrylamide gel and stained with coomassie blue. Lane MWM: Molecular weight marker (kDa); Lane 2: contains 100 ng of recombinant IGF-1.

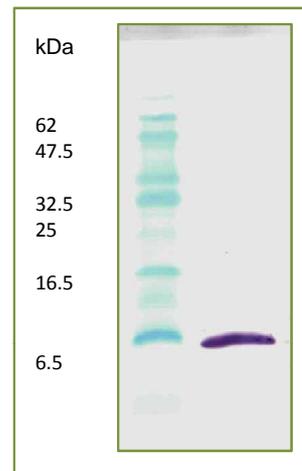
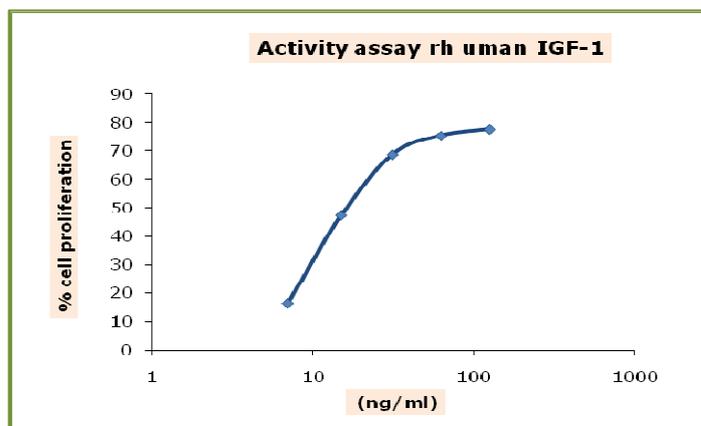


Figure 2. Western Blot analysis of recombinant IGF-1. Lane MWM: Molecular weight marker (kDa); Lane 2: contains 100 ng of recombinant IGF-1.

Bioassay:

The specific activity is determined by the dose-dependent proliferation of mouse BALBC 3T3 cells using a concentration range of 10-20 ng/ml.



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