

DESCRIPTION

Source	<i>E. coli</i> -derived human IGF-I/IGF-1 protein Gly49-Ala118 Accession # P05019 Produced using non-animal reagents in an animal-free laboratory.
N-terminal Sequence Analysis	Gly49
Predicted Molecular Mass	7.6 kDa

SPECIFICATIONS

Activity	Measured in a serum-free cell proliferation assay using MCF-7 human breast cancer cells. Karey, K.P. <i>et al.</i> (1988) Cancer Research 48 :4083. The ED ₅₀ for this effect is 0.3-1.5 ng/mL. The specific activity of Recombinant Human IGF-I/IGF-1 is approximately 2.5 IU/μg, which is calibrated against recombinant human IGF-I/IGF-1 WHO International Standard (NIBSC code: 91/554).
Endotoxin Level	<0.10 EU per 1 μg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 μm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 0.2 mg/mL in sterile PBS.
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.

BACKGROUND

Insulin-like growth factor I (IGF-I or IGF-1), also known as somatomedin C, is the dominant effector of growth hormone and is structurally homologous to proinsulin. Human IGF-I/IGF-1 is synthesized as two precursor isoforms with N- and alternate C-terminal propeptides (1). These isoforms are differentially expressed by various tissues (1). The 7.6 kDa mature IGF-I/IGF-1 is identical between isoforms and is generated by proteolytic removal of the N- and C-terminal regions. Mature human IGF-I/IGF-1 shares 94% and 96% aa sequence identity with mouse and rat IGF-I/IGF-1, respectively (2), and exhibits cross-species activity. It shares 64% aa sequence identity with mature human IGF-II/IGF-2. Circulating IGF-I/IGF-1 is produced by hepatocytes, while local IGF-I/IGF-1 is produced by many other tissues in which it has paracrine effects (1). IGF-I/IGF-1 induces the proliferation, migration, and differentiation of a wide variety of cell types during development and postnatally (3). IGF-I/IGF-1 regulates glucose and fatty acid metabolism, steroid hormone activity, and cartilage and bone metabolism (4-7). It plays an important role in muscle regeneration and tumor progression (1, 8). IGF-I/IGF-1 binds IGF-I R, IGF-II R, and the insulin receptor, although its effects are mediated primarily by IGF-I R (9). IGF-I/IGF-1 association with IGF binding proteins increases its plasma half-life and modulates its interactions with receptors (10).

References:

1. Philippou, A. *et al.* (2007) *In Vivo* **21**:45.
2. Sandberg-Nordqvist, A.C. *et al.* (1992) *Brain Res. Mol. Brain Res.* **12**:275.
3. Guvakova, M.A. (2007) *Int. J. Biochem. Cell Biol.* **39**:890.
4. Clemmons, D.R. (2006) *Curr. Opin. Pharmacol.* **6**:620.
5. Blüher, S. *et al.* (2005) *Best Pract. Res. Clin. Endocrinol. Metab.* **19**:577.
6. Garcia-Segura, L.M. *et al.* (2006) *Neuroendocrinology* **84**:275.
7. Malemud, C.J. (2007) *Clin. Chim. Acta* **375**:10.
8. Samani, A.A. *et al.* (2007) *Endocrine Rev.* **28**:20.
9. LeRoith, D. and S. Yakar (2007) *Nat. Clin. Pract. Endocrinol. Metab.* **3**:302.
10. Denley, A. *et al.* (2005) *Cytokine Growth Factor Rev.* **16**:421.

MANUFACTURING SPECIFICATIONS

Animal-Free Manufacturing Conditions

Our dedicated controlled-access animal-free laboratories ensure that at no point in production are the products exposed to potential contamination by animal components or byproducts. Every stage of manufacturing is conducted in compliance with R&D Systems' stringent Standard Operating Procedures (SOPs). Production and purification procedures use equipment and media that are confirmed animal-free.

Production

- All molecular biology procedures use animal-free media and dedicated labware.
- Dedicated fermentors are utilized in committed animal-free areas.

Purification

- Protein purification columns are animal-free.
- Bulk proteins are filtered using animal-free filters.
- Purified proteins are stored in animal-free containers in a dedicated cold storage room.

Quality Assurance

- Low Endotoxin Level.
- No impairment of biological activity.
- High quality product obtained under stringent conditions.
- For *ex vivo* research or bioproduction, [additional documentation](#) can be provided.

[Please read our complete Animal-Free Statement](#)