



Recombinant Porcine IGF-1 Protein DataSheet

Catalog Number: GR189031

Background

Insulin-like growth factor 1 (IGF-1) is a hormone similar in molecular structure to insulin.^[1] It plays an important role in childhood growth and continues to have anabolic effects in adults. A synthetic analog of IGF-1, mecasermin, is used for the treatment of growth failure.^[2] IGF-1 consists of 70 amino acids in a single chain with three intramolecular disulfide bridges. IGF-1 has a molecular weight of 7,649 daltons.^[3] IGF-1 is produced throughout life primarily by the liver as an endocrine hormone as well as in target tissues in a paracrine/autocrine fashion. Production is stimulated by growth hormone (GH) and can be retarded by under-nutrition, growth hormone insensitivity, lack of growth hormone receptors, or failures of the downstream signaling pathway post GH receptor including SHP2 and STAT5B. Approximately 98% of IGF-1 is always bound to one of 6 binding proteins (IGF-BP). IGFBP-3, the most abundant protein, accounts for 80% of all IGF binding. IGF-1 binds to IGFBP-3 in a 1:1 molar ratio. IGFBP-1 is regulated by insulin. The highest rates of IGF-1 production occur during the pubertal growth spurt. The lowest levels occur in infancy and old age. Its primary action is mediated by binding to its specific receptor, the insulin-like growth factor 1 receptor (IGF1R), which is present on many cell types in many tissues. IGF-1 is a primary mediator of the effects of growth hormone (GH). Patients with severe primary insulin-like growth factor-1 deficiency (IGFD) may be treated with either IGF-1 alone or in combination with IGFBP-3.^[4] Mecasermin (brand name Increlex) is a synthetic analog of IGF-1 which is approved for the treatment of growth failure.^[4] IGF-1 has been manufactured recombinantly on a large scale using both yeast and *E. coli*.

References

1. Jansen M, et al. (1983). *Nature* 306 (5943): 609–11.
2. Keating G (2008). "Mecasermin". *BioDrugs* 22 (3): 177–88.
3. Rinderknecht E, Humbel R (1978). *J Biol Chem* 253 (8): 2769–2776.
4. Rosenbloom A (2007). *Curr. Opin. Pediatr.* 19 (4): 458–64.



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Description

Quantity: 10 µg

Sources: Expressed in *E. coli*.

Composition: Gly26-Ala95

Accession #: NP_999421.1

Molecular weight: 7.6 kDa

Activity: Measured in a serum-free cell proliferation assay using MCF7 human breast cancer cells. Karey, K.P. *et al.* (1988) Cancer Research **48**:4083.

The ED50 for this effect is typically 0.4-1.6 ng/ml.

Endotoxin level: <1.0 EU per 1 µg of the protein by the LAL method.

Purity: > 96%, by SDS-PAGE under reducing conditions and visualized by silver staining.

Formulation: Lyophilized from a 0.2 µm filtered solution in PBS with BSA as a carrier protein.

Reconstitution: Reconstitute at 100 µg/ml in sterile PBS and store at -20°C ~ -70°C for up to 3 months.

Shipping and storage: The product is shipped at ambient temperature or with ice pad. Upon receipt, store it immediately at -20°C to avoid loss of activity and use it in 6 months.

DECLARATION

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN HUMANS AND ANIMALS.

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NOT FOR USE IN HUMANS AND ANIMALS**