

PRODUCT INFORMATION



IGF-1 (human, recombinant)

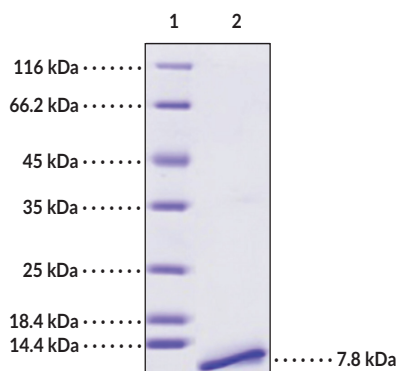
Item No. 33981

Overview and Properties

Synonyms:	Insulin-like Growth Factor-1, Mechano Growth Factor, Somatomedin-C
Source:	Active recombinant human IGF-1 expressed in <i>E. coli</i>
Amino Acids:	49-118
Uniprot No.:	P05019
Molecular Weight:	7.8 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥98% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile 30% acetonitrile, 0.1% TFA, 30% acetonitrile, 5% trehalose, 5% mannitol, 0.01% tween-80
Bioactivity:	See figures for details

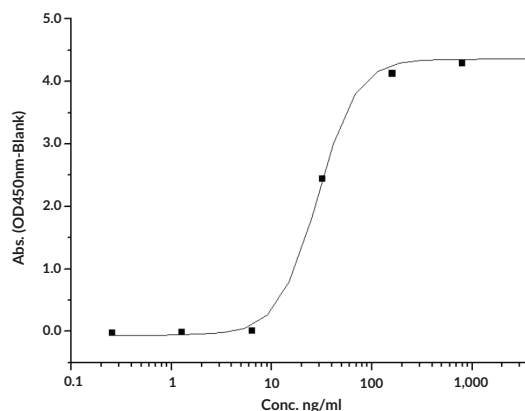
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: IGF-1

SDS-PAGE Analysis of IGF-1. This protein has a calculated molecular weight of 7.8 kDa.



IGF-1 Binding in a Binding Assay. Immobilized IGF-1 at 2 µg/ml (100 µl/well) can bind human IGFBP4. The EC₅₀ value of human IGFBP4 is 10-60 ng/ml.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

Insulin-like growth factor-1 (IGF-1) is a polypeptide hormone that regulates cell growth, maturation, and proliferation.¹ It shares sequence homology with insulin and is composed of an N-terminal signal peptide, B-, C-, A-, and D-regions, and a C-terminal extension (E) peptide. Alternative splicing of the *IGF1* pre-mRNA generates three isoforms, IGF-1Ea, IGF-1Eb, and IGF-1Ec, which have variable E peptides that are post-transcriptionally cleaved to produce the mature peptide. IGF-1 synthesis is induced by growth hormone (GH) and occurs primarily in the liver, where it is transported in the serum to other tissues *via* IGF binding proteins (IGFBPs), but it is also produced by a variety of other tissues, including the bone, where it acts in a paracrine or autocrine manner.² IGF-1 binds the IGF-1 receptor (IGF-1R) with higher affinity than the IGF-2 receptor (IGF-2R) or insulin receptor (IR), inducing activation of a variety of signaling pathways, including PI3K/Akt and RAS/MAPK pathways, that stimulate cell proliferation and protect against apoptosis.³ *IGF1* SNPs have been associated with increased risk of breast cancer, and serum IGF-1 levels are decreased in children with malnutrition.^{3,4} Cayman's IGF-1 (human, recombinant) protein can be used for binding assay and cell-based assay applications. The protein was synthesized from a DNA sequence encoding the mature form of human IGF-1 (Gly49-Ala118) with an N-terminal translation-initiating methionine (Met1). The expressed protein consists of 71 amino acids, has a calculated molecular weight of 7.8 kDa, and a predicted N-terminus of Met1.

References

1. Philippou, A., Maridaki, M., Pneumaticos, S., *et al.* The complexity of the IGF1 gene splicing, posttranslational modification and bioactivity. *Mol. Med.* **20(1)**, 202-214 (2014).
2. Laron, Z. Insulin-like growth factor 1 (IGF-1): A growth hormone. *Mol. Pathol.* **54(5)**, 311-316 (2001).
3. Christopoulos, P.F., Msaouel, P., and Koutsilieris, M. The role of the insulin-like growth factor-1 system in breast cancer. *Mol. Cancer* **14**, 43 (2015).
4. Kjaer, T.W., Grenov, B., Yaméogo, C.W., *et al.* Correlates of serum IGF-1 in young children with moderate acute malnutrition: A cross-sectional study in Burkina Faso. *Am. J. Clin. Nutr.* **114(3)**, 965-972 (2021).

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