

CTGrade GMP rh IGF-1

Catalog #	Product	Size
500-22	CTGrade GMP rh IGF-1	50µg, 100µg, 1mg lyophilized

Intended Use

This product is for research or further manufacturing use only. Not for injection or diagnostic procedures. The safety and efficacy of this product in diagnostic or other clinical procedures has not been established.

Product Description

This product is produced from *E. coli* and is manufactured in a facility that does not use or process beta-lactam containing materials. No animal- or human-derived materials were used during manufacturing or as ingredients. As such, the risk for BSE/TSE contamination can be considered negligible. This product is manufactured, tested, and released in an ISO 9001:2015 certified facility and follows cGMP practices. USP chapter <1043> for ancillary materials has been considered in the manufacture of this product.

Synonyms: Somatomedin C, mechano growth factor, IGF-1A

NIH Accession Number: P05019

Background: Insulin-like Growth Factor 1 (IGF-1), also known as somatomedin C, is the principal effector of growth hormone and is structurally and functionally related to insulin, but with significantly stronger growth-promoting activity [1]. IGF-1 is synthesized as multiple precursor isoforms with N- and alternate C-terminal propeptides. Proteolytic cleavage yields the mature 7.7 kDa peptide, which is 94–96% identical to rodent IGF-1, 100% identical to bovine and porcine IGF-1, and ~64% identical to human IGF-2 [2]. IGF-1 acts in both endocrine (circulating, mainly liver-derived) and paracrine/autocrine (tissue-specific) manners [3]. It plays essential roles in Cell proliferation, migration, and differentiation in muscle, bone, and cartilage [4], Glucose and lipid metabolism, functioning as an insulin-sensitizer in some contexts [5], Muscle regeneration and bone growth [6], Neuroprotection, with low levels linked to Alzheimer’s disease [7], and Tumor progression, where overactivation of IGF-1R contributes to oncogenesis [8]. At the molecular level, IGF-1 binds with high affinity to IGF-1R, and with lower affinity to IGF-2R and the insulin receptor. Signaling occurs primarily through the PI3K/AKT and MAPK pathways, promoting proliferation, survival, and resistance to apoptosis [9]. In circulation, IGF-1 associates with IGF-binding proteins (IGFBPs), which regulate half-life and tissue targeting [10]. Recombinant human IGF-1 is approved for the treatment of severe primary IGF-1 deficiency, such as Laron syndrome, or in children with growth hormone deficiency who develop anti-GH antibodies [11]. It has also been used experimentally to improve glycemic control in severe insulin resistance syndromes and Type 1/Type 2 diabetes [12]. IGF-1 and its pathway are active areas of investigation in oncology and neurodegenerative disease therapy [13, 14]. UniProt ID: P05019

Specifications

Formulation:	CTGrade GMP rh IGF-1 is lyophilized from a 0.2 µm filtered solution containing 0.1% Trifluoroacetic Acid (TFA).
Protein Purity:	≥98% determined by reducing and non-reducing SDS-PAGE analysis.
Endotoxin:	<0.01 EU/µg using USP <85>/ EP 2.6.14
Bioactivity:	ED50 is determined by the dose-dependent MCF-7 cell line cells. ED50 is typically less than 1.5 ng/mL.
Quality:	Carrier-free and no animal- or human-derived materials were used during manufacturing.

Quality Assurance

All quality control test results are reported on a lot specific Certificate of Analysis, which is available at www.irvinesci.com or upon request.

Shipping

This product is shipped at ambient temperature. Immediately upon receipt, store at the recommended temperature below.

Storage Instructions and Stability

Upon receipt, store the lyophilized protein at -20°C in a manual defrost freezer. Unopened vials are stable for 36 months from the date of manufacture. Reconstituted material should be apportioned in working volumes and stored at or below -20°C in manual defrost freezer.

For short term storage reconstituted material is stable for 4-6 weeks when stored at 2-8°C. Stability can be increased by adding at least 0.1% carrier protein.

Precautions

For *ex vivo* use only. Not for injection or diagnostic procedures. The safety and efficacy of this product in diagnostic or other clinical uses has not been established. Please refer to the Safety Data Sheet for information regarding hazards and safe handling practices.

Directions for Use

1. Reconstitution

Allow the vial and sterile water (e.g. FUJIFILM Irvine Scientific, Inc. P/N 9309 Water for Injection) to equilibrate to room temperature. Draw up desired volume of reconstitution buffer. Aseptically puncturing through rubber stopper with sterile needle, inject the buffer to achieve the desired concentration (0.1-0.5 mg/mL). Swirl the vial gently, **do not vortex**. Allow protein to rehydrate for 10-15 minutes at room temperature with occasional gentle mixing.

2. Optimum Concentration

The optimum concentration varies depending on cell type and culture conditions. Working concentration should be determined for each specific application.

Related Products

Catalog #	Product	Size
9052	DMEM	500mL, 1L
91149	PRIME-XV MSC Expansion XSFM	250mL, 1L
91235G	PRIME-XV MSC Expansion Basal XSFM	500mL
91139	PRIME-XV FreezIS	10mL, 100mL
9309	Water for Injection	1L

References

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Technical Support

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WEBSITE RESOURCES

Visit the website at <https://fujifilmbiosciences.fujifilm.com/> for technical resources and information including:

- Safety Data Sheets (SDS)
- Certificate of Analysis (CoA) (when available)
- FAQs
- Product literature

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