

Recombinant Human IL-7 Protein

Product Name

Recombinant Human IL-7 Protein

Size/Catalog Number

50µg / GMP-TL506-0050

100µg / GMP-TL506-0100

Product Information

Synonyms: Interleukin-7, IL7

Accession: Uniprot P13232-1

Expressed Region: Asp26-His177

Fusion Tag: Human IgG1 Fc fragment fused to C-terminus

Expression system: CHO cells

Predicted Molecular weight: 43.8 kDa

Purity: > 95% as determined by SDS-PAGE and HPLC

Endotoxin: < 0.01 EU per 1 µg of protein (LAL method)

Activity: Exhibits dose-dependent proliferation of PHA-activated PBMCs with an ED₅₀ of 0.5-20 ng/mL and a specific activity >1.0×10⁷ IU/mg.

Form: Lyophilized from sterile 20mM phosphate-buffered saline (PBS), pH 7.4, normally containing 6–8% (w/v) mannitol as protectant

Background

The recombinant human IL-7-Fc fusion protein is a glycosylated functional dimer produced in CHO expression systems, engineered with a C-terminal human IgG1 Fc domain to enhance protein stability and receptor clustering efficacy. As a pivotal member of the IL-2 cytokine family, IL-7 activates the JAK1/JAK3-STAT5 signaling cascade via its heterodimeric receptor (IL-7Rα/γc), driving survival, proliferation, and differentiation of T/B/NK cells while maintaining lymphocyte homeostasis through Bcl-2-mediated anti-apoptotic mechanisms and promoting CD4⁺/CD8⁺ double-positive T-cell maturation during thymic development. In cell therapy manufacturing, this fusion protein serves as a critical culture additive to enhance CAR-T cell metabolic fitness and memory phenotype formation through sustained PI3K-AKT-mTOR pathway activation. It synergizes with IL-15 to suppress exhaustion markers (e.g., PD-1/TIM-3) while supporting hematopoietic stem cell differentiation into functional lymphoid progenitors, thereby improving the persistence and antitumor efficacy of adoptive immune cell products. The Fc-mediated dimeric configuration mimics native membrane-bound IL-7 bioactivity and optimizes pharmacokinetic profiles through extended serum half-life.

Stability & Storage

Lyophilized powder: Stable for 12 months at -80°C or 6 months at -20°C when stored in the original sealed container under desiccant.

Reconstitution: Dissolve in sterile Water for Injection, 0.9% NaCl, or PBS (pH 7.4) maintaining final concentration ≥100 µg/mL to prevent adsorption.

Handling: Aliquot to avoid repeated freeze-thaw cycles.

References

1. Aliyari Z, Alemi F, Brazvan B, Tayefi Nasrabadi H, Nozad Charoudeh H. CD26+ Cord Blood Mononuclear Cells Significantly Produce B, T, and NK Cells. Iran J Immunol. 2015 Mar;12(1):16-26.
2. Kim HR, Hwang KA, Park SH, Kang I. IL-7 and IL-15: biology and roles in T-Cell immunity in health and disease. Crit Rev Immunol. 2008;28(4):325-39.
3. Su N, Shi SX, Zhu X, Borazanci A, Shi FD, Gan Y. Interleukin-7 expression and its effect on natural killer cells in patients with multiple sclerosis. J Neuroimmunol. 2014 Nov 15;276(1-2):180-6.

Intended Us

For research and manufacturing purposes only.