

## Recombinant Human IL-21 Protein

### Product Name

Recombinant Human IL-21 Protein

### Size/Catalog Number

50µg / GMP-TL509-0050

100µg / GMP-TL509-0100

### Product Information

**Synonyms:** IL21, Za11, IL-21

**Accession:** Uniprot Q9HBE4-1

**Amino acid sequence:** Gln29-Ser126

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

**Expression system:** CHO cells

**Predicted Molecular weight:** 41.9 kDa

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

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

**Activity:** Induces IFN-γ secretion in human NK-92 lymphoma cells with an ED<sub>50</sub> ≤50 ng/mL.

**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-21-Fc fusion protein is an innovative biologics engineered by covalently linking the human IL-21 pleiotropic cytokine with an immunoglobulin Fc domain through genetic recombination technology. As a γc-chain cytokine family member secreted by antigen-activated CD4<sup>+</sup> T cells (including Tfh and Th17 subsets) and NKT cells, IL-21 activates the JAK1/JAK3-STAT1/STAT3 signaling cascade via its heterodimeric receptor complex (IL-21R/γc), orchestrating immune cell functions: potentiating CD8<sup>+</sup> T/NK cell-mediated tumor cytotoxicity, promoting Th17 polarization, suppressing Treg differentiation, and driving antibody affinity maturation through coordinated Tfh-B cell interactions. The Fc fusion design not only extends serum half-life but also enhances immunomodulatory efficacy via Fcγ receptor-mediated targeted delivery, demonstrating unique therapeutic potential in cancer immunotherapy and autoimmune disease intervention. In cell therapy manufacturing, the recombinant human IL-21-Fc fusion protein serves as a critical culture supplement to enhance the proliferation efficiency and effector cytotoxicity of engineered T/NK cells via JAK-STAT pathway activation, while promoting memory T-cell phenotypes and suppressing activation-induced cell exhaustion (AICD), thereby supporting the generation of highly potent and durable antitumor immune cell products.

### 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. Ju B, Li D, Ji X, Liu J, Peng H, Wang S, Liu Y, Hao Y, Yee C, Liang H, Shao Y. Interleukin-21 administration leads to enhanced antigen-specific T cell responses and natural killer cells in HIV-1 vaccinated mice. *Cell Immunol.* 2016 May;303:55-65.
2. Oyer JL, Pandey V, Igarashi RY, Somanchi SS, Zakari A, Solh M, Lee DA, Altomare DA, Copik AJ. Natural killer cells stimulated with PM21 particles expand and biodistribute in vivo: Clinical implications for cancer treatment. *Cytotherapy.* 2016 May;18(5):653-63.

**Intended Us**

For research and manufacturing purposes only.