Recombinant Human IL-4 Protein

Product Name

Recombinant Human IL-4 Protein

Size/Catalog Number

50μg / GMP-TL301-0050

100μg / GMP-TL301-0100

Product Information

Synonyms: Interleukin-4, B-cell stimulatory factor 1 (BSF-1), Lymphocyte stimulatory factor 1

Accession: Uniprot P05112

Expressed Region: His25-Ser153

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

Expression system: CHO cells

Predicted Molecular Weight: 42.3 kDa

Purity: > 90% as determined by SDS-PAGE

Endotoxin: < 0.1 EU per 1 μg of protein (LAL method)

Activity: Induces dose-dependent proliferation of TF-1 cells with an ED_{50} ≤0.5 ng/mL in MTS-based assays.

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

Background

As a pivotal Th2-polarizing cytokine, IL-4 activates the JAK1/JAK3-STAT6 signaling cascade via the heterodimeric IL-4Rα/γc receptor, driving naive CD4+ T-cell differentiation into Th2 effectors while mediating B-cell IgE/IgG1 class switching and FcεRI upregulation. In monocyte differentiation protocols, this protein synergizes with GM-CSF to suppress CD14 expression and direct the generation of immature dendritic cells (iDCs) with enhanced antigen-processing capacity and controlled co-stimulatory molecule (CD80/CD86) expression, serving as a critical regulator for DC vaccine production. The recombinant human IL-4 protein is a glycosylated functional dimer produced in CHO expression systems, engineered with a C-terminal human IgG1 Fc domain to enhance structural stability and receptor clustering efficacy. Within cell therapy applications, it functions as a key culture component to modulate Treg/Th17 balance for mitigating graft-versus-host disease (GVHD), enhances CAR-T cell metabolic plasticity for improved solid tumor microenvironment adaptation, and promotes hematopoietic stem cell lineage commitment through Fc-mediated sustained signaling, thereby providing molecular scaffolding for functional maturation of adoptive immunotherapy 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. Banchereau J, Briere F, Caux C, Davoust J, Lebecque S, Liu YJ, Pulendran B, Palucka K. Immunobiology of dendritic cells. Annu Rev Immunol. 2000;18:767-811.
2. Banchereau J, Steinman RM. Dendritic cells and the control of immunity. Nature. 1998 Mar 19;392(6673):245-52.
3. Schuler G. Dendritic cells in cancer immunotherapy. Eur J Immunol. 2010 Aug;40(8):2123-30.

Intended Us

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