

DESCRIPTION

Source *E. coli*-derived human IL-4 protein
His25-Ser153, with an N-terminal Met
Accession # P05112.1
Produced using non-animal reagents in an animal-free laboratory.

N-terminal Sequence Analysis Met

Predicted Molecular Mass 15 kDa

SPECIFICATIONS

SDS-PAGE 14 kDa, reducing conditions

Activity Measured in a cell proliferation assay using TF-1 human erythroleukemic cells. Kitamura, T. *et al.* (1989) J. Cell Physiol. **140**:323.
The ED₅₀ for this effect is 0.0500-0.200 ng/mL.
The specific activity of Recombinant Human IL-4 is $>1.00 \times 10^7$ IU/mg, which is calibrated against human IL-4 WHO International Standard (NIBSC code: 88/656).

Endotoxin Level <0.01 EU per 1 µg of the protein by the LAL method.

Purity >97%, by SDS-PAGE under reducing conditions and visualized by silver stain.

Formulation Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 0.2 mg/mL in sterile PBS.

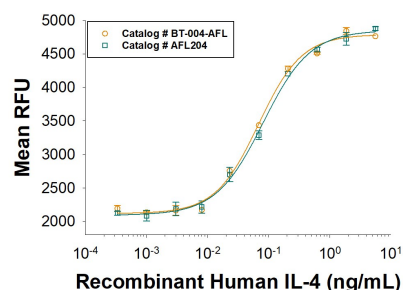
Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

- 12 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 12 months, -20 to -70 °C under sterile conditions after reconstitution.

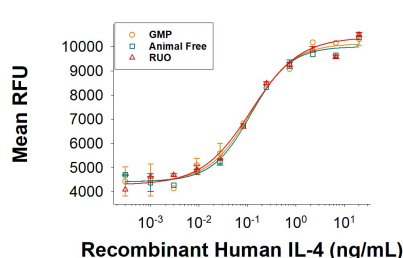
DATA

Bioactivity



Recombinant Human IL-4 Protein Bioactivity Comparison. As an alternative, please consider our next generation Recombinant Human IL-4 (Catalog # BT-004-AFL). It has equivalent bioactivity to Recombinant Human IL-4 (Catalog # AFL204). It combines R&D Systems quality with scalability that allows for a solid supply chain. Both Recombinant Human IL-4 proteins are measured in a cell proliferation assay using TF-1 human erythroleukemic cell line.

Bioactivity



Equivalent Bioactivity of GMP, Animal-Free, and RUO grades of Recombinant Human IL-4
Equivalent Bioactivity of GMP (Catalog # 204-GMP), Animal-Free (Catalog # AFL204), and RUO (Catalog # 204-IL/CF) grades of Recombinant Human IL-4 as measured in cell proliferation assay (orange, green, red, respectively).

BACKGROUND

Interleukin-4 (IL-4), also known as B cell-stimulatory factor-1, is a monomeric, approximately 13 kDa-18 kDa Th2 cytokine that shows pleiotropic effects during immune responses (1-3). It is a glycosylated polypeptide that contains three intrachain disulfide bridges and adopts a bundled four α -helix structure (4). Human IL-4 is synthesized with a 24 aa signal sequence. Alternate splicing generates an isoform with a 16 aa internal deletion. Mature human IL-4 shares 55%, 39% and 43% aa sequence identity with bovine, mouse, and rat IL-4, respectively. Human, mouse, and rat IL-4 are species-specific in their activities (5-7). IL-4 exerts its effects through two receptor complexes (8, 9). The type I receptor, which is expressed on hematopoietic cells, is a heterodimer of the ligand binding IL-4 Ra and the common γ chain (a shared subunit of the receptors for IL-2, -7, -9, -15, and -21). The type II receptor on nonhematopoietic cells consists of IL-4 Ra and IL-13 Ra1. The type II receptor also transduces IL-13 mediated signals. IL-4 is primarily expressed by Th2-biased CD4⁺ T cells, mast cells, basophils, and eosinophils (1, 2). It promotes cell proliferation, survival, and immunoglobulin class switch to IgG4 and IgE in human B cells, acquisition of the Th2 phenotype by naïve CD4⁺ T cells, priming and chemotaxis of mast cells, eosinophils, and basophils, and the proliferation and activation of epithelial cells (10-13). IL-4 plays a dominant role in the development of allergic inflammation and asthma (12, 14).

References:

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7. Mosman, T.R. *et al.* (1987) J. Immunol. **138**:1813.
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MANUFACTURING SPECIFICATIONS

Animal-Free Manufacturing Conditions

Our dedicated controlled-access animal-free laboratories ensure that at no point in production are the products exposed to potential contamination by animal components or byproducts. Every stage of manufacturing is conducted in compliance with R&D Systems' stringent Standard Operating Procedures (SOPs). Production and purification procedures use equipment and media that are confirmed animal-free.

Production

- All molecular biology procedures use animal-free media and dedicated labware.
- Dedicated fermentors are utilized in committed animal-free areas.

Purification

- Protein purification columns are animal-free.
- Bulk proteins are filtered using animal-free filters.
- Purified proteins are stored in animal-free containers in a dedicated cold storage room.

Quality Assurance

- Low Endotoxin Level.
- No impairment of biological activity.
- High quality product obtained under stringent conditions.
- For ex vivo research or bioproduction, [additional documentation](#) can be provided.

[Please read our complete Animal-Free Statement](#)