

DESCRIPTION

Source *E. coli*-derived human IL-2 protein
Ala21-Thr153 (Cys145Ser), with and without an N-terminal Met
Accession # P60568.1
Produced using non-animal reagents in an animal-free laboratory.

N-terminal Sequence Analysis Ala21 & Met

Predicted Molecular Mass 15.5 kDa

SPECIFICATIONS

SDS-PAGE 13 kDa, under reducing conditions.

Activity Measured in a cell proliferation assay using CTLL-2 mouse cytotoxic T cells. Gearing, A.J.H. and C.B. Bird (1987) in *Lymphokines and Interferons, A Practical Approach*. Clemens, M.J. *et al.* (eds): IRL Press. 295.
The ED₅₀ for this effect is 0.0300-0.250 ng/mL. The specific activity of recombinant human IL-2 is >5.00 x 10⁶ IU/mg, which is calibrated against the human IL-2 WHO International Standard (NIBSC code: 86/500).

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

Purity >97%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

Formulation Lyophilized from a 0.2 µm filtered solution in Sodium Acetate with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 500 µg/mL in sterile deionized water.

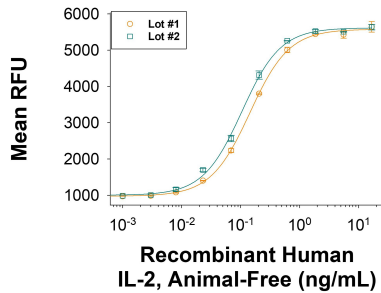
Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

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.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

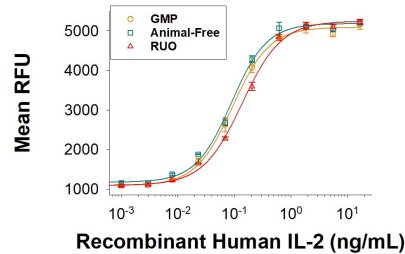
DATA

Bioactivity



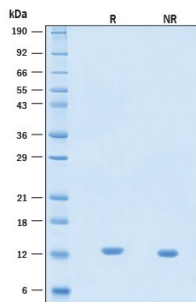
Recombinant Human IL-2 Protein, Animal-Free, Bioactivity. Animal-Free™ Recombinant Human IL-2 (Catalog # BT-002-AFL) as measured in a cell proliferation assay using CTLL-2 mouse cytotoxic T cells. The ED₅₀ for this effect is 0.0300-0.250 ng/mL. Two independent lots were tested for activity and plotted on the same graph to show lot-to-lot consistency of Animal-Free™ Recombinant Human IL-2.

Bioactivity



Equivalent Bioactivity of GMP, Animal-Free, and RUO grades of Recombinant Human IL-2. Equivalent bioactivity of GMP (Catalog # BT-002-GMP) Animal-Free (Catalog # BT-002-AFL) and RUO (Catalog # BT-002) grades of Recombinant Human IL-2 as measured in a cell proliferation assay using CTLL-2 mouse cytotoxic T cells (orange, green, red, respectively).

SDS-PAGE



Recombinant Human IL-2 Animal-Free Protein SDS-PAGE. 2 µg/lane of Animal-Free™ Recombinant Human IL-2 Protein (Catalog # BT-002-AFL) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 13 kDa.

BACKGROUND

Recombinant Interleukin-2 (IL-2) is expressed in *E. coli* and has been engineered to contain the serine for cysteine substitution found in Proleukin® (aldesleukin). Recombinant IL-2 is widely used in cell culture for the expansion of T cells.

IL-2 is expressed by CD4⁺ and CD8⁺ T cells, γδ T cells, B cells, dendritic cells, and eosinophils (1 - 3). Mature human IL-2 shares 56% and 66% amino acid (aa) sequence identity with mouse and rat IL-2, respectively. Human and mouse IL-2 exhibit cross-species activity (4). The receptor for IL-2 consists of three subunits that are present on the cell surface in varying preformed complexes (5 - 7). The 55 kDa IL-2 Rα is specific for IL-2 and binds with low affinity. The 75 kDa IL-2 Rβ, which is also a component of the IL-15 receptor, binds IL-2 with intermediate affinity. The 64 kDa common gamma chain γc/IL-2 Rγ, which is shared with the receptors for IL-4, -7, -9, -15, and -21, does not independently interact with IL-2. Upon ligand binding, signal transduction is performed by both IL-2 Rβ and γc. IL-2 is best known for its autocrine and paracrine activity on T cells. It drives resting T cells to proliferate and induces IL-2 and IL-2 Rα synthesis (1, 2). It contributes to T cell homeostasis by promoting the Fas-induced death of naïve CD4⁺ T cells but not activated CD4⁺ memory lymphocytes (8). IL-2 plays a central role in the expansion and maintenance of regulatory T cells, although it inhibits the development of Th17 polarized cells (9 - 11). Thus, IL-2 may be a key cytokine in the natural suppression of autoimmunity (12, 13).

References:

1. Ma, A. *et al.* (2006) *Annu. Rev. Immunol.* **24**:657.
2. Gaffen, S.L. and K.D. Liu (2004) *Cytokine* **28**:109.
3. Taniguchi, T. *et al.* (1983) *Nature* **302**:305.
4. Mosmann, T.R. *et al.* (1987) *J. Immunol.* **138**:1813.
5. Liparoto, S.F. *et al.* (2002) *Biochemistry* **41**:2543.
6. Wang, X. *et al.* (2005) *Science* **310**:1159.
7. Bodnar, A. *et al.* (2008) *Immunol. Lett.* **116**:117.
8. Jaleco, S. *et al.* (2003) *J. Immunol.* **171**:61.
9. Malek, T.R. (2003) *J. Leukoc. Biol.* **74**:961.
10. Laurence, A. *et al.* (2007) *Immunity* **26**:371.
11. Kryczek, I. *et al.* (2007) *J. Immunol.* **178**:6730.
12. Afzali, B. *et al.* (2007) *Clin. Exp. Immunol.* **148**:32.
13. Fehervari, Z. *et al.* (2006) *Trends Immunol.* **27**:109.

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](#)

PRODUCT SPECIFIC NOTICES

Proleukin® is a registered trademark of Clinigen Holdings Limited.