



Recombinant Human Interleukin-2 (rHu IL-2) Prefilled Syringe

Liquid Syringe (1 mg) Cat. # AK9984-1000 | Protein Concentration (1 mg/mL)

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NOTICE: Catalog # AK9984 is patent pending.

Product Description:

Akron's Recombinant Human Interleukin-2 (rHu IL-2) products are manufactured following all relevant cGMP guidelines for ancillary materials and are supported by a Type II Master File (MF) on file with the FDA and an MF Type I on file with Health Canada which can be referenced during your drug or biologic application process. Our rHu IL-2 amino acid sequence is identical to Proleukin® (aldesleukin), and its functional similarity in T Cell expansion has been evaluated and confirmed (see page 3). Akron's rHu IL-2 is a single chain, 15.3 kDa, non-glycosylated lymphokine analog expressed in *E. coli*, containing 132 amino acids.

It is purified in a pharmaceutical facility without the use of histidine tags and nickel columns. Sterile filtration with aseptic filling are performed with Endotoxin and Sterility testing performed per USP/EP on the final product. The novel liquid formulation and syringe packaging increase safety and ease of use by eliminating the reconstitution step during manufacture.

IL-2 plays a major role in both upregulating and downregulating the body's immune response. It is critical for the homeostasis and differentiation of many immune cell types and is involved in the immune system's ability for self-tolerance. The pleiotropic nature of cytokines is especially diverse in IL-2 due to its signal being transduced by at least three different primary signaling pathways. The trimeric IL-2 receptor protein (IL-2R) shares an identical subunit with the IL-7, IL-15, and IL-21 receptor proteins and activates some of the same signal transduction mechanisms. Akron's cGMP-compliant rHu IL-2 can be used to promote the activation and proliferation of numerous immune cell types, including CAR-T cells, TCR-T cells, Tregs, TILs, NK cells, CIK cells, B cells, monocytes, and macrophages.

Product Features:

Active Substance

- Amino acid sequence identical to Proleukin® / aldesleukin
- Carrier protein-free formulation
- *E. coli* expression system
- All raw materials are compliant, controlled, and traceable under Akron's Quality Management System (QMS)

Manufacturing

- Type II eCTD MF (#026152) on file with the FDA and MF Type I (#e250089) on file with Health Canada
- Tag-free pharmaceutical processing
- Gram-scale production capacity

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Packaging

- Type I borosilicate glass syringe compliant per USP <660> Containers-Glass
- Luer-lock tip connector, for a tight seal and quick disconnect, compliant per USP <381> Elastomeric Closures for Injections
- Plunger stopper provides an effective barrier against extractables and leachables

Quality

- Relevant cGMP guidelines used in manufacture, testing, and release
- USP <1043>, Ancillary Materials for Cell, Gene, and Tissue-Engineered Products
- EP 5.2.12, Raw Materials of Biological Origin for the Production of Cell-based and Gene Therapy Medicinal Products
- ISO 13485:2016, Medical Devices - Quality Management Systems - Requirements for Regulatory Purposes
- ISO/TS 20399-1-3:2018, Biotechnology - Ancillary Materials Present During the Production of Cellular Therapeutic Products
- High Purity, Low Endotoxin - Endotoxin and Sterility testing per USP/EP

Release Testing:

- Appearance (Visual)
- pH (Potentiometric)
- Protein Concentration (Lowry)
- Identification (Reducing SDS-PAGE)
- Western Blot
- Impurities (Non-reducing SDS-PAGE)
- Impurities (Reducing SDS-PAGE)
- Host Cell-derived Proteins (ELISA)
- Host Cell DNA (RT-PCR)
- Biological Activity (HT-2 Proliferation)
- Specific Activity (HT-2 Proliferation)
- Bacterial Endotoxins (USP <85> / EP 2.6.14)
- Sterility (USP <71> / EP 2.6.1)

Stability:

- 24-month shelf life
- Store at 2-8 °C
- Transport with cold packs

Preparation for Use:

DO NOT USE UNTIL THE PRECIPITATE COMPLETELY DISSOLVES AND IS NO LONGER VISIBLE.

During storage at 2-8 °C, a white precipitate appears inside the syringe. This is the result of a reversible interaction between the rHu IL-2 protein and excipients at this temperature, which brings about no relevant changes in strength, purity, or biological activity of Akron's rHu IL-2. The precipitate disappears after a few minutes at room temperature. Warming up the syringe with the hands, rolling the syringe back and forth slowly between them to gently swirl the content may accelerate the process. Once the precipitate has reached dissolution, a colorless, clear liquid should be observed within the syringe, which is now ready to use. Please ensure the white precipitate, if present, completely dissolves and is no longer visible prior to use.

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For Use Statement:

For research use or further manufacturing use in *ex vivo* cell therapy applications. This product is not intended for direct *in vivo* use or for direct clinical use as a drug, therapeutic, biologic, or medical device.

Related Products:

| Catalog Number | Product Name | Size |
|----------------|---|--------|
| AR1045-0100 | Recombinant Interleukin-2 (rHu IL-2) Closed System Solutions (CSS) | 100 µg |
| AK8223-1000 | Recombinant Human Interleukin-2 (rHu IL-2) | 1 mg |
| AK9842-0040 | Recombinant Human Interleukin-7 (rHu IL-7) | 40 µg |
| AK9823-0040 | Recombinant Human Interleukin-15 (rHu IL-15) | 40 µg |
| AK9833-0040 | Recombinant Human Interleukin-21 (rHu IL-21) | 40 µg |
| AK9995-0020 | Recombinant Human Interleukin-12 (rHu IL-12) | 20 µg |
| AK9999-0025 | Recombinant Human Interleukin-18 (rHu IL-18) | 25 µg |

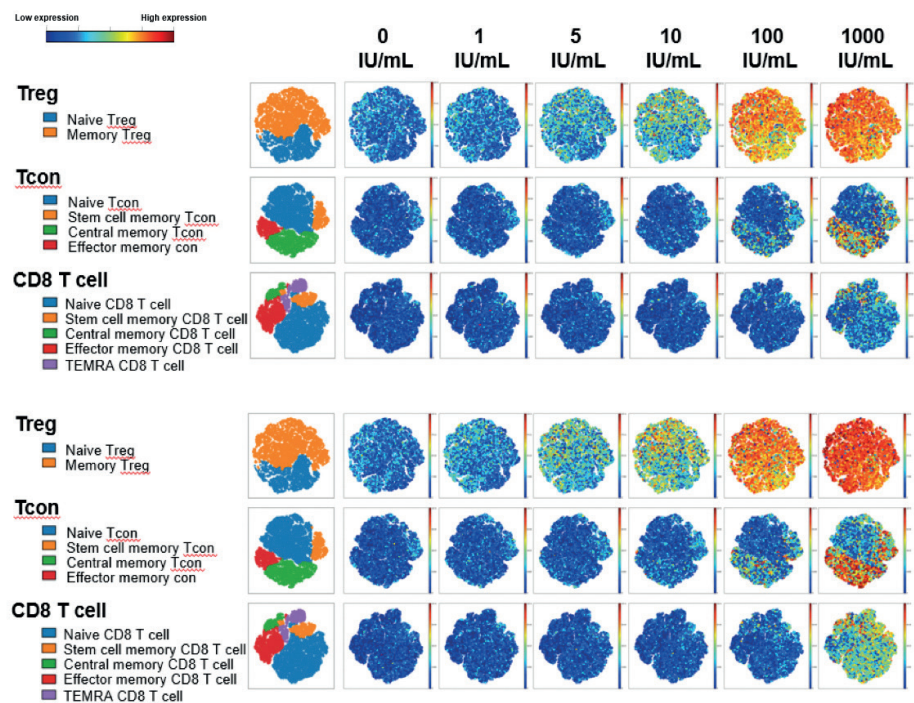
Functionality Data:

Akron rHu IL-2 vs Proleukin® - pSTAT5 Expression

Figure 1: To examine IL-2 signaling, freshly isolated PBMC from healthy donors were stained with surface antibodies targeting 21 different protein markers prior to *in vitro* stimulation with IL-2. Single mass cell cytometry was used to compare the effect of Akron's rHu IL-2 (above) against Proleukin® (below) on the expression of pSTAT5, pSTAT3, & pSTAT1 in T cell subsets. (pSTAT5 example shown to right).

When results were summarized for 6 healthy donors, T cell stimulation *in vitro* by Proleukin® and Akron rHu IL-2 were indistinguishable.

This study was done in collaboration with the Dana-Farber Cancer Institute; study and poster available upon request.



For more information on our available products or for technical assistance, see contact info below.

For contract orders under master supply agreement, please inquire.