

## Acnovia Data Sheet

Catalog#/Size	GMP-AC52387/100 µg.
Source	<i>Escherichia coli</i> .
Molecular Weight	Approximately 17.5 kDa, a single non-glycosylated polypeptide chain containing 152 amino acids.
Description	Accession # P13232.1, Asp26-His177, with an N terminal Met.
SDS-PAGE	17 kDa, reducing conditions.
Purity	> 95 %, as determined by SDS-PAGE, under reducing non-reducing conditions, visualized by coomassie staining and > 95% as determined by RP-HPLC.
Endotoxin	Less than 0.01 EU/µg of GMP Recombinant Human IL-7 as determined by kinetic Limulus Amoebocyte Lysate (LAL) assay.
Sterility	The sterility testing was performed by Direct inoculation Method described in CP<1101>.
Biological Activity	Measured in a cell proliferation assay using PHA-activated human peripheral blood lymphocytes. The EC <sub>50</sub> for this effect is 4.017-4.985 ng/mL. The specific activity of GMP Recombinant Human IL-7 is >1.0x10 <sup>8</sup> IU/mg, which is calibrated against human IL-7 WHO International Standard (NIBSC code: 90/530).
Host Cell Protein	< 0.5 ng per µg of protein when tested by ELISA.
Host Cell DNA	< 0.0015 ng per µg of protein when tested by qPCR.
Kanamycin	Negative when tested by ELISA.
Physical Appearance	Sterile Filtered White lyophilized (freeze-dried) powder.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS.
Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Reconstitute to a concentration of 0.1-1.0 mg/mL in <b>sterile distilled H<sub>2</sub>O</b> . Stock solutions should be apportioned into working aliquots and stored at -20°C to -70°C. Further dilutions should be made in appropriate buffered solutions. <b>Do not reconstitute in cell culture media directly.</b>
Shipping	The product is shipped at 2°C to 8°C. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	<b>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</b> A minimum of 12 months from date of shipping when stored at -20°C to -70°C as supplied. 4 weeks at 2°C to 8°C under sterile conditions after reconstitution. 4 months at -20°C to -70°C under sterile conditions after reconstitution.
Usage	Acnovia rHuIL-7 product can be used for a variety of ex vivo cell culture applications such as research or further manufacturing.
Quality statement	No animal- or human-derived materials were used for the manufacture of this product, unless otherwise stated in the respective Certificate of Origin.

### Background:

Interleukin-7(IL-7) is a soluble globular glycoprotein of about 25 kDa (152 amino acids in humans) and encoded by the gene that located on chromosome 8q12-13. Human IL-7 cDNA encodes 177 amino acids (aa) which contain a 25 aa signal peptide. Human IL-7 exhibits about 60-76% aa sequence with mouse, rat, equine, bovine, ovine, porcine, feline and canine IL-7. Human and mouse IL-7 has the species-crossing activity.

IL-7 is produced by a wide variety of cells, such as fetal liver cells, stromal cells in the bone marrow (BM), and thymus and other epithelial cells, including keratinocytes and enterocytes. The IL-7 receptor(IL-7R) is a heterodimeric complex consisting of the  $\alpha$ -chain (CD127) and the common cytokine receptor  $\gamma$ -chain which is shared with IL-2, IL-4, IL-7, IL-9, IL-15, and IL-21, and expressed in a variety of cells. IL-7 plays a vital role in T-cell development, proliferation, and differentiation, as well as in B cell maturation through the activation of the IL-7 receptor (IL-7R).

IL-7 is a highly pleiotropic cytokine that is required for the efficient generation of lymphocytes from HSCs and maintains the survival of B and T cells by regulating B-cell lymphoma-2 (Bcl-2) family proteins and providing proliferation signals to these lymphocytes. Other than that IL-7 is primarily involved in regulating the development of B cells, T cells, natural killer cells, and dendritic cells via the JAK-STAT, PI3K-Akt, and MAPK pathways.

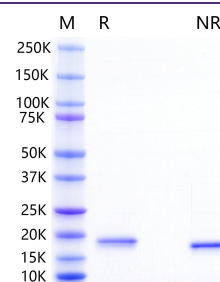
### Application References:

- 1.Barata JT, Silva A, Abecasis M, Carlesso N, Cumano A, Cardoso AA. Molecular and functional evidence for activity of murine IL-7 on human lymphocytes. *Exp Hematol.* 2006 Sep;34(9):1133-42.
- 2.Chen D, Tang TX, Deng H, Yang XP, Tang ZH. Interleukin-7 Biology and Its Effects on Immune Cells: Mediator of Generation, Differentiation, Survival, and Homeostasis. *Front Immunol.* 2021 Dec 2;12:74732.

## DATA:

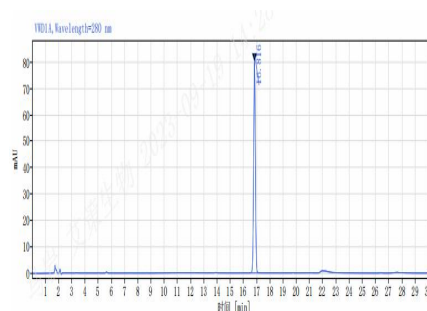
### SDS-PAGE

Recombinant Human IL-7 Protein SDS-PAGE 1µg/lane of Recombinant Human IL-7(Catalog # GMP-AC52387) was resolved with SDS-PAGE under reducing(R) and non-reducing(NR) conditions visualized by coomassie staining showing a single band at 17 kDa.



### RP-HPLC

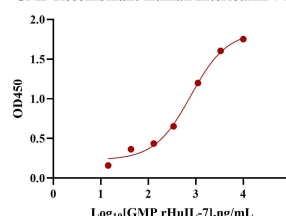
GMP Recombinant Human IL-7 Protein (Catalog # GMP-AC52387) more than 95% as determined by RP-HPLC.



## Bioactivity-ELISA

Immobilized GMP Recombinant Human IL-7 (Catalog # GMP-AC52387) at 0.1 µg/well can bind Human IL-7R with a linear range of 564.8 to 1160 ng/mL.

GMP Recombinant Human Interleukin-7 ELISA



## Bioactivity- Cell based assay

GMP Recombinant Human IL-7 (Catalog # GMP-AC52387) stimulates proliferation of PHA-activated human peripheral blood lymphocytes. The EC<sub>50</sub> for this effect is 4.017-4.985 ng/mL. The specific activity of GMP Human IL-7 is >1.0x10<sup>8</sup> IU/mg, which is calibrated against human IL-7 WHO International Standard (NIBSC code: 90/530).

GMP Recombinant Human IL-7 stimulates proliferation of PBMC cells

