RecombinantHumanInterleukin-7 (rHuIL-7)

Acnovia Data Sheet

Catalog#/Size:	AC52387/100 μg.
Source:	*Escherichia coli.*
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.
Endotoxin:	Less than 0.01 EU/μg of rHuIL-7 as determined by kinetic Limulus Amoebocyte Lysate (LAL) assay.
Biological Activity:	Recombinant human IL-7 bioactivity is measured in a cell proliferation assay using human peripheral blood mononuclear cell (PBMC), the EC50 for this effect is 0.3327 to 0.7014 ng/mL.
Physical Appearance:	Sterile Filtered White lyophilized (freeze-dried) powder.
Formulation:	Lyophilized from a 0.2 μm filtered solution in PBS with Trehalose.
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 **sterile distilled H_2O**. Stock solutions should be apportioned into working aliquots and stored at-20 ℃ to -70 ℃. Further dilutions should be made in appropriate buffered solutions. **Do not reconstitute in cell culture media directly**.
Shipping:	The product is shipped at 2 °C to 8 °C. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage:	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** A minimum of 12 months from date of shipping when stored at -20 ℃to -70℃as supplied. 4 weeks at 2 ℃ to 8 ℃ under sterile conditions after reconstitution. 4 months at -20 ℃ to -70 ℃ 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 sequense 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 α-chain (CD127) and the common cytokine receptor γ-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).

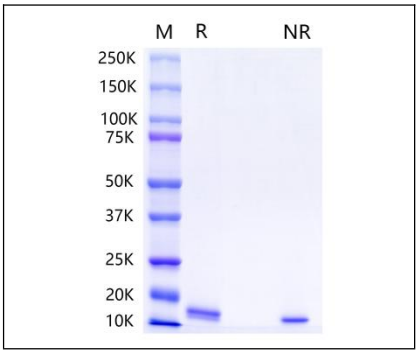
IL-7 is a highly pleiotropic cytokine that is required for the efficient generation of lymphocytes from HSCs and maintains the survival of B and T cells by regulating B-cell lymphoma-2 (Bcl-2) family proteins and providing proliferation signals to these lymphocytes. Other than that IL-7 is primarily 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.

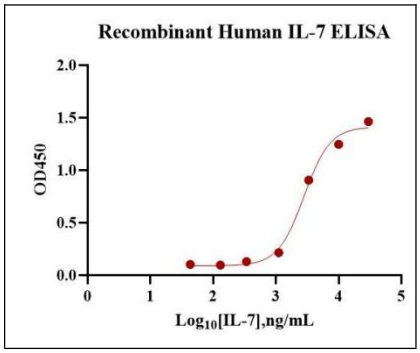
2.Chen D, Tang TX, Deng H, Yang XP, Tang ZH. Interleukin-7 Biology and Its Effects on Immune Cells: Mediator of Generation, Differentiation, Survival, and Homeostasis. Front Immunol. 2021 Dec 2;12:747324.

DATA:



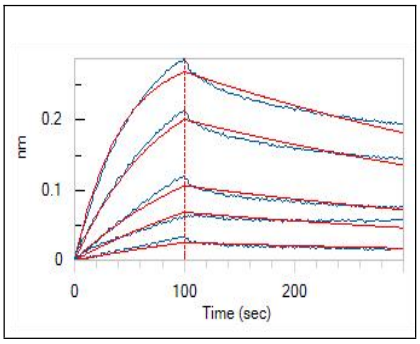
SDS-PAGE

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



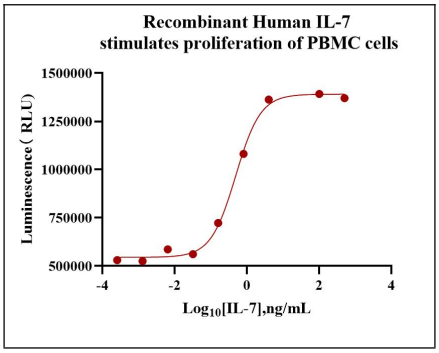
Bioactivity-ELISA

Immobilized Recombinant Human IL-7(Catalog # AC52387) at 0.1 μg/well can bind human IL-7 R alpha with a linear range of 2266 to 3685 ng/mL.



Bioactivity-BLI

Loaded Human IL-7 R alpha, can bind Recombinant Human IL-7(Catalog # AC52387) with an affinity constant of 4.49nM as determined in BLI assay (Octet® R8).



Bioactivity-Cell based assay

Recombinant Human IL-7(Catalog # AC52387) stimulates proliferation of PHA-P-activated human peripheral blood mononuclear cell (PBMC). The EC50 for this effect is 0.3327 to 0.7014 ng/mL.