Recombinant Human Interleukin-6 (rHuIL-6)

Acnovia Data Sheet

Catalog#/Size:	AC52377/100 μg.
Source:	*Escherichia coli.*
Molecular Weight:	Approximately 20.9 kDa, a single non-glycosylated polypeptide chain containing 184 amino acids.
Description :	Accession # Q75MH2, Pro29-Met212, with an N terminal Met.
SDS-PAGE:	21 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-6 as determined by kinetic Limulus Amoebocyte Lysate (LAL) assay.
Biological Activity:	Recombinant human IL-6 bioactivity is measured in a cell proliferation assay using TF-1 human erythroleukemic cell line, the EC50 for this effect is 1.259 to 5.459 ng/mL.
Physical Appearance:	Sterile Filtered White lyophilized (freeze-dried) powder.
Formulation:	Lyophilized from a 0.2 μm filtered concentrated solution in 20 mM Tris-HCl, pH 8.0, 150 mM NaCl , with 10% 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 0.1-0.2 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-6 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-6 (IL-6) is a cytokine that was found to be produced by a variety of different cell types, including T cells, macrophages, and fibroblasts and involved in a wide range of physiological processes, including immune response, inflammation, hematopoiesis, and metabolism.

Mature human IL-6 is a small glycoprotein with a molecular weight of 19-28 kDa, consisting of 183 amino acids forming a four-α helix structure, usually in monomer form. IL-6 signals through a receptor complex consisting of the IL-6 receptor (IL-6R) and glycoprotein 130 (gp130), leading to the activation of downstream signaling pathways, such as the JAK/STAT, MAPK, and PI3K/AKT pathways .

Commonly IL-6 is used to promote the growth and differentiation of various cell types, including hematopoietic stem cells, B cells, and plasma cells.

It has also been shown to enhance the production of monoclonal antibodies in hybridoma cells. Additionally, IL-6 has been used in the culture of mesenchymal stem cells (MSCs) to promote their proliferation and differentiation into bone-forming cells.

In the field of cell and gene therapy, IL-6 has been used as a component of culture media for the expansion and differentiation of various cell types, including mesenchymal stem cells and T cells. IL-6 has also been used in combination with other cytokines to promote the generation of specific cell subsets for therapeutic applications. For example, IL-6 has been used in combination with IL-21 to generate cytotoxic T cells for the treatment of cancer.

References

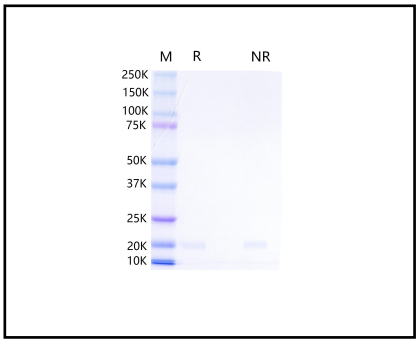
1.Mansell, A. and B.J. Jenkins (2013) Cytokine Growth Factor Rev. 24:249.

2.Sujin Kang et al. Historical overview of the interleukin-6 family cytokine.2020. J. Exp. Med. 2020 Vol. 217 No. 5

3.Xie, F., Wu, C.-F., Liao, Y.-J., Zhou, Y.-Z., Zhang, J.-S., & Deng, Y.-H. (2019). Mesenchymal stem cells modified to express interleukin-6 improve outcomes in Parkinson's disease model rats. CNS Neuroscience & Therapeutics, 25(6), 720–729.

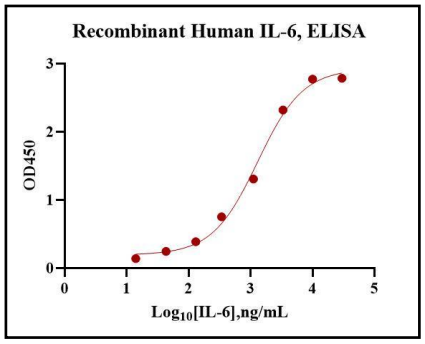
4.S. Kaur *et al*. A Panoramic Review of IL-6: Structure, Pathophysiological Roles and Inhibitors.2020. Bioorganic & Medicinal Chemistry.

DATA:



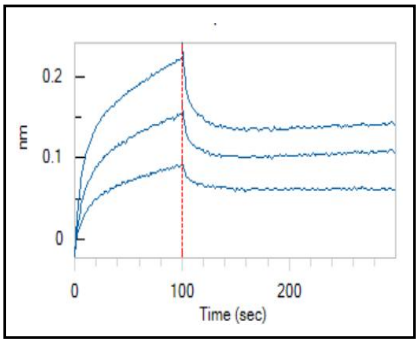
SDS-PAGE

Recombinant Human IL-6 Protein SDS-PAGE 1 μg/lane of Recombinant Human IL-6(Catalog #AC52377) was resolved with SDS-PAGE under reducing(R)and non-reducing (NR) conditions visualized by coomassie staining showing a single band at 21 kDa.



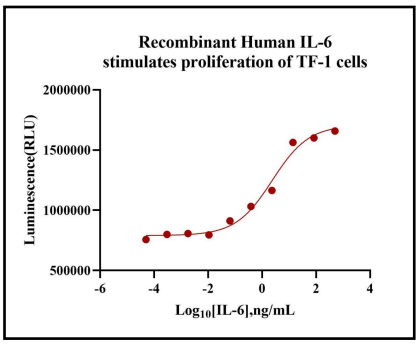
Bioactivity-ELISA

Immobilized Recombinant Human IL-6(Catalog #AC52377) at 0.2 μg/well can bind Human IL-6 R alpha with a linear range of 859.6 to 1996 ng/mL.



Bioactivity-BLI

Loaded Human IL-6 R alpha, can bind Recombinant Human IL-6(Catalog #AC52377) with an affinity constant of 1.772 nM as determined in BLI assay(Octet R8).



Bioactivity-Cell based assay

Recombinant Human IL-6 (Catalog # AC52377) stimulates proliferation of TF-1 human erythroleukemic cell line. The EC50 for this effect is 1.259 to 5.459 ng/mL.