Animal-Free IL-2 Protein, Human (His)

Cat. No.:	HY-P7037AF
Synonyms:	Interleukin-2; IL-2; T-Cell Growth Factor; TCGF; Aldesleukin; IL2
Species:	Human
Source:	E. coli
Accession:	P60568 (A21-T153)
Gene ID:	3558
Molecular Weight:	Approximately 16.4 kDa

PROPERTIES

AA Sequence	M A P T S S S T K K T Q L Q L E H L L L D L Q M I L N G I N N Y K N P K L T R M L T F K F Y M P K K A T E L K H L Q C L E E E L K P L E E V L N L A Q S K N F H L R P R D L I S N I N V I V L E L K G S E T T F M C E Y A D E T A T I V E F L N R W I T F C Q S I I S T L T
Biological Activity	1.Measure by its ability to induce proliferation in CTLL-2 cells. The ED_{50} for this effect is <3 ng/mL. The specific activity of recombinant human IL-2 is approximately >5 x 10^6 IU/mg. 2.Measure by its ability to induce proliferation in NK cells. The ED_{50} for this effect is <46 ng/mL
Appearance	Lyophilized powder.
Formulation	Lyophilized from a solution containing 1X PBS, pH 8.0 or NaPi buffer, 0.018% SDS, pH 7.5.
Endotoxin Level	<0.1 EU per 1 μg of the protein by the LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	The cytokine interleukin-2 (IL-2), produced primarily by activated CD4-positive helper T-cells and, to a lesser extent, by activated CD8-positive T-cells and natural killer (NK) cells, plays pivotal roles in the immune response and tolerance. IL-2 binds to a receptor complex composed of either the high-affinity trimeric IL-2R (IL2RA/CD25, IL2RB/CD122, and IL2RG/CD132) or the low-affinity dimeric IL-2R (IL2RB and IL2RG). This interaction induces oligomerization and conformational changes in the IL-2R subunits, initiating downstream signaling with the phosphorylation of JAK1 and JAK3.

Subsequently, JAK1 and JAK3 phosphorylate the receptor, creating a docking site for the phosphorylation of various substrates, including STAT5. This process activates multiple pathways, including STAT, phosphoinositide-3-kinase/PI3K, and mitogen-activated protein kinase/MAPK pathways. IL-2 functions as a T-cell growth factor, enhances NK-cell cytolytic activity, and promotes robust proliferation of activated B-cells, leading to increased immunoglobulin production. Furthermore, IL-2 plays a crucial role in regulating the adaptive immune system by controlling the survival and proliferation of regulatory T-cells, essential for maintaining immune tolerance. Additionally, IL-2 participates in the differentiation and homeostasis of various effector T-cell subsets, including Th1, Th2, Th17, as well as memory CD8-positive T-cells.

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