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Recombinant Human IL-2 Protein

Catalog Number:	630901, 630902
Size:	20 µg, 100 µg
Target Name:	IL-2, T-cell growth factor (TCGF)
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Bioassay
Format:	Lyophilized from sterile PBS, pH 7.4.
Expression Host:	HEK293
Species:	Human
accession number:	NP_000577.2
Sources:	A DNA sequence encoding the human IL2 (NP_000577.2) (Ala21-Thr153) was expressed.
Molecular Weight:	The recombinant human IL2 consists of 133 amino acids and predicts a molecular mass of 15.4 kDa. It migrates as an approximately 18.52 KDa band in SDS-PAGE under reducing conditions.
Affinity Tag:	None
Purity:	> 95 % as determined by SDS-PAGE. > 95 % as determined by SEC-HPLC.
Endotoxin level:	
Protein Concentration:	Lyophilized
Storage and Handling:	Proteins are stable for up to twelve months from date of receipt at -20℃ to -80℃. Store it under sterile conditions at -20℃ to -80℃. It is recommended that the protein be aliquoted for optimal storage. Avoid repeated freeze-thaw cycles.

BACKGROUND INFORMATION

Human interleukin-2 (IL-2) is a central cytokine in adaptive immunity that regulates T cell proliferation, survival, and differentiation. It is primarily produced by activated CD4+ T cells following antigen recognition and serves as a key growth factor for both effector and regulatory T cells. IL-2 promotes clonal expansion of antigen-specific lymphocytes, enhances cytotoxic activity of CD8+ T cells and natural killer (NK) cells, and plays a crucial role in maintaining immune tolerance through the development and function of regulatory T cells (Tregs).

Structurally, IL-2 is a small, single-chain α-helical cytokine that signals through a heterotrimeric receptor complex composed of IL-2Rα (CD25), IL-2Rβ (CD122), and the common γ chain (γc, CD132), which is shared with several other cytokines. The affinity of IL-2 binding varies depending on receptor subunit composition, with the high-affinity receptor including all three chains. Ligand binding triggers activation of JAK1 and JAK3 kinases and downstream STAT5 signaling, along with PI3K/AKT and MAPK pathways, leading to cell proliferation and survival. IL-2 functions as the primary ligand for this receptor system.

Dysregulation of IL-2 signaling is associated with autoimmune diseases, immunodeficiency, and cancer. Reduced IL-2 activity can

impair immune tolerance, while excessive signaling may contribute to inflammation. Therapeutically, recombinant IL-2 has been used to treat cancers such as melanoma and renal cell carcinoma. More recently, engineered IL-2 variants and low-dose IL-2 therapies are being developed to selectively expand Tregs for autoimmune disease treatment.