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Recombinant Human IL-10 Protein

Catalog Number:	630001, 630002
Size:	20 µg, 100 µg
Target Name:	IL-10, IL10, Interleukin-10, B-TCGF, CSIF, TGIF
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Bioassay
Format:	Lyophilized from sterile PBS, pH 7.4.
Expression Host:	E.coli
Species:	Human
accession number:	NP_000563.1
Sources:	A DNA sequence encoding human IL10 (NP_000563.1) (Ser19-Asn178) was expressed.
Molecular Weight:	The recombinant human IL10 consists of 161 amino acids and predicts a molecular mass of 18.78 KDa. It migrates as an approximately 18 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 IL-10 (interleukin-10) is a key anti-inflammatory cytokine that plays a central role in limiting immune responses and maintaining immune homeostasis. It is produced by a variety of immune cells, including regulatory T cells (Tregs), macrophages, dendritic cells, and certain B cell subsets. IL-10 primarily functions to suppress the production of pro-inflammatory cytokines such as TNF-α, IL-6, and IL-12, thereby preventing excessive tissue damage during immune responses. It also inhibits antigen presentation by downregulating MHC class II and co-stimulatory molecules on antigen-presenting cells.

Structurally, IL-10 is a homodimeric protein composed of two identical subunits, each containing six α-helices. The functional cytokine forms through non-covalent interactions between these subunits, creating a stable dimer that binds to its receptor complex. The IL-10 receptor is a heterotetramer consisting of two IL-10R1 (alpha) chains and two IL-10R2 (beta) chains. Upon ligand binding, the receptor activates intracellular signaling pathways, primarily through JAK1 and TYK2 kinases, leading to STAT3 phosphorylation and transcription of anti-inflammatory genes.

IL-10 does not have multiple classical ligands; rather, it itself is the ligand for the IL-10 receptor complex. However, it belongs to a broader IL-10 cytokine family that includes related molecules such as IL-19, IL-20, and IL-22, which share structural similarities but have distinct receptor usage and biological functions.

In disease, IL-10 plays a dual role. Its anti-inflammatory activity is protective in conditions such as autoimmune diseases, including inflammatory bowel disease and rheumatoid arthritis. However, excessive IL-10 production can contribute to immune suppression in chronic infections and cancer, allowing pathogens or tumor cells to evade immune surveillance.

Therapeutically, IL-10 has been explored both as a treatment and as a target. Recombinant IL-10 has been investigated for inflammatory and autoimmune diseases, although clinical success has been limited. Conversely, blocking IL-10 signaling may enhance anti-tumor immunity in cancer immunotherapy. Ongoing research aims to better harness IL-10’s regulatory properties for precise immune modulation.

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