

Recombinant Human IL-10 Protein

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|---------------------------|-------------------------------------------------|
| 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

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| 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°C to -80°C. Store it under sterile conditions at -20°C to -80°C. 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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