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Recombinant Human IL-4 Protein

Catalog Number:	631601, 631602
Size:	20 μg, 100 μg
Target Name:	IL-4,interleukin-4, B cell growth factor 1 (BCGF-1), B-cell stimulatory factor 1 (BSF-1), lymphocyte stimula
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Bioassay
Format:	Lyophilized from sterile PBS, pH 7.4.
Expression Host:	E.coli
Species:	Human
accession number:	P05112-1
Sources:	A DNA sequence encoding the mature form of human IL4 isoform 1 (P05112-1) (His 25-Ser 153) was expressed and purified with an initial Met.
Molecular Weight:	The recombinant human IL4 consisting of 130 amino acids and migrates with an apparent molecular mass of 15.1 kDa as predicted.
Affinity Tag:	None
Purity:	≥ 95 % as determined by SDS-PAGE. ≥ 95 % as determined by SEC-HPLC.
Endotoxin level:	
Protein Concentration:	Lyophilized
Storage and Handling:	Samples 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-4 (IL-4) is a pleiotropic cytokine primarily produced by activated $CD4^+$ T helper 2 (Th2) cells, basophils, and mast cells. It plays a central role in orchestrating humoral immunity by promoting B-cell proliferation, differentiation, and class switching to IgE and IgG4. IL-4 also suppresses Th1-mediated inflammatory responses, thereby skewing immune polarization toward a Th2 phenotype. Through these functions, IL-4 is critical in host defense against parasitic infections but also contributes to allergic inflammation.

Structurally, IL-4 is a small, secreted glycoprotein of approximately 15 kDa composed of a four α-helix bundle, a common motif among cytokines in the hematopoietin family. IL-4 signals through two receptor complexes: the type I receptor (IL-4Rα paired with the common γ chain) and the type II receptor (IL-4Rα with IL-13Rα1). Binding of IL-4 to these receptors activates the JAK-STAT pathway, particularly STAT6, leading to transcriptional regulation of target genes involved in immune modulation. IL-4 shares functional overlap with IL-13, which can bind the type II receptor complex.

Dysregulation of IL-4 is strongly associated with allergic diseases such as asthma, atopic dermatitis, and allergic rhinitis, where excessive IL-4 drives IgE production and eosinophilic inflammation. It is also implicated in tumor immune evasion and fibrosis in certain contexts. Therapeutically, targeting the IL-4/IL-4 receptor axis has proven effective; for example, monoclonal antibodies against IL-4Rα (blocking both IL-4 and IL-13 signaling) are widely used to treat moderate-to-severe atopic diseases. Conversely, recombinant IL-4 has been explored experimentally to enhance immune responses in cancer and vaccine settings, although its clinical use remains limited.

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