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Recombinant Human IL-12 Protein

Catalog Number:	630101, 630102
Size:	10 μg, 100 μg
Target Name:	IL-12, Natural killer cell stimulatory factor (NKSF), cytotoxic lymphocyte maturation factor (CLMF)
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Bioassay
Format:	Lyophilized from sterile PBS, pH 7.4.
Expression Host:	HEK293
Species:	Human
accession number:	P29459-1 &NP_002178.2
Sources:	A DNA sequence encoding the human IL12A (P29459-1)(Met1-Ser219) was expressed, constructed the plasmid 1; A DNA sequence encoding the human IL12B (NP_002178.2)(Met1-Ser328) was expressed, constructed the plasmid 2. The two plasmids were co-expressed and the human IL12A&IL12B heterodimer was purified.
Molecular Weight:	The recombinant heterodimer of human IL12A&IL12B comprises 503(197+306) amino acids and has a calculated molecular mass of 57.2(22.5+34.7) KDa. The apparent molecular mass of human IL12 heterodimer is approximately 34 & 41 kDa respectively 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-12 (IL-12) is a proinflammatory cytokine that plays a central role in bridging innate and adaptive immunity. It is primarily produced by antigen-presenting cells such as dendritic cells, macrophages, and B cells in response to pathogens. IL-12 promotes the differentiation of naïve CD4+ T cells into T helper 1 (Th1) cells and enhances the cytotoxic activity of natural killer (NK) cells and CD8+ T lymphocytes. A key function of IL-12 is the induction of interferon-gamma (IFN-γ) production, which amplifies cellular immune responses against intracellular pathogens.

Structurally, IL-12 is a heterodimer composed of two covalently linked subunits: p35 and p40. These subunits are encoded by

separate genes and must assemble to form the biologically active cytokine, often referred to as IL-12p70. IL-12 signals through a receptor complex consisting of IL-12Rβ1 and IL-12Rβ2 chains, leading to activation of the JAK-STAT signaling pathway, particularly STAT4.

In disease, dysregulated IL-12 production is associated with chronic inflammation and autoimmune conditions such as psoriasis and inflammatory bowel disease. Conversely, insufficient IL-12 activity can impair host defense against infections. Therapeutically, IL-12 has been explored as an immunostimulatory agent in cancer, aiming to boost anti-tumor immunity. However, systemic toxicity has limited its direct use, leading to alternative strategies such as targeted delivery or modulation of its signaling pathway.

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