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Recombinant Mouse IL-12 Protein

Catalog Number:	671201, 671202
Size:	20 μg, 50 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:	Mouse
accession number:	P43431 & P43432
Sources:	A DNA sequence encoding the p35 subunit of mouse IL12, termed as IL12A (P43431) (Met 1-Ala 215) was fused with a polyhistidine tag at the C-terminus, constructed the plasmid 1; A DNA sequence encoding the p40 subunit of mouse IL12, termed as IL12B (P43432) (Met 1-Ser 335) was fused with a polyhistidine tag at the C-terminus, constructed the plasmid 2. The two plasmids were co-expressed and the heterodimer was purified.
Molecular Weight:	The recombinant mouse IL12 heterodimer of IL12A/IL12B, comprises 528 (204 + 324) amino acids and has a calculated molecular mass of 60.3 (23.1 + 37.2) KDa. The apparent molecular mass of IL12 heterodimer is approximately 28 & 47 KDa respectively in SDS-PAGE under reducing conditions.
Affinity Tag:	C-His
Purity:	≥90% as determined by SDS-PAGE.
Endotoxin level:	< 1.0 EU per μg protein
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

Mouse interleukin-12 (IL-12) is a pro-inflammatory cytokine that plays a central role in cell-mediated immunity by promoting T-helper 1 (Th1) cell differentiation, activating natural killer (NK) cells, and enhancing the production of interferon-gamma (IFN-γ). It is produced primarily by activated dendritic cells, macrophages, and other antigen-presenting cells in response to microbial components and immune stimuli. Through these activities, IL-12 helps coordinate innate and adaptive immune responses against intracellular pathogens and contributes to antitumor immunity.

Mouse IL-12, also known as IL-12p70, is a heterodimeric protein composed of two disulfide-linked subunits: p35 (encoded by Il12a) and p40 (encoded by Il12b). The p40 subunit is also shared with IL-23, in which it pairs with the p19 subunit. IL-12 signals through a heterodimeric receptor consisting of IL-12Rβ1 and IL-12Rβ2. Receptor engagement activates Janus kinases, particularly TYK2 and JAK2, leading primarily to STAT4 activation and increased IFN-γ production. Unlike some cytokines, IL-12 does not have a conventional soluble ligand; instead, its biological activity depends on binding to its specific cell-surface receptor.

IL-12 is important in host defense against intracellular bacteria, parasites, and certain viruses. Impaired IL-12 signaling can weaken cellular immunity and increase susceptibility to some infections. Conversely, excessive IL-12 activity may contribute to chronic inflammation, autoimmune conditions, and tissue damage by sustaining Th1 responses and inflammatory cytokine production. Its effects depend on the infection, tissue environment, and balance of other immune mediators.

Because IL-12 can stimulate cytotoxic T cells and NK cells, it has been investigated as an immunotherapeutic agent for cancer. Experimental approaches include recombinant IL-12, localized IL-12 delivery, and engineered immune cells expressing IL-12 to enhance antitumor activity while limiting systemic toxicity. Mouse IL-12 is widely used in preclinical research to investigate Th1 immunity, cytokine signaling, infectious disease, inflammatory disorders, and cancer immunotherapy.

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