

## Recombinant Human IL-12

### Information

<b>Accession #</b>	P29460 (IL-12p40), P29459 (IL-12p35)
<b>Alternate Names</b>	Human IL12; hIL-12, recombinant IL12, interleukin 12
<b>Source</b>	Human embryonic kidney cell, HEK293-derived human IL12 protein
<b>Protein sequence</b>	IL-12 p40 (Ile23-Ser328), IL-12 p35 (Arg23-Ser219)
<b>M.Wt</b>	22.5 kDa + 34.7 kDa
<b>Appearance</b>	Solution protein.
<b>Stability &amp; Storage</b>	Avoid repeated freeze-thaw cycles. It is recommended that the protein be aliquoted for optimal storage. 12 months from date of receipt, -20 to -70 °C as supplied.
<b>Concentration</b>	0.2 mg/mL
<b>Formulation</b>	Dissolved in sterile PBS buffer.
<b>Reconstitution</b>	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. This solution can be diluted into other aqueous buffers.
<b>Biological Activity</b>	Measured in a cell proliferation assay using PHA-stimulated human T lymphoblasts. The EC50 for this effect is 4-40 pg/mL
<b>Shipping Condition</b>	Shipping with dry ice.
<b>Handling</b>	Centrifuge the vial prior to opening.
<b>Usage</b>	For Research Use Only! Not to be used in humans.

### Quality Control

<b>Purity</b>	> 95%, determined by SDS-PAGE.
<b>Endotoxin</b>	<0.010 EU per 1 ug of the protein by the LAL method.

### Description

Interleukin-12 (IL-12), also known as natural killer cell stimulatory factor (NKSF) or cytotoxic lymphocyte maturation factor (CLMF), is a pleiotropic cytokine originally identified in the medium of activated human B lymphoblastoid cell lines <sup>[1]</sup>. The p40 subunit of IL-12 has been shown to have extensive amino acid sequence homology to the extracellular domain of the human IL-6 receptor while the p35 subunit shows distant but significant sequence similarity to IL-6, G-CSF, and chicken MGF <sup>[2, 3]</sup>. These observations have led to the suggestion that IL-12 might have evolved from a cytokine/soluble receptor complex. Human and murine IL-12 share 70% and 60% amino acid sequence homology in their p40 and p35 subunits, respectively. IL-12 apparently shows species specificity with human IL-12 reportedly showing minimal activity in the murine system. IL-12 is

produced by macrophages and B lymphocytes and has been shown to have multiple effects on T cells and natural killer (NK) cells [4]. These effects include inducing production of IFN- $\gamma$  and TNF by resting and activated T and NK cells, synergizing with other IFN- $\gamma$  inducers at both the transcriptional and post-transcriptional levels. This interaction induces IFN- $\gamma$  gene expression, enhancing the cytotoxic activity of resting NK and T cells, inducing and synergizing with IL-2 in the generation of lymphokine-activated killer (LAK) cells, acting as a co-mitogen to stimulate proliferation of resting T cells, and inducing proliferation of activated T and NK cells [5]. Current evidence indicates that IL-12, produced by macrophages in response to infectious agents, is a central mediator of the cell-mediated immune response by its actions on the development, proliferation, and activities of TH1 cells. In its role as the initiator of cell-mediated immunity, it has been suggested that IL-12 has therapeutic potential as a stimulator of cell-mediated immune responses to microbial pathogens, metastatic cancers, and viral infections such as AIDS.

## Reference

- [1]. Gubler, U. et al. (1991) Proc. Natl. Acad. Sci. 88:4143.
- [2]. Gearing, D. et al. (1991) Cell 66:9.
- [3]. Merberg, D. et al. (1992) Immunology Today 13:78.
- [4]. Wolf, S.F. et al. (1991) Journal of Immunology 146:3074.
- [5]. Airoidi, I. et al. (2000) Journal of Immunology 165:6880.

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