

Background

Interleukin 12 (IL-12) is the founding member of the IL-12 family of heterodimeric cytokines, which have important immunological functions. IL-12 is composed of two disulfide-linked subunits of 35 kDa and 40 kDa, respectively. The 35 kDa subunit (p35) is an α -helical protein homologous to IL-6 and G-CSF. The 40 kDa subunit (p40) contains one fibronectin type III and one Ig C2-like domain, and has a high degree of structural homology to type I cytokine receptors. Whereas p35 subunit is unique to IL-12, the p40 subunit is also utilized in IL-23. Mature rat p35 is a 194 amino acids (aa) protein that is secreted as a heterodimer linked to p40. It contains three potential N-linked glycosylation sites and shares 86%, and 58% aa sequence identity with mouse and human p35, respectively. Mature rat p40 contains 313 aa and can exist in multiple forms, including monomer, homodimer, heterodimer linked to p19 (forming IL-23), and heterodimer linked to p35 (forming IL-12). The expression of p40 is upregulated by substances such as LPS and CpG that activate antigen-presenting cells. Mature rat p40 shows 92% and 66% aa sequence identity to mouse and human p40, respectively. Cells known to produce IL-12 include macrophages, dendritic cells, monocytes, Langerhans cells, neutrophils, and keratinocytes. The activities of IL-12 are mediated by the receptor complex composed of two type I transmembrane proteins: a 100 kDa ligand-binding subunit (IL-12 R β 1) and a 130 kDa signal transducing subunit (IL-12 R β 2). IL-12 facilitates hematopoietic stem cell proliferation, induces NK cell proliferation, and potentiates the expansion and late activation of Th1 CD4⁺ T cells (1 - 4).

References:

1. Park, A.Y. and P. Scott (2001) Scand. J. Immunol. **53**:529.
2. Trinchieri, G. *et al.* (2003) Immunity **19**:641.
3. Brombacher, F. *et al.* (2003) Trends Immunol. **24**:207.
4. Lankford, C.S. and D.M. Frucht (2003) J. Leukoc. Biol. **73**:49.

Description

Source	<i>Spodoptera frugiperda</i> , Sf21 (baculovirus)-derived	
	Rat IL-12 p40 (Met23 – Ser335) Accession # NP_072133	6-His tag
Structure / Form	Rat IL-12 p35 (Arg23 – Ser215) Accession # Q9R103	6-His tag
	N-terminus	C-terminus
Structure / Form	Disulfide-linked heterodimer	
Predicted Molecular Mass	36.8 kDa (p40), 22.6 kDa (p35)	

Specifications

SDS-PAGE	42-45 kDa and 26-28 kDa, reducing conditions
Activity	Measured in a cell proliferation assay using PHA-activated mouse splenocytes. Mattner, F. <i>et al.</i> (1993) Eur. J. Immunol. 23 :2202. The ED ₅₀ for this effect is typically 0.1 - 0.3 ng/mL.
Endotoxin Level	<1.0 EU per 1 μ g of the protein by the LAL method.
Purity	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 μ m filtered solution in PBS with BSA as a carrier protein. See Certificate of Analysis for details.

Preparation and Storage

Reconstitution	Reconstitute at 10 μ g/mL in sterile PBS containing at least 0.1% human or bovine serum albumin.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	<p>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</p> <ul style="list-style-type: none"> ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 3 months, -20 to -70 °C under sterile conditions after reconstitution.

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NOT FOR USE IN HUMANS.