Sterile

#5208

Mouse Interleukin-4 (mIL-4)

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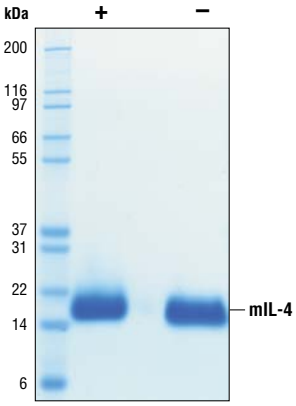
For Research Use Only. Not For Use In Diagnostic Procedures.

Source: Recombinant mouse IL-4 (mIL-4) His21-Ser140 (Accession #NP_067258) was expressed in human 293 cells at Cell Signaling Technology.

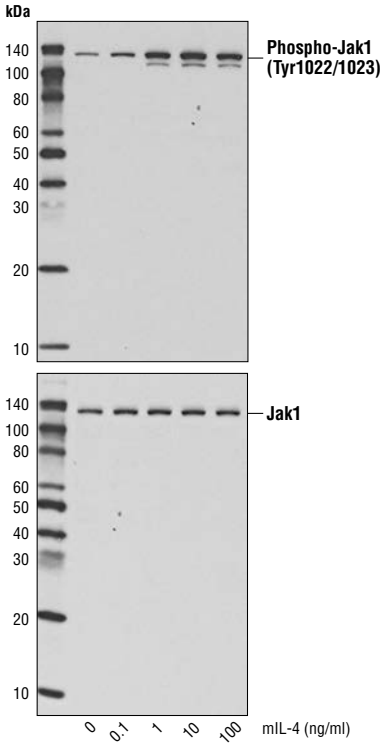
Molecular Characterization: Recombinant mIL-4 contains no "tags" and the nonglycosylated protein has a calculated MW of 13,557. DTT-reduced and non-reduced protein migrate as 16 kDa polypeptide due to glycosylation. The expected amino-terminal HIHGC of recombinant mIL-4 was verified by amino acid sequencing.

Endotoxin: Less than 0.01 ng endotoxin/1 μg mIL-4.

Purity: >98% as determined by SDS-PAGE of 6 μg reduced (+) and non-reduced (-) recombinant mIL-4. All lots are greater than 98% pure.

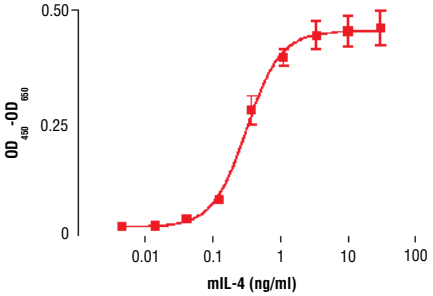


The purity of recombinant mIL-4 was determined by SDS-PAGE of 6 μg reduced (+) and non-reduced (-) recombinant mIL-4 and staining overnight with Coomassie Blue.



Western blot analysis of extracts from HT-2 cells untreated or treated with mIL-4 for 10 minutes, using Phospho-Jak1 (Tyr1022/1023) Antibody #3331 (upper) or Jak1(6G4) Rabbit mAb #3344 (lower).

Bioactivity: The bioactivity of recombinant mIL-4 was determined in an HT-2 cell proliferation assay. The ED_{50} of each lot is between 100-400 pg/ml.



◀ *The proliferation of HT-2 cells treated with increasing concentrations of mIL-4 was assessed. After 48 hour treatment with mIL-4, cells were incubated with a tetrazolium salt and the OD_{450} - OD_{650} was determined.*

Formulation: With carrier: Lyophilized from a 0.22 μm filtered solution of PBS, pH 7.2 containing 20 μg BSA per 1 μg mIL-4.

Carrier free: Lyophilized from a 0.22 μm filtered solution of PBS, pH 7.2.

Reconstitution:
With carrier: Add sterile PBS or PBS containing 1% bovine or human serum albumin or 5-10% FBS to a final mIL-4 concentration of greater than 50 μg/ml. Solubilize for 30 minutes at room temperature with occasional gentle vortexing.

Carrier free: Add sterile PBS or PBS containing protein to minimize absorption of mIL-4 to surfaces. Solubilize for 30 minutes at room temperature with occasional gentle vortexing. Stock mIL-4 should be greater than 50 μg/ml.

Storage: Stable in lyophilized state at -20°C for 1 year after receipt. Sterile stock solutions reconstituted with carrier protein are stable at 4°C for 2 months and at -20°C for 6 months. Avoid repeated freeze-thaw cycles.

Maintain sterility. Storage at -20°C should be in a manual defrost freezer.

Applications: Optimal concentration for the desired application should be determined by the user.

Background: IL-4 is produced by T cells, NK T cells, γδ cells, and mast cells (1). Target cells include B cells, T cells, and macrophages (1). IL-4 induces the polarization of naïve helper T cells into the TH2 phenotype (1,2). IL-4 also promotes B cell proliferation, antibody class switching and the production other TH2 cytokines including IL-5 and IL-9. IL-4 induced TH2 polarization is important in developing humoral immunity against extracellular pathogens (1) and is involved in the development of allergy and asthma (3). IL-4 binds to two distinct receptors, the Type I receptor and Type II receptor. Type I receptor is a heterodimer consisting of IL-4Rα chain and the common gamma chain, γc (4,5). Type II receptor, which is shared with IL-13, is a heterodimer of IL-4Rα and IL-13Rα1. Signaling initiated via Type I receptor results in the activation of Jak1/Stat6, Jak3 and the PI3K/Akt pathways (4). The Type II receptor activates the Jak1/Stat6 and the Tyk2/Stat3 pathways (4).

Background References:

(1) Corthay, A. (2006) *Scand J Immunol* 64, 93-6.

(2) Wynn, T.A. (2003) *Annu Rev Immunol* 21, 425-56.

(3) Nakajima, H. and Takatsu, K. (2007) *Int Arch Allergy Immunol* 142, 265-73.

(4) Wills-Karp, M. and Finkelman, F.D. (2008) *Sci Signal* 1, pe55.

(5) Mueller, T.D. et al. (2002) Biochim Biophys Acta 1592, 237-50.