

DESCRIPTION

Source	<i>Spodoptera frugiperda</i> , Sf 21 (baculovirus)-derived mouse IL-5 protein Met21-Gly133 Accession # P04401
N-terminal Sequence Analysis	Met21
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	13.1 kDa (monomer)

SPECIFICATIONS

SDS-PAGE	12-20 kDa, reducing conditions
Activity	Measured in a cell proliferation assay using TF-1 human erythroleukemic cells. Kitamura, T. <i>et al.</i> (1989) J. Cell Physiol. 140 :323. The ED ₅₀ for this effect is 0.04-0.15 ng/mL.
Endotoxin Level	<1.0 EU per 1 µg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Supplied as a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Shipping	The product is shipped with dry ice or equivalent. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. <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 opening.

BACKGROUND

Interleukin-5 (IL-5) is a secreted glycoprotein that belongs to the α-helical group of cytokines (1 - 3). Unlike other family members, it is present as a covalently linked antiparallel dimer (4, 5). The cDNA for mouse IL-5 encodes a signal peptide and a 113 amino acid (aa) mature protein. Mature mouse IL-5 shares 70%, 94%, 58%, 66%, 59% and 63%, aa sequence identity with human, rat, canine, equine, feline and porcine IL-5, respectively, and shows cross-reactivity with human IL-5 receptor. IL-5 is primarily produced by CD4⁺ Th2 cells, but also by activated eosinophils, mast cells, EBV-transformed B cells, Reed-Sternberg cells in Hodgkin's disease, and IL-2-stimulated invariant natural killer T cells (iNKT) (1 - 3, 6 - 8). IL-5 increases production and mobilization of eosinophils and CD34⁺ progenitors from the bone marrow and causes maturation of eosinophil precursors outside the bone marrow (1, 6, 9, 10). The receptor for human IL-5, mainly expressed by eosinophils, but also found on basophils and mast cells, consists of a unique ligand-binding subunit (IL-5 Rα) and a shared signal-transducing subunit, βc (3, 6, 11). IL-5 Rα first binds IL-5 at low affinity, then associates with preformed βc dimers, forming a high-affinity receptor (12). IL-5 also binds proteoglycans, potentially enhancing its activity (13). Soluble forms of IL-5 Rα antagonize IL-5 and can be found *in vivo* (10, 14). In humans, IL-5 primarily affects cells of the eosinophilic lineage, and promotes their differentiation, maturation, activation, migration and survival, while in mice IL-5 also enhances Ig class switching and release from B1 cells (1 - 3, 9, 10, 15, 16). IL-5 also promotes differentiation of basophils and primes them for histamine and leukotriene release (17).

References:

1. Rosenberg, H. F. *et al.* (2007) J. Allergy Clin. Immunol. **119**:1303.
2. Elsas, P.X. and M. I. G. Elsas (2007) Curr. Med. Chem. **14**:1925.
3. Martinez-Moczygemba, M. and D. P. Huston (2003) J. Allergy Clin. Immunol. **112**:653.
4. Minamitake, Y. *et al.* (1990) J. Biochem. **107**:292.
5. McKenzie, A. N. *et al.* (1991) Mol. Immunol. **28**:155.
6. Shakoory, B. *et al.* (2004) J. Interferon Cytokine Res. **24**:271.
7. Lalani, T. *et al.* (1999) Ann. Allergy Asthma Immunol. **82**:317.
8. Sakuishi, K. *et al.* (2007) J. Immunol. **179**:3452.
9. Clutterbuck, E. J. *et al.* (1989) Blood **73**:1504.
10. Cameron, L. *et al.* (2000) J. Immunol. **164**:1538.
11. Tavernier, J. *et al.* (1991) Cell **66**:1175.
12. Zaks-Zilberman, M. *et al.* (2008) J. Biol. Chem. **283**:13398.
13. Lipscombe, R. *et al.* (1998) J. Leukocyte Biol. **63**:342.
14. Tavernier, J. *et al.* (2000) Blood **95**:1600.
15. Kopf, M. *et al.* (1996) Immunity **4**:15.
16. Horikawa, K. and K. Takatsu (2006) Immunology **118**:497.
17. Denburg, J. A. *et al.* (1991) Blood **77**:1462.