

**DESCRIPTION**

**Source** *E. coli*-derived  
 Leu79-Leu234, with an N-terminal Met  
 Accession # P51435

**N-terminal Sequence Analysis** Met

**Predicted Molecular Mass** 17.4 kDa

**SPECIFICATIONS**

**Activity** Measured in a cytotoxicity assay using L-929 mouse fibroblast cells in the presence of the metabolic inhibitor actinomycin D. Matthews, N. and M.L. Neale (1987) in *Lymphokines and Interferons, A Practical Approach*. Clemens, M.J. *et al.* (eds): IRL Press. 221.  
 The ED<sub>50</sub> for this effect is typically 0.015-0.06 ng/mL.

**Endotoxin Level** <0.01 EU per 1  $\mu$ 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  $\mu$ m filtered solution in PBS with BSA as a carrier protein. See Certificate of Analysis for details.

**PREPARATION AND STORAGE**

**Reconstitution** Reconstitute at 100  $\mu$ 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** **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**

- 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.

**BACKGROUND**

Tumor necrosis factor alpha (TNF- $\alpha$ ), also known as cachectin and TNFSF1A, is the prototypic ligand of the TNF superfamily. It is a pleiotropic molecule that plays a central role in inflammation, apoptosis, and immune system development. TNF- $\alpha$  is produced by a wide variety of immune and epithelial cell types (1, 2). Guinea pig TNF- $\alpha$  consists of a 35 amino acid (aa) cytoplasmic domain, a 21 aa transmembrane segment, and a 155 aa extracellular domain (ECD) (3). Within the ECD, guinea pig TNF- $\alpha$  shares 80% - 83% aa sequence identity with human, mouse, and rat TNF- $\alpha$ . The 26 kDa type 2 transmembrane protein is assembled intracellularly to form a noncovalently linked homotrimer (4). Ligation of this complex induces reverse signaling that promotes lymphocyte co-stimulation but diminishes monocyte responsiveness (5). Cleavage of membrane bound TNF- $\alpha$  by TACE/ADAM17 releases a 55 kDa soluble trimeric form of TNF- $\alpha$  (6, 7). TNF- $\alpha$  trimers bind the ubiquitous TNF RI and the hematopoietic cell-restricted TNF RII, both of which are also expressed as homotrimers (1, 8). TNF- $\alpha$  regulates lymphoid tissue development through control of apoptosis (2). It also promotes inflammatory responses by inducing the activation of vascular endothelial cells and macrophages (2). TNF- $\alpha$  is a key cytokine in the development of several inflammatory disorders (9). It contributes to the development of type 2 diabetes through its effects on insulin resistance and fatty acid metabolism (10, 11).

**References:**

1. Idriss, H.T. and J.H. Naismith (2000) *Microsc. Res. Tech.* **50**:184.
2. Hehlhans, T. and K. Pfeffer (2005) *Immunology* **115**:1.
3. White, A.M. *et al.* (1997) *Am. J. Physiol.* **273**:L524.
4. Tang, P. *et al.* (1996) *Biochemistry* **35**:8216.
5. Eissner G. *et al.* (2004) *Cytokine Growth Factor Rev.* **15**:353.
6. Black, R.A. *et al.* (1997) *Nature* **385**:729.
7. Moss, M.L. *et al.* (1997) *Nature* **385**:733.
8. Loetscher, H. *et al.* (1991) *J. Biol. Chem.* **266**:18324.
9. Clark, I.A. (2007) *Cytokine Growth Factor Rev.* **18**:335.
10. Romanatto, T. *et al.* (2007) *Peptides* **28**:1050.
11. Hector, J. *et al.* (2007) *Horm. Metab. Res.* **39**:250.