

DESCRIPTION

Source *E. coli*-derived
Val77-Leu233
Accession # P01375

N-terminal Sequence Analysis Val77

Structure / Form Homotrimer

Predicted Molecular Mass 17 kDa (unlabeled)

SPECIFICATIONS

SDS-PAGE 17 kDa, reducing conditions

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 ED₅₀ for this effect is typically 25-100 pg/mL.

Endotoxin Level <0.10 EU per 1 μ g of the protein by the LAL method.

Purity >95%, by SDS-PAGE with silver staining.

Formulation Lyophilized from a 0.2 μ m filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

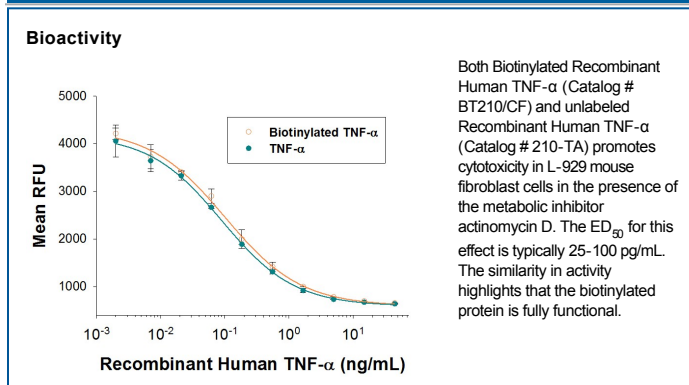
Reconstitution Reconstitute at 100 μ g/mL in sterile PBS.

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.

DATA



BACKGROUND

Tumor necrosis factor alpha (TNF- α), 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, immune system development, apoptosis, and lipid metabolism (1, 2). Human TNF- α consists of a 35 amino acid (aa) cytoplasmic domain, a 21 aa transmembrane segment, and a 177 aa extracellular domain (ECD) (3). Within the ECD, human TNF- α shares 97% aa sequence identity with rhesus and 71%-92% with bovine, canine, cotton rat, equine, feline, mouse, porcine, and rat TNF- α . TNF- α is produced by a wide variety of immune, epithelial, endothelial, and tumor cells (1, 2). TNF- α is assembled intracellularly to form a noncovalently linked homotrimer which is expressed on the cell surface (4). Cell surface TNF- α can induce the lysis of neighboring tumor cells and virus infected cells, and it can generate its own downstream cell signaling following ligation by soluble TNFR I (2, 5). Shedding of membrane bound TNF- α by TACE/ADAM17 releases the bioactive cytokine, a 55 kDa soluble trimer of the TNF- α extracellular domain (6-8). TNF- α binds the ubiquitous 55-60 kDa TNF RI (9, 10) and the hematopoietic cell-restricted 80 kDa TNF RII (11, 12), both of which are also expressed as homotrimers (1, 2, 13). Both type I and type II receptors bind TNF- α with comparable affinity (14), although only TNF RI contains a cytoplasmic death domain which triggers the activation of apoptosis. Soluble forms of both types of receptors are released and can neutralize the biological activity of TNF- α (15).

References:

1. Zelova, H. and J. Hosek (2013) *Inflamm. Res.* **62**:641.
2. Juhasz, K. *et al.* (2013) *Expert Rev. Clin. Immunol.* **9**:335.
3. Pennica, D. *et al.* (1984) *Nature* **312**:724.
4. Tang, P. *et al.* (1996) *Biochemistry* **35**:8216.
5. Perez, C. *et al.* (1990) *Cell* **63**:251.
6. Black, R.A. *et al.* (1997) *Nature* **385**:729.
7. Moss, M.L. *et al.* (1997) *Nature* **385**:733.
8. Gearing, A.J.H. *et al.* (1994) *Nature* **370**:555.
9. Schall, T.J. *et al.* (1990) *Cell* **61**:361.
10. Loetscher, H. *et al.* (1990) *Cell* **61**:351.
11. Dembic, Z. *et al.* (1990) *Cytokine* **2**:231.
12. Smith, C.A. *et al.* (1990) *Science* **248**:1019.
13. Loetscher, H. *et al.* (1991) *J. Biol. Chem.* **266**:18324.
14. Pinckard, J.K. *et al.* (1997) *J. Biol. Chem.* **272**:10784.
15. Engelmann, H. *et al.* (1990) *J. Biol. Chem.* **265**:1531.