

## TNF- $\alpha$

### Recombinant Human Tumor Necrosis Factor $\alpha$

CAS Number: 94948591  
MDL Number: MFCD00148692

Catalog#	Package size
T1100-20	20 $\mu$ g
T1100-200	200 $\mu$ g
T1100-1000	1.0 mg

**Lot#:** 163011  
**Formulation:** Powder lyophilized from volatile buffer 50 mM  $\text{NH}_4\text{HCO}_3$  (pH 8.0).  
**Preservative:** None.  
**MW:** 17kDa  
**Purity:** >97% (15% SDS-PAGE)  
**Source:** Recombinant protein expressed in *E. coli*.  
**Sterility:** 0.2  $\mu$ m membrane-filtered and packaged aseptically.  
**ED50\*:** 0.01-0.1ng/ml.  
**Endotoxin\*\*:**  $\leq 0.1$  EU/ $\mu$ g TNF- $\alpha$   
**QC Tests:** SDS-PAGE, Native PAGE, ELISA, Cytolysis, TC

#### Reconstitution and Use:

Reconstitute the contents of the vial using sterile phosphate-buffered saline (PBS) to a concentration no less than 100  $\mu$ g/ml and aliquot for future use. (*If the initial rehydration is too diluting, activity may be lost due to the non-specific adsorption to the container*). The solution can then be further diluted to a working stock solution. Bovine serum albumin can be added to the working solution to protect TNF- $\alpha$  from loss at low concentrations.

If the product is going to be used for applications requiring absolute asepsis (e.g. cell culture), it's best to filter-sterilize the solution using a sterile and non-pyrogenic 0.2 $\mu$ m membrane before use.

#### Storage and Stability:

Upon receiving, store the product at  $-20$   $^{\circ}\text{C}$ . After reconstitution, store the working aliquots at 2-8  $^{\circ}\text{C}$  for no more than 3 months. For extended storage, aliquot the rehydrated solution ( $\geq 100$   $\mu$ g/ml) and freeze at  $-70$   $^{\circ}\text{C}$  or  $-20$   $^{\circ}\text{C}$ . Avoid repeated freezing and thawing. More dilute solutions stored at  $-20$   $^{\circ}\text{C}$  will lose activity faster.

#### \*Cytolysis Assay:

The ED50 is defined as the effective concentration of TNF- $\alpha$  that causes 50% cytolysis of murine L929B cells, a TNF- $\alpha$  sensitive mouse fibrosarcoma cell line, in the presence of actinomycin-D. Results may vary depending on cell line used. (Havell, E.A., 1987).

#### \*\*Endotoxin Assay:

Endotoxin Unit (EU) is determined by Limulus Amebocyte Lysate (LAL) assay (Sigma).

### About Tumor Necrosis Factor $\alpha$

Tumor Necrosis Factor-Alpha (TNF- $\alpha$ ), also known as cachectin, is named after its activity to cause tumor necrosis *in vivo* when injected into tumor-bearing mice. TNF- $\alpha$  is expressed as a 26 kDa membrane bound protein and is then cleaved by TNF- $\alpha$  converting enzyme (TACE) to release the soluble 17 kDa monomer which forms homotrimers in circulation. Recombinant TNF- $\alpha$  exists as homo-dimer, -trimer or -pentamer. TNF- $\alpha$  is believed to play roles in antitumor activity, immune modulation, inflammation, anorexia, cachexia, septic shock, viral replication and hematopoiesis. TNF- $\alpha$  is expressed in many types of cells but primarily in macrophage cells in response to immunological challenges such as bacteria (lipopolysaccharides), viruses, parasites, mitogens and other cytokines. TNF- $\alpha$  is closely related to the 25 kDa protein Tumor Necrosis Factor- $\beta$  (lymphotoxin) with 28% amino acid sequence identity, sharing the same receptors (TNFR1 and TNFR2) and cellular actions. TNF- $\alpha$  causes cytolysis or cytostasis of many transformed cells, being synergistic with  $\gamma$ -interferon in its cytotoxicity. Although it has little effect on many cultured normal human cells, TNF- $\alpha$  appears to be directly toxic to vascular endothelial cells. Other actions of TNF- $\alpha$  include stimulating growth of human fibroblasts and other cell lines, activating polymorphonuclear neutrophils and osteoclasts, and induction of interleukin-1, prostaglandin E2 and collagenase production. Although TNF- $\alpha$  is currently being evaluated in treatment of certain cancers and AIDS-related symptoms, the recombinant TNF- $\alpha$  offered by Biomyx is for research only.

#### Further information:

- 1) Aggarwal, B., and Reddy, S., Nicola, N., ed., Tumor necrosis factor (TNF) *Guidebook to Cytokines and Their Receptors*, New York (1994), 103-104
- 2) Beutler, B., Sporn, M., and Roberts, A., ed., cachectin/tumor necrosis factor and lymphotoxin *Peptide Growth Factors and their Receptors II*, New York (1991), 39-70
- 3) Callard, R., and Gearing, A., *The Cytokine Facts Book*, New York (1994),
- 4) Ruff, M.R. and G.E. Gifford, *Lymphokines 2*: 235, 1981.
- 5) Eskandari, M.K., *et al.*, *Immunol. Invest.* **19**: 69-79, 1990.
- 6) Havell, E.A., *J. Immunol.* **139**: 4225-4231, 1987.
- 7) Ware, C., *et al.*, Thomson, A.W., ed., Tumor necrosis factor-related ligands and receptors. *The Cytokine Handbook* 3rd ed., San Diego, CA (1998), 549
- 8) Matthews, N., *et al.*, *Lymphokines and Interferons, A Practical Approach*, Clemens, M., *et al.*, eds. IRL Press, 221 (1987).

**For research use only, not for use in humans.**

**For research use only, not for use in humans.**