

# Human Tumor Necrosis Factor- $\alpha$ (hTNF- $\alpha$ )



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**MW (kDa):**  
18

**UniProt ID:**  
#P01375

**Entrez-Gene Id:**  
7124

## Background

TNF- $\alpha$ , the prototypical member of the TNF protein superfamily, is a homotrimeric type-II membrane protein (1,2). Membrane bound TNF- $\alpha$  is cleaved by the metalloprotease TACE/ADAM17 to generate a soluble homotrimer (2). Both membrane and soluble forms of TNF- $\alpha$  are biologically active. TNF- $\alpha$  is produced by a variety of immune cells including T cells, B cells, NK cells and macrophages (1). Cellular response to TNF- $\alpha$  is mediated through interaction with receptors TNF-R1 and TNF-R2 and results in activation of pathways that favor both cell survival and apoptosis depending on the cell type and biological context. Activation of kinase pathways (including JNK, ERK (p44/42), p38 MAPK and NF- $\kappa$ B) promotes the survival of cells, while TNF- $\alpha$  mediated activation of caspase-8 leads to programmed cell death (1,2). TNF- $\alpha$  plays a key regulatory role in inflammation and host defense against bacterial infection, notably *Mycobacterium tuberculosis* (3). The role of TNF- $\alpha$  in autoimmunity is underscored by blocking TNF- $\alpha$  action to treat rheumatoid arthritis and Crohn's disease (1,2,4).

## Endotoxin

Less than 0.01 ng endotoxin/1  $\mu$ g hTNF- $\alpha$ .

## Purity

>98% as determined by SDS-PAGE of 6  $\mu$ g reduced (+) and non-reduced (-) recombinant hTNF- $\alpha$ . All lots are greater than 98% pure.

## Source / Purification

Recombinant human TNF- $\alpha$  (hTNF- $\alpha$ ) Val77-Leu233 (Accession #HUMTNFAB) was produced in *E. coli* at Cell Signaling Technology.

## Bioactivity

The bioactivity of hTNF- $\alpha$  was determined in an L-929 cell viability assay. The ED<sub>50</sub> of each lot is between 10-500 pg/ml.

## Background References

1. Aggarwal, B.B. (2003) *Nat Rev Immunol* 3, 745-56.
2. Hehlhans, T. and Pfeffer, K. (2005) *Immunology* 115, 1-20.
3. Lin, P.L. et al. (2007) *J Invest Dermatol Symp Proc* 12, 22-5.
4. Brennan, F.M. and McInnes, I.B. (2008) *J Clin Invest* 118, 3537-45.

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