

PRODUCT INFORMATION



Soluble TNF- α (human, recombinant)

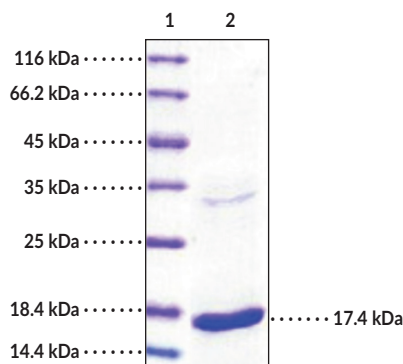
Item No. 32020

Overview and Properties

Synonyms:	DIF, Differentiation-inducing Factor, TNFA, TNFSF2, Tumor Necrosis Factor- α
Source:	Active recombinant human TNF- α expressed in <i>E. coli</i>
Amino Acids:	77-233 (full length, soluble form)
Uniprot No.:	P01375
Molecular Weight:	17.4 kDa
Storage:	-80°C (as supplied)
Stability:	≥ 1 year
Purity:	$\geq 95\%$ estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile PBS, pH 7.4, with 5% trehalose, 5% mannitol, and 0.01% Tween 80
Bioactivity:	See figures for details

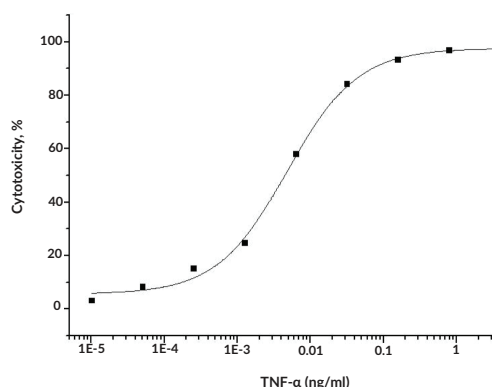
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images

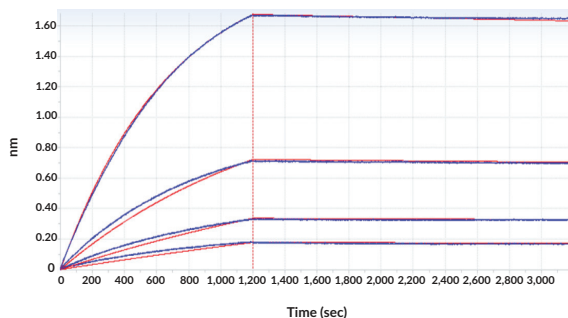


Lane 1: MW Markers
Lane 2: Soluble TNF- α

SDS-PAGE Analysis of Soluble TNF- α . This protein has a calculated molecular weight of 17.4 kDa.



Soluble TNF- α activity in cytotoxicity assay. Soluble TNF- α activity is measured in a cytotoxicity assay using L929 mouse fibrosarcoma cells in the presence of the metabolic inhibitor actinomycin D. The ED_{50} value for this effect is typically 5-50 pg/ml.



Labeled biotin to Soluble TNF- α by a certain molar ratio. Using the Octet RED System, the affinity constant (K_d) of Soluble TNF- α , Biotinylated bound to Humira was 0.1 nM.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
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Description

TNF- α is a cytokine and a member of the TNF/TNF receptor (TNFR) cytokine superfamily.¹ TNF- α is produced as a 233-amino acid transmembrane precursor protein from which mature, soluble TNF- α is formed by proteolysis.² Soluble TNF- α is a 157-amino acid polypeptide, cleaved from the precursor protein on the extracellular side of the membrane, that forms bell-shaped homotrimers with the C-termini at the base, each containing three receptor interaction sites.³ It is primarily produced by activated macrophages but can also be produced by a variety of other cells, such as T cells, natural killer cells, and osteoblasts.^{3,4} TNF- α binds to and activates its receptors, TNFR1 and TNFR2, which are associated with intracellular protein complexes that activate caspases to induce cell death, induce p38 MAPK signaling, and initiate NF- κ B or AP-1-mediated transcription of immune and inflammatory mediators.⁵ TNF- α promotes inflammation partly by inducing endothelial cells to express adhesion molecules, COX enzymes, and pro-coagulant factors.⁴ Exogenous TNF- α induces death of cancer cells *in vitro*, as well as disrupts tumor vascularization and induces tumor necrosis *in vivo*, but it has tumor promoting properties when produced in the cancer microenvironment.^{1,6} In contrast, it plays a role in resistance to infection, with mice lacking *Tnf* having an increased susceptibility to certain microbial infections but lacking resistance to leishmania.⁵ *Tnf* knockout mice are also resistant to certain types of cancer, including chemically induced skin carcinogenesis.¹ TNF- α increases lung metastases in a mouse model of fibrosarcoma, an effect that can be reduced by an anti-TNF- α antibody. Mice overexpressing *Tnf* develop an arthritis similar to rheumatoid arthritis in humans.⁷ TNF- α is produced in the inflamed tissues of patients with inflammatory diseases such as rheumatoid arthritis, and neutralizing antibodies to TNF- α reduce the levels of TNF- α *in vitro* and in mouse models of the disease.⁴ Cayman's Soluble TNF- α (human, recombinant) protein can be used for cell-based and binding assay applications. This protein consists of 158 amino acids and has a calculated molecular weight of 17.4 kDa.

References

1. Balkwill, F. TNF- α in promotion and progression of cancer. *Cancer Metastasis Rev.* **25**(3), 409-416 (2006).
2. Kriegler, M., Perez, C., DeFray, K., *et al.* A novel form of TNF/cachectin is a cell surface cytotoxic transmembrane protein: Ramifications for the complex physiology of TNF. *Cell* **53**(1), 45-53 (1988).
3. Tang, P., Hung, M., and Klostergaard, J. Human pro-tumor necrosis factor is a homotrimer. *Biochemistry* **35**(25), 8216-8225 (1996).
4. Bradley, J.R. TNF-mediated inflammatory disease. *J. Pathol.* **214**(2), 149-160 (2008).
5. Idriss, H.T. and Naismith, J.H. TNF α and the TNF receptor superfamily: Structure-function relationship(s). *Microsc. Res. Tech.* **50**(3), 184-195 (2000).
6. Josephs, S.F., Ichim, T.E., Prince, S.M., *et al.* Unleashing endogenous TNF-alpha as a cancer immunotherapeutic. *J. Transl. Med.* **16**(1), 242 (2018).
7. Li, P. and Schwarz, E.M. The TNF- α transgenic mouse model of inflammatory arthritis. *Springer Semin. Immunopathol.* **25**(1), 19-33 (2003).

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