Recombinant Human TNFα Protein

Product Name

Recombinant Human TNFα Protein

Size / Catalog Number

100μg / GMP-TL303-0100

Product Information

Synonyms: Tumor necrosis factor, Cachectin, TNF-alpha, Tumor necrosis factor ligand superfamily member 2 (TNF-a)

Accession: UniProt P01375

Expressed Region: Val77-Leu233

Tag: C-terminal 6×His-tag

Expression system: HEK293 cells

Predicted Molecular weight: 18.2 kDa

Purity: > 90% as determined by SDS-PAGE

Endotoxin: < 0.1 EU per 1 μg of protein (LAL method)

Activity: Determined by cytotoxicity assay using L929 cells in the presence of actinomycin D, corresponding to a specific activity of ≥ 1.0×10^7 IU/mg.

Form: Lyophilized from sterile PBS (pH7.4), typically supplemented with 6% mannitol as a protectant.

Background

The recombinant human Tumor Necrosis Factor Alpha (TNF-α) protein is a high-purity homotrimeric cytokine produced in HEK-293 expression system via transient transfection, featuring a C-terminal polyhistidine tag for nickel-affinity chromatography purification. As the prototypic member of the TNF superfamily, TNF-α is produced primarily by macrophages and exerts its broad spectrum of pleiotropic biological effects by binding to its receptors TNF-R1 (CD120a/p55) and TNF-R2 (CD120b/p75). It plays a central role in regulating immune cell activity, capable of inducing apoptotic cell death in certain tumor cell lines, triggering inflammation, inhibiting viral replication, and critically modulating processes such as cell proliferation, differentiation, lipid metabolism, and coagulation. However, dysregulation of TNF-α is implicated in a variety of human diseases, including cancer (exhibiting dual roles in both antitumorigenesis and tumor promotion/metastasis), septic shock, fever, autoimmune diseases (such as rheumatoid arthritis and Crohn's disease), graft-versus-host disease, Alzheimer's disease, and major depression. Recombinant TNF-α is utilized clinically as an immunostimulant under the INN tasonermin. The native homotrimeric configuration preserves full bioactivity, while the His-tag design enables precise purification.

Stability & Storage

Lyophilized powder: Stable for 12 months at -80°C or 6 months at -20°C when stored in the original sealed container under desiccant.

Reconstitution: Dissolve in sterile water for injection, 0.9% NaCl, or PBS (pH7.4), maintaining a final concentration ≥ 100 μg/mL to prevent adsorption.

Handling: Aliquot to avoid repeated freeze-thaw cycles.

References

1. Zelová H, Hošek J. TNF-α signalling and inflammation: interactions between old acquaintances. Inflamm Res. 2013 Jul;62(7):641-51.

2. Marmenout A, Fransen L, Tavernier J, *et al*. Molecular cloning and expression of human tumor necrosis factor and comparison with mouse tumor necrosis factor. Eur J Biochem. 1985 Nov 4;152(3):515-22.

3. Tang P, Hung M-C, Klostergaard J. Human pro-tumor necrosis factor is a homotrimer. Biochemistry. 1996 Jun 25;35(25):8216-25.

4. Xie Z, Yu W, Zheng G, *et al*. TNF-α-mediated m6A modification of ELMO1 triggers directional migration of mesenchymal stem cell in ankylosing spondylitis. Nat Commun. 2021 Sep 10;12(1):5373.

Intended Us

For research and manufacturing purposes only.