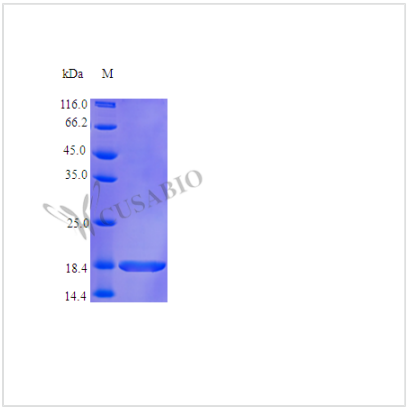
Recombinant Human Tumor necrosis factor protein (TNF), partial (Active)

Product Code	CSB-AP002141HU
Abbreviation	Recombinant Human TNF protein, partial (Active)
Uniprot No.	P01375
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 m filtered PBS, pH 7.0
Product Type	Tumor Necrosis Factor
Immunogen Species	Homo sapiens (Human)
Biological Activity	Fully biologically active when compared to standard. The ED50 as determined by a cytotoxicity assay using murine L929 cells is less than 0.05 ng/ml, corresponding to a specific activity of >2.0x10^7 IU/mg in the presence of actinomycin D.
Purity	>97% as determined by SDS-PAGE.
Sequence	MHHHHHH+VRS SSRTPSDKPV AHVVANPQAE GQLQWLNRRA NALLANGVEL RDNQLVVPSE GLYLIYSQVL FKGQGCPSTH VLLTHTISRI AVSYQTKVNL LSAIKSPCQR ETPEGAEAKP WYEPIYLGGV FQLEKGDRLS AEINRPDYLD FAESGQVYFG IIAL
Research Area	Cancer
Source	E.coli
Target Names	TNF
Expression Region	77-233aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	18.3 kDa
Protein Length	Partial
PubMed ID	3555974; 6392892; 3883195; 2995927; 3856324; 3932069; 8499947; 10202016; 14656967; 15489334; 8631363; 8597870; 10205166; 2009860; 1402651; 9034191; 10369255; 16829952; 16829951; 22517918; 23396208; 2922050; 1964681; 2551905; 9488135; 9442056; 12746914; 12
Image	



Description

This recombinant human Tumor Necrosis Factor (TNF) protein comes from E. coli production, covering amino acids 77-233 with an N-terminal 6xHis tag for straightforward purification. The protein shows high purity—greater than 97% as verified by SDS-PAGE—and keeps endotoxin levels low at less than 1.0 EU/μg, confirmed through the LAL method. It appears to be fully biologically active, with an ED50 of less than 0.05 ng/ml in cytotoxicity assays using murine L929 cells. Specific activity exceeds 2.0 × 10^7 IU/mg when actinomycin D is present.

Tumor Necrosis Factor (TNF) stands as a key cytokine in systemic inflammation and contributes to the body's acute phase reaction. This protein seems crucial for regulating immune cells, apoptosis, and inflammatory pathways. TNF has drawn significant attention in research on autoimmune disorders, cancer, and infectious diseases because of its regulatory influence on cell proliferation, differentiation, and immune response modulation.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Cytotoxicity Assays for TNF Signaling Research

Researchers might find this recombinant TNF protein valuable for cytotoxicity assays studying TNF-induced cell death pathways across different cell lines. The confirmed biological activity with an ED50 of less than 0.05 ng/ml using L929 cells offers a solid reference point for dose-response studies. Scientists can investigate how TNF mediates apoptosis and necroptosis in various cellular contexts. High purity (>97%) and low endotoxin levels should minimize interference from contaminants in sensitive cell-based assays.

2. TNF Receptor Binding Studies

The biologically active recombinant TNF may work well as a ligand in receptor binding assays to characterize TNF receptor interactions and binding kinetics. That N-terminal 6xHis tag allows for easy detection and quantification in binding

experiments through anti-His antibodies or nickel-based detection systems. This application could prove valuable for studying TNF receptor expression levels, binding affinity, and competitive binding with other ligands or inhibitors. The defined activity profile might allow for standardized experimental conditions across different research groups.

3. Antibody Development and Validation

This recombinant TNF protein appears suitable as an antigen for developing and validating anti-TNF antibodies in research applications. The 6xHis tag makes protein immobilization on nickel-coated surfaces relatively simple for ELISA-based antibody screening and characterization. High purity should help generate specific antibody responses without cross-reactivity to bacterial contaminants. Researchers could evaluate antibody specificity, determine binding epitopes, and assess neutralizing antibody activity through functional assays.

4. Inflammatory Response Studies in Cell Culture Models

The biologically active TNF protein can trigger inflammatory responses in various cell culture models for mechanistic studies. Scientists might investigate TNF-triggered signaling pathways, including NF-κB activation, cytokine production, and inflammatory gene expression. Standardized activity measurements may provide reproducible experimental conditions for studying dose-dependent inflammatory responses. Low endotoxin content becomes particularly important for inflammation studies—it helps avoid confounding effects from bacterial contaminants.

5. Protein-Protein Interaction Studies

The 6xHis-tagged TNF protein could work in pull-down assays to identify and characterize proteins that interact with TNF in cellular lysates or purified protein systems. The tag allows efficient immobilization on nickel-based affinity matrices for capturing TNF-binding partners. This approach seems useful for discovering novel TNF-interacting proteins or validating known interactions under controlled conditions. The protein's high purity should reduce non-specific binding events that might complicate interaction studies.

Endotoxin	Less than 1.0 EU/μg as determined by LAL method.
Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.