TNF alpha protein, Human (His)

Cat. No.:	HY-P70426A
Synonyms:	Tumor Necrosis Factor; Cachectin; TNF-Alpha; Tumor Necrosis Factor Ligand Superfamily Member 2; TNF-a; TNF; TNFA; TNFSF2
Species:	Human
Source:	E. coli
Accession:	P01375 (V77-L233)
Gene ID:	7124
Molecular Weight:	Approximately 18 kDa

PROPERTIES

AA Sequence	V R S S S R T P S D K P V A H V V A N P Q A E G Q L Q W L N R R A N A L L A N G V E L R D N Q L V V P S E G L Y L I Y S Q V L F K G Q G C P S T H V L L T H T I S R I A V S Y Q T K V N L L S A I K S P C Q R E T P E G A E A K P W Y E P I Y L G G V F Q L E K G D R L S A E I N R P D Y L D F A E S G Q V Y F G I I A L
Biological Activity	Measured in a cytotoxicity assay using L-929 mouse fibroblast cells in the presence of the metabolic inhibitor actinomycin D. The ED_{50} for this effect is < 0.13 ng/mL.
Appearance	Lyophilized powder
Formulation	Lyophilized from a 0.2 μm filtered solution of PBS, 300 mM NaCl, pH 7.4 or PBS, pH 7.4 or PBS, pH 6.5, 8% trehalose.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	TNF alpha is produced by various types of cells including macrophages, monocytes, neutrophils, T cells, and NK-cells[2]. The amino acid sequence of human TNF alpha protein has low homology between mouse, rat, bovine, cynomolgus TNF alpha protein. While, human TNF alpha shares 94.85% aa sequence identity with cynomolgus TNF alpha protein, mouse TNF alpha shares 94.47% aa sequence identity with rat TNF alpha protein. TNF alpha exists in two forms; a type II transmembrane protein (tmTNF-α) and a mature soluble protein (sTNF-α). TNF-α

binds to its receptors, mainly TNFR1 and TNFR2, and then transmits molecular signals for biological functions such as inflammation and cell death. Both sTNF-α and tmTNF-α activate TNFR1, and process a death domain (DD) that interacts with the TNFR1-associated death domain (TRADD) adaptor protein. The TNFR2 signaling pathway is mainly activated by tmTNF-α. TNFR1 signaling tends to be pro-inflammatory and apoptotic. TNFR2 results in NF-κB and MAPKs and AKT activation, TNFR2 activation is associated with homeostatic bioactivities such as tissue regeneration, cell proliferation, and cell survival, as well as host defense and inflammation[1].

TNF-alpha is critical for normal immune response, abnormal secretion TNF alpha activates synovial fibroblasts, keratinocytes, osteoclasts, induces rheumatoid arthritis, inflammatory bowel disease, psoriatic arthritis (PsA), and noninfectious uveitis (NIU)[3]. TNF alpha positively regulates endogenous TNF-α expression levels independently of Pgp efflux activity, induces IHF cells proliferation[4]. TNF alpha in tissues may promote cancer growth, invasion, and metastasis. Besides, TNF alpha stimulates NF-κB pathway via TNFR2 and anti-TNF-α MAb significantly suppresses the tumor development in colitis-associated cancer (CAC) mouse[5]. TNF alpha as a proneurogenic factor activates the SAPK/JNK pathway and can facilitate neuronal replacement and brain repair in response to brain injury[6].

REFERENCES

[1]. Horiuchi T, et al. Transmembrane TNF-alpha: structure, function and interaction with anti-TNF agents. Rheumatology (Oxford). 2010 Jul;49(7):1215-28.

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