

## TNF-alpha/TNFSF2 Protein, Human (P. pastoris, C-His)

Cat. No.:	HY-P700507
Synonyms:	rHuTNF- $\alpha$ , His; Cachectin; TNFSF2
Species:	Human
Source:	P. pastoris
Accession:	P01375 (R78-L233)
Gene ID:	7124
Molecular Weight:	18.7 kDa

### PROPERTIES

AA Sequence	<pre> 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           </pre>
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 $\mu$ m filtered solution of Tris/PBS-based buffer, 6% Trehalose, pH 8.0.
Endotoxin Level	<1 EU/ $\mu$ g, determined by LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 $\mu$ g/mL in ddH <sub>2</sub> O.
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	<p>The TNF-alpha/TNFSF2 Protein, a cytokine, binds to TNFRSF1A/TNFR1 and TNFRSF1B/TNFR, primarily secreted by macrophages with the capability to induce cell death in specific tumor cell lines. Acting as a potent pyrogen, it causes fever through direct action or by stimulating interleukin-1 secretion and is implicated in the induction of cachexia. Furthermore, under specific conditions, TNF-alpha can stimulate cell proliferation and induce cell differentiation. Notably, in individuals with rheumatoid arthritis, it impairs regulatory T-cells (Treg) function via FOXP3 dephosphorylation, up-regulating the expression of protein phosphatase 1 (PP1) that dephosphorylates the key 'Ser-418' residue of FOXP3, rendering Treg cells functionally defective. Additionally, TNF-alpha is a key mediator of cell death in the anticancer action of BCG-stimulated neutrophils in combination with DIABLO/SMAC mimetic in the RT4v6 bladder cancer cell line. It induces insulin resistance in adipocytes by inhibiting insulin-induced IRS1 tyrosine phosphorylation and glucose uptake, leading to GKAP42 protein</p>
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degradation and TNF-induced insulin resistance. Furthermore, it plays a role in angiogenesis by synergistically inducing VEGF production with IL1B and IL6, and it promotes osteoclastogenesis, contributing to bone resorption. Lastly, the TNF intracellular domain (ICD) form induces IL12 production in dendritic cells, highlighting its diverse impact across various physiological processes.

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**Caution: Product has not been fully validated for medical applications. For research use only.**

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: [tech@MedChemExpress.com](mailto:tech@MedChemExpress.com)

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA