

## PRODUCT DATA SHEET

### Human TNF alpha ELISA Kit

#### Description

Tumor Necrosis Factor alpha (TNF alpha) is a pleiotropic proinflammatory cytokine within the TNF superfamily. The biologically active form of TNF alpha exists as a homotrimer with a molecular mass of 52 kDa, whereas the monomeric form is not biologically active. In humans, TNF alpha is synthesized as a transmembrane protein and assembled intracellularly to form the noncovalently linked homotrimer, which is then expressed on the cell surface. It is primarily produced by macrophages/monocytes during acute inflammation and plays a crucial role in various signaling events within cells, leading to necrosis or apoptosis. Additionally, TNF alpha is essential for resistance to infections and cancers. TNF alpha exerts many of its effects by binding to either TNFR-1 or TNFR-2. Both receptor types bind TNF alpha with comparable affinity and can activate NF- $\kappa$ B. However, only TNFR-1 contains a cytoplasmic death domain that triggers apoptosis activation. Soluble forms of both receptor types are present in human serum and urine, capable of neutralizing the biological activity of TNF alpha.

Physiologically, TNF alpha plays a vital role in regulating normal immune responses. However, its inappropriate or excessive production can be detrimental, potentially leading to the onset of various diseases. The involvement of TNF alpha in pathological conditions such as asthma, Crohn's disease, rheumatoid arthritis, neuropathic pain, obesity, type 2 diabetes, septic shock, autoimmunity, and cancer underscores its significance as a key cytokine in both research and clinical application within the field of chronic inflammatory and autoimmune diseases.

#### Contents

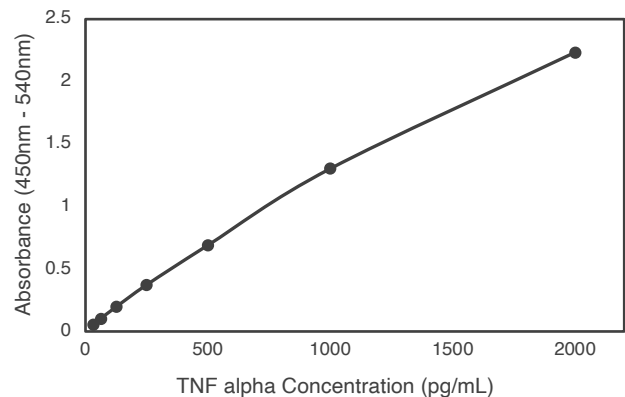
Pre-coated strip microplate (8X12)	96 wells
10X Wash Buffer	50 mL
1X Assay Diluent	50 mL
1X Detection Diluent	50 mL
Biotinylated anti-Human TNF alpha	1 vial
TNF alpha Standard	1 vial
200X HRP-Streptavidin Conjugate	150 $\mu$ L
1X One-step TMB Substrate	12 mL
1X Stop Solution	8 mL
Adhesive Plate Covers	1 count

#### Features

The Human TNF alpha solid-phase sandwich ELISA is designed to quantify the target analyte "sandwiched" between a matched antibody pair. The microplate wells supplied with the kit are pre-coated with a target-specific antibody. Upon

adding the samples, standards, or controls, the target is captured by the immobilized antibody and subsequently binds to the next added detector antibody.

A secondary enzyme conjugate binds the target attached detector antibody and a substrate solution reacts with the enzyme-antibody-target complex to develop a measurable colored end-product which correlates to the concentration of target analyte present in the original sample. See manual for more information on the assay procedure.



#### Characteristics

Protein name	TNF alpha
Alternate names	Tumor necrosis factor alpha, TNF- $\alpha$ , APC1 protein, cachectin, TNFA, TNF-alphacachectin, TNFSF1A
Species reactivity	Human
Assay format	Solid-phase Sandwich ELISA (quantitative)
Sample type	Serum, Plasma, Cell culture supernatant
Sample volume	100 $\mu$ L
Assay length	4.5 hrs
Analytical sensitivity	<11 pg/mL
Assay range	31.2 – 2000 pg/mL
Intra-assay CV	<2%
Inter-assay CV	<7%
Recovery (%)	Serum: 97.7 Plasma: 92.8 Cell culture media: 94.2
Detection & Instrument	Colorimetric, Microplate Reader
UniProt ID	(Human) Q9UBM5

#### Validation

Each manufactured lot of this ELISA kit is quality tested for criteria such as sensitivity, specificity, precision, and lot-to-lot consistency. See manual for more information on validation.

#### Canada, Europe, Asia, Pacific and Africa

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#### United States, Mexico, South and Central America

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**Storage**

This product should be stored at 2-8°C. Do not freeze. If stored as specified, the ELISA Plates and reagents are stable for at least 12 months.

**Precautions and Disclaimer**

For Research Use Only. Not for use in diagnostic procedures. Not for resale without express authorization. Please consult the Material Safety Data Sheet available online at [www.cytodiagnosics.com](http://www.cytodiagnosics.com) for information regarding hazards and safe handling procedures.

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