MSD® Human TNF-β Kit

## For quantitative determination in human serum, plasma, and tissue culture supernatants

Alzheimer's Disease
BioProcess
Cardiac
Cell Signaling
Clinical Immunology
Cytokines
Growth Factors
Hypoxia
Immunogenicity
Inflammation
Metabolic
Oncology
Toxicology
Vascular

Catalog Numbers

Human TNF-β Kit	
Kit size	
1 plate	K151LWD-1
5 plates	K151LWD-2
25 plates	K151LWD-4

TNF-β
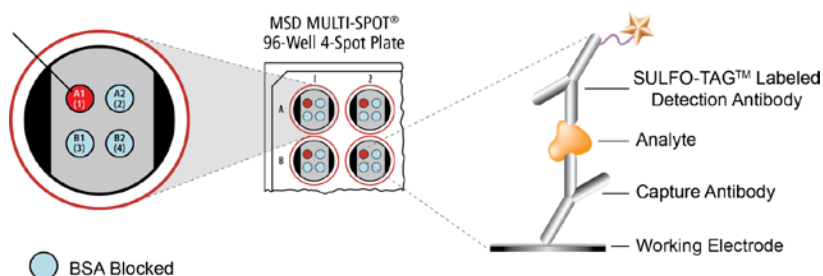
Tumor necrosis factor-beta (TNF-β), also known as Lymphotoxin-alpha, is a 25 kDa protein and member of the cytokine TNF-family, a group of cytokines known to contribute to apoptosis. TNF-β is both structurally and functionally similar to TNF-α with 35% protein sequence homology, and both bind to the same cell surface receptors (TNF-RI and TNF-RII).[1] It is produced by TH1 type T-cells after antigenic or mitogenic stimulation and is cytotoxic for a range of tumor cells. Genetic polymorphism within the regulatory regions of TNF-α and TNF-β (specifically 252 A to G in TNF-β) are linked to various cancer malignancies.[2] TNF-β is a mediator of inflammatory, immunostimulatory, and antiviral responses.[3] It may also be involved in the proper development of secondary lymphoid organs such as lymph nodes and Peyer's patches.[4] TNF-β has also been shown to contribute to the susceptibility of several autoimmune diseases, including graft-versus-host and rheumatoid arthritis[5,6], as well diabetes[7] and other disorders.

The MSD Human TNF-β assay is available on 96-well 4-spot plates. This datasheet outlines the performance of the assay.

Assay Sensitivity
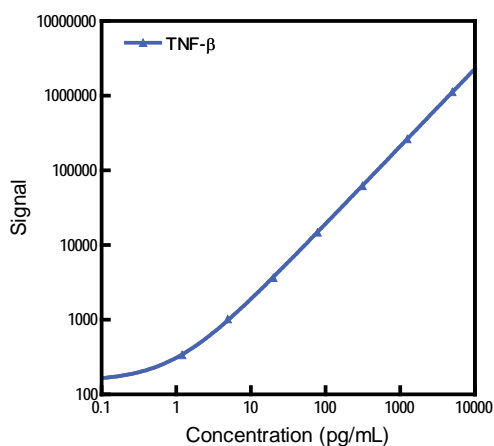
	TNF-β
LLOD (pg/mL)	0.23

The lower limit of detection (LLOD) is a calculated concentration based on a signal 2.5 standard deviations above the background (zero calibrator blank).

Typical Standard Curve
The following standard curve is an example of the wide dynamic range of the Human TNF-β assay.

	TNF-β	
Conc. (pg/mL)	Average Signal	%CV
0	121	6.7
1.2	339	6.0
4.9	1021	4.7
20	3642	6.6
78	14 855	6.1
313	62 095	5.1
1250	263 753	5.6
5000	1 127 795	6.0

MSD Cytokine Assays

Specificity

The Human TNF-β assay recognizes recombinant and native human TNF-β. This assay shows no significant non-specific binding with following recombinant human analytes: GM-CSF, IFN-γ, IL-1β, IL-2, IL-4, IL-5, IL-6,. IL-8, IL-10, IL-12p40, IL-12p70, IL-13, IL-15, IL-17, TNF-α, or VEGF.

This assay recognizes native cynomolgus monkey TNF-β.

Tested Samples

Normal human serum samples were diluted 2-fold and tested with the Human TNF-β Kit. Median and range of concentrations for the sample set are displayed below. Concentrations are corrected for sample dilution.

Sample Type	Statistic	TNF-β
Serum	Median (pg/mL)	74
	Range (pg/mL)	34–96
	Number of Samples	8
	Samples in Quantitative Range	8

References

1. Aggarwal BB, et al. Characterization of receptors for human tumour necrosis factor and their regulation by gamma-interferon. Nature 1985;318(6047):665-667.
2. Ibrahim A, et al. Tumor necrosis factor alpha-308 and Lymphotoxin alpha+252 genetic polymorphisms and the susceptibility to non-Hodgkin lymphoma in Egypt. Leuk. Res. 2012;36:694-698.
3. Remouchamps C, et al. Biology and signal transduction pathways of the Lymphotoxin-αβ/LTβR system. Cytokine Growth Factor Rev. 2011 Oct-Dec;22(5-6):301-10.
4. Banks TA, et al. Lymphotoxin-alpha-deficient mice: effects on secondary lymphoid organ development and humoral immune responsiveness. J Immunol 1995;155(4):1685-1693.
5. Chiang EY, et al. In vivo depletion of lymphotoxin-alpha expressing lymphocytes inhibits xenogeneic graft-versus-host-disease. PLoS One. 2012;7(3):e33106.
6. Chiang EY, et al. Targeted depletion of lymphotoxin-alpha-expressing TH1 and TH17 cells inhibits autoimmune disease. Nat Med. 2009 Jul;15(7):766-73.
7. Wang Y, et al. Predictive role of multilocus genetic polymorphisms in cardiovascular disease and inflammation-related genes on chronic kidney disease in Type 2 diabetes--an 8-year prospective cohort analysis of 1163 patients. Nephrol. Dial. Transplant. 2012;27:190-196.
8. Zhou H, et al. Collection, storage, preservation, and normalization of human urinary exosomes for biomarker discovery. Kidney. 2006; 69:1471-76.
9. Thomas CE, et al. Urine collection and processing for protein biomarker discovery and quantification. Cancer Epidemiol Biomarkers & Prevention. 2010;19:953-59.
10. Schoonenboom NS, et al. Effects of processing and storage conditions on amyloid beta (1-42) and tau concentrations in cerebrospinal fluid: implications for use in clinical practice. Clin Chem. 2005;51:189-95.
11. Castle JD. Purification of organelles from mammalian cells. Curr Protoc Immunol. 2003 Nov;Chapter 8:Unit 8.1B.