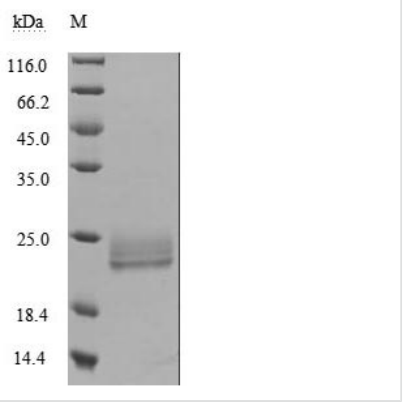
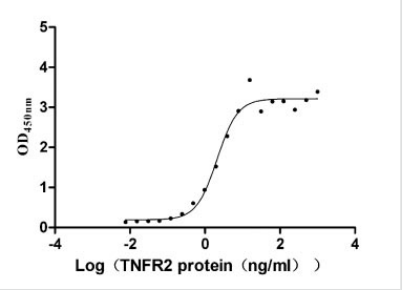
Recombinant Human Lymphotoxin-alpha (LTA) (Active)

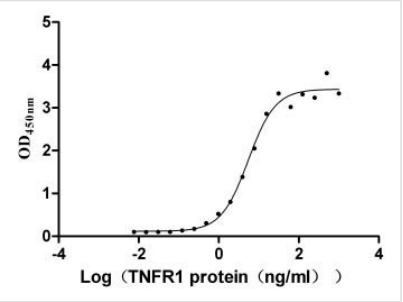
Product Code	CSB-MP013218HU
Abbreviation	Recombinant Human LTA protein (Active)
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P01374
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm filtered 20 mM Tris-HCl, 0.5 M NaCl, 6% Trehalose, pH 8.0
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Biological Activity	①Measured by its binding ability in a functional ELISA. Immobilized LTA at 5 μg/ml can bind human TNFRSF1B (CSB-MP023978HU2), the EC_{50} is 1.632-2.699 ng/ml.②Measured by its binding ability in a functional ELISA. Immobilized LTA at 5 μg/ml can bind human TNFR1(CSB-MP023977HU1), the EC_{50} of human LTA protein is 4.409-6.797 ng/ml.
Purity	Greater than 95% as determined by SDS-PAGE.
Sequence	LPGVGLTPSAAQTARQHPKMHLAHSTLKPAAHLIGDPSKQNSLLWRANTDRA FLQDGFSLSNNSLLVPTSGIYFVYSQVVFSGKAYSPKATSSPLYLAHEVQLFSS QYPFHVPLLSSQKMVYPGLQEPWLHSMYHGAAFQLTQGDQLSTHTDGIPHLV LSPSTVFFGAFAL
Source	Mammalian cell
Target Names	LTA
Expression Region	35-205aa
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	20.8 kDa
Protein Length	Full Length of Mature Protein
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.



Activity
Measured by its binding ability in a functional ELISA. Immobilized LTA at 5 μg/ml can bind human TNFRSF1B (CSB-MP023978HU2), the EC_{50} is 1.632-2.699 ng/ml.



Activity
Measured by its binding ability in a functional ELISA. Immobilized LTA at 5 μg/ml can bind human TNFR1(CSB-MP023977HU1), the EC_{50} of human LTA protein is 4.409-6.797 ng/ml.

Description

The recombinant human LTA protein is expressed in mammalian cells using a plasmid encoding the 35-205 amino acid region of the human LTA. This LTA protein is co-expressed with the N-terminal 6xHis-tag. The LTA protein achieves a purity of over 95%, as measured by SDS-PAGE, and contains less than 1.0 EU/μg endotoxin based on LAL assay results. ELISA confirms its activity through specific binding to human TNFRSF1B (CSB-MP023978HU2) and human TNFR1 (CSB-MP023977HU1), with the EC_{50} of 1.632-2.699 ng/ml and 4.409-6.797 ng/ml, respectively.

Human lymphotoxin-alpha (LTA) is a cytokine that plays a critical role in the immune system, particularly in the regulation of immune responses and the maintenance of lymphoid structures. It is primarily produced by activated T and B lymphocytes. LTA is known to form a heterotrimeric complex with LTβ, which is essential for various biological functions, including the organization of lymphoid tissues and the modulation of immune responses [1][2].

LTA is crucial for the development and maintenance of secondary lymphoid organs (SLOs), such as lymph nodes and spleen, by promoting the formation of specialized structures within these organs that facilitate immune cell interactions

[1][2]. It has been shown that LTA signaling is vital for the organization of ectopic germinal centers, which are sites of B cell activation and proliferation, particularly in chronic inflammatory conditions [3]. Moreover, LTA is involved in the regulation of T cell responses, enhancing their activation and survival, which is particularly relevant in the context of cancer immunotherapy [4][5].

LTA is involved in the granulomatous response to infections such as tuberculosis, where it helps to organize the immune response necessary for controlling the infection [6]. Furthermore, LTA has been linked to the development of liver inflammation and hepatocellular carcinoma, indicating its potential role in tumorigenesis [7].

References:
[1] D. Liepinsh, S. Grivennikov, K. Klarmann, M. Lagarkova, M. Drutskaya, S. Lockett, et al. Novel lymphotoxin alpha (ltα) knockout mice with unperturbed tumor necrosis factor expression: reassessing ltα biological functions, Molecular and Cellular Biology, vol. 26, no. 11, p. 4214-4225, 2006. https://doi.org/10.1128/mcb.01751-05
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[3] Y. Gao. Rheumatoid arthritis: pathogenesis and therapeutic advances, Medcomm, vol. 5, no. 3, 2024. https://doi.org/10.1002/mco2.509
[4] S. Yang, K. Hayer, H. Fazelinia, L. Spruce, M. Asnani, A. Naqvi, et al. Fbxw7β isoform drives transcriptional activation of the proinflammatory tnf cluster in human pro-b cells, Blood Advances, vol. 7, no. 7, p. 1077-1091, 2023. https://doi.org/10.1182/bloodadvances.2022007910
[5] A. Kamali. Immune checkpoints and cancer immunotherapies: insights into newly potential receptors and ligands, Therapeutic Advances in Vaccines and Immunotherapy, vol. 11, 2023. https://doi.org/10.1177/25151355231192043
[6] J. FITNESS, P. Fine, A. Crampin, D. Warndorff, S. Floyd, S. MALEMA, et al. Large-scale candidate gene study of tuberculosis susceptibility in the karonga district of northern malawi, American Journal of Tropical Medicine and Hygiene, vol. 71, no. 3, p. 341-349, 2004. https://doi.org/10.4269/ajtmh.2004.71.341
[7] S. Cairo and M. Buendia. How transient becomes stable: an epigenetic switch linking liver inflammation and tumorigenesis, Journal of Hepatology, vol. 57, no. 4, p. 910-912, 2012. https://doi.org/10.1016/j.jhep.2012.05.017

Endotoxin	Less than 1.0 EU/ug 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.