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Product Information

Lymphotoxin-α1/β2, human recombinant, expressed in *Sf*21 cells

Catalog Number **L5162**
Storage Temperature –20 °C

Synonym: LT

Product Description
Lymphotoxin (LT) is composed of two members of the TNF family (LT-α) and (LT-β). These proteins exist in several trimeric forms. LT-α is secreted as a soluble homotrimer (LT-α3, previously known as TNF-β) and complexes with membrane associated LT-β to generate two types of heterotrimers, LT-α1/β2 and LT-α2/β1.[1] The soluble LT-α3 binds both TNF RI (p55) and TNF RII (p75). The predominant heterotrimer membrane bound LT-α1/β2 binds and activates only the lymphotoxin β receptor (LTβR). In contrast, LT-α2/β1 is capable of binding TNF RI, TNF RII, and LTβR.

LT-α is a 25 kDa glycoprotein that is tightly regulated by lymphocytes. At the amino acid level, human and mouse LT-α are 74% homologous, and human and mouse LT-β are 80% homologous.[2]

LT is expressed in activated CD4+ and CD8+ T cells, B and NK cells, and in certain transformed cells. LT is expressed by activated naïve CD4 cells, unpolarized IL2-secreting effectors, and Th1 effectors. LT is critical for normal lymphoid organ development.[3,4] Genetic polymorphisms in TNF-α and LT-α have been linked to certain pathological conditions, including myasthenia gravis.[5] A loss of LT expression and lack of TNF-α or LT-α secretions is associated with prior exposure to IL-4 and a Th2 phenotype.[6]

This human recombinant form of lymphotoxin α1/β2 is expressed in *Sf*21 cells. The cDNA sequence encodes the mature human lymphotoxin (LT)-α (Leu^{35}-Leu^{205}) and the extracellular domain of LT-β (Leu^{54}-Gly^{244}). It is cloned downstream of a CD33 signal sequence. The resulting LT-α2/β1 heterotrimer is purified from the supernatant.[7] It is lyophilized from a 0.2 μm filtered solution of phosphate-buffered saline (PBS), pH 7.4, containing 0.50 mg of bovine serum albumin per 1 μg of cytokine.

Molecular mass: Based on N-terminal amino acid sequencing, Met^{17} (from the CD33 signal peptide sequence) is retained on both the rhLT-α and rhLT-β subunits. A small amount of LT-α with Thr^{41} at the N-terminus is also present. LT-α and LT-β have calculated molecular masses of ~18 kDa and ~18.5 kDa, respectively. As a result of glycosylation, multiple bands of ~18.25 kDa are present in SDS-PAGE under reducing conditions.

Purity: ≥95% (SDS-PAGE)

Lymphotoxin α1/β2 is measured in a cytotoxicity assay using murine L929 cells. The ED_{50} for this effect is typically 0.02–0.1 μg/mL.

Endotoxin: <0.1 ng/μg of LT-α1/β2 (LAL method)

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions
Reconstitute the contents of the vial using sterile phosphate-buffered saline (PBS) containing at least 0.1% human serum albumin or bovine serum albumin. Prepare a stock solution of ≥100 μg/mL.

Storage/Stability
Store the product at –20 °C.

Upon reconstitution; store at 2–8 °C for one month. For extended storage, freeze working in aliquots. Repeated freezing and thawing is not recommended.

References

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4. Cuff, C.A. et al., Lymphotoxin alpha3 induces chemokines and adhesion molecules: insight into the role of LT alpha in inflammation and lymphoid organ development. J. Immunol., **161**, 6853-6860 (1998).
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JJJ,KAA,MAM 04/12-1