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ProductInformation

LIGHT
Human, Recombinant
Expressed in NSO mouse myeloma cells

Product Number **L 0414**
Storage Temperature –20 °C

Synonyms: TNFSF14, HVEML, LTγ

Product Description

LIGHT is a 240 amino acid type II transmembrane protein consisting of a 37 amino acid cytoplasmic domain, a 22 amino acid transmembrane domain, and a 181 amino acid extracellular domain. Recombinant LIGHT is produced from a cDNA sequence encoding the extracellular region of human LIGHT (amino acid residues 74-240) that was fused via a polypeptide linker at its amino terminus to a polyhistidine tag and the CD33 signal peptide (Met^{1}-Met^{17}).[1] It is expressed in NSO mouse myeloma cells and purified by affinity chromatography. Based on amino acid sequence analysis, the amino terminus of the mature fusion protein is Met^{17} of the CD33 signal peptide. The calculated molecular mass of the LIGHT fusion protein is 20.9 kDa. However, as a result of glycosylation, the recombinant protein migrates as a 25 kDa protein in SDS-PAGE under reducing conditions. LIGHT is predicted to assemble as a homotrimer *in vivo*.

LIGHT is a member of the TNF superfamily. The acronym LIGHT stands for "is homologous to **l**ymphotoxins, exhibits **i**nducible expression, and competes with *Herpes simplex* virus (HSV) **g**lycoprotein D for **H**VEM, a receptor expressed by **T** lymphocytes". LIGHT is a ligand for HVEM (Herpes virus entry mediator), a member of the TNF receptor superfamily[2,3] and for the lymphotoxin β receptor (LTβR).[4] Binding to these receptors induces apoptosis in various tumor cell lines, including HT29 cells. In contrast, LIGHT can also bind to the decoy death receptor DcR3, that suppresses LIGHT-mediated cytotoxicity.[5]

Overexpression of LIGHT in tumor cells induces apoptosis. The reactivity can be enhanced by Interferon-γ (IFNγ). Evidence suggests that LIGHT influences dendritic cell (DC) maturation and enhances the DC-mediated immune response by its co-stimulatory effect with CD154 (CD40 ligand).[3,6,7]

Reagents

Recombinant human LIGHT is lyophilized from a sterile filtered phosphate-buffered saline (PBS) solution containing 50 µg bovine albumin (BSA) per 1 µg of LIGHT.

Preparation Instructions

Reconstitute the vial contents with sterile PBS containing at least 0.01% human or bovine albumin (HSA or BSA.). Stock solution concentration should be no less than 50 µg/ml.

Storage/Stability

Lyophilized human recombinant LIGHT is stable for at least six months at –20 °C. Upon reconstitution, store the stock solution at 2-4 °C for up to one month. For extended storage, store in working aliquots at –20 °C. Repeated freeze-thaw cycles should be avoided. Do not store in a frost-free freezer.

Product Profile

LIGHT activity is measured in a cytotoxicity assay using HT29 cells in the presence of 10 U/ml IFN-γ. Recombinant human LIGHT causes a 2–4.5-fold inhibition of HT29 cell proliferation at 10 ng/ml. Optimal dilutions should be determined by each laboratory for each application.

Purity: >95% by SDS-PAGE visualized by silver stain.

Endotoxin level: < 0.1 ng/µg of protein as determined by the LAL (Limulus amebocyte lysate) method.

References

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2. Montgomery, R., et al., Herpes simplex virus-1 entry into cells mediated by a novel member of the TNF/NGF receptor family. Cell, 87, 427 – 436 (1996).

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4. Rooney, I.A., et al., The lymphotoxin-β receptor is necessary and sufficient for LIGHT-mediated apoptosis of tumor cells. J. Biol. Chem., **275**, 14307-14315 (2000).
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6. Morel, Y. et al., Reciprocal expression of the TNF family receptor herpes virus entry mediator and its ligand LIGHT on activated T cells: LIGHT down-regulates its own receptor. J. Immunol., 165, 4397-4404 (2000).
7. Morel, Y., et al., The TNF superfamily members LIGHT and CD154 (CD40 ligand) costimulate induction of dendritic cell maturation and elicit specific CTL activity. J. Immunol., 167, 2479 – 2487 (2001).

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