



Features and Advantages

- Native Conformation: Native sequences, tag-free and natural function.
- Reliable Activity: Biological activity calibrated against WHO/NIBSC standards.
- Stringent Quality Control: Protein content, purity, and cell-based bioactivity testing for each batch.
- Lowest Endotoxin level (<0.01 EU/ug).
- Safety Assurance: Sterile filtration through 0.2 µm membrane.
- AOF: Animal origin-free raw materials throughout the production process.

Synonym

4-1BB Ligand, TNFSF9, CD137L

Source

Human 4-1BB Ligand (71-254) Protein, Fc Tag, Research Grade (41L-H5266) is expressed from human 293 cells (HEK293). It contains AA Arg 71 - Glu 254 (Accession # [P41273-1](#)).

Predicted N-terminus: Pro

Molecular Characterization

This protein carries a human IgG1 Fc tag at the N-terminus.

The protein has a calculated MW of 87.5 kDa. The protein migrates as 95 kDa±5 kDa when calibrated against [Star Ribbon Pre-stained Protein Marker](#) under reducing (R) condition (SDS-PAGE) due to glycosylation.

Endotoxin

Less than 0.01 EU per µg by the LAL method / rFC method.

Purity

>95% as determined by SDS-PAGE.

>90% as determined by SEC-MALS.

Formulation

Lyophilized from 0.22 µm filtered solution in PBS, pH7.4 with trehalose as protectant.

Contact us for customized product form or formulation.

Reconstitution

Please see Certificate of Analysis for specific instructions.

For best performance, we strongly recommend you to follow the reconstitution protocol provided in the CoA.

Storage

For long term storage, the product should be stored at lyophilized state at -20°C or lower.

Please avoid repeated freeze-thaw cycles.

This product is stable after storage at:

- -20°C to -70°C for 24 months in lyophilized state;
- -70°C for 3 months under sterile conditions after reconstitution.

ACRO Quality Management System

- [QMS\(ISO, GMP\)](#)
- [Quality Advantages](#)
- [Quality Control Process](#)

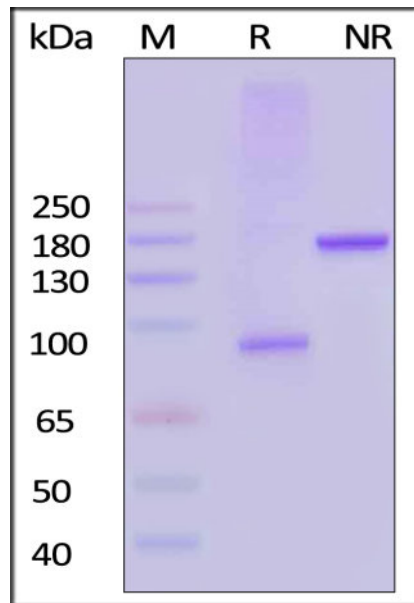
Quality Description

ACRO's Research-grade products are suitable for a wide range of cell culture applications, particularly for research use in academic institutions. These products are sterilized by filtration, followed by lyophilization where applicable. Typical specifications include endotoxin levels of <0.01 EU/µg and purities >95%. Biological activity is calibrated against WHO/NIBSC standards when available.

ACRO's Premium-grade (Pre-GMP) products are characterized by their high quality and enhanced safety profiles, making them ideal for early-stage discovery and manufacturing processes in cell therapy companies. A key advantage is their seamless transition to corresponding GMP-grade versions. Biological activity is calibrated against WHO/NIBSC standards when available. Typical specifications include endotoxin levels of <0.01

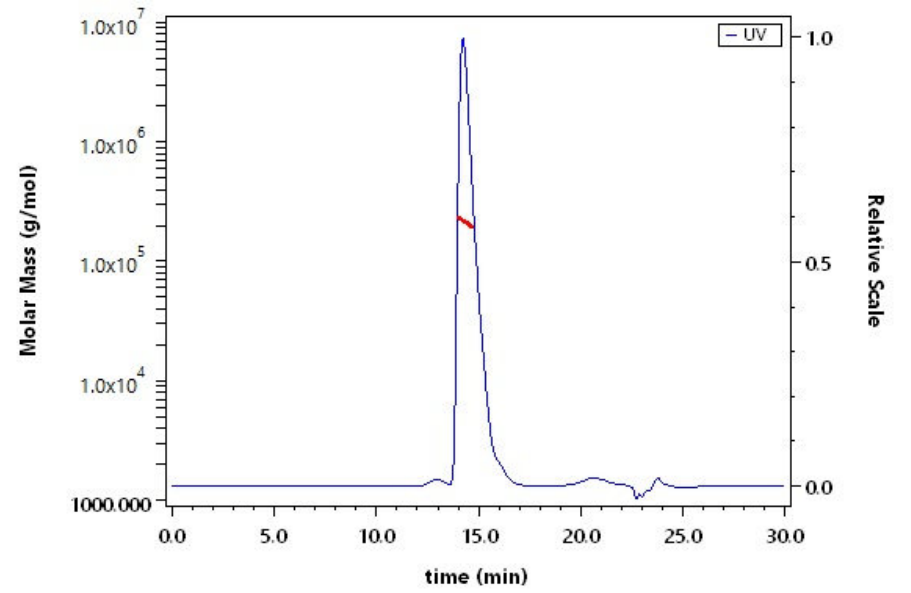
EU/ μg and purities $>95\%$. In addition, rigorous testing is conducted to ensure the absence of mycoplasma, HCD, and HCP, thereby guaranteeing product safety.

SDS-PAGE



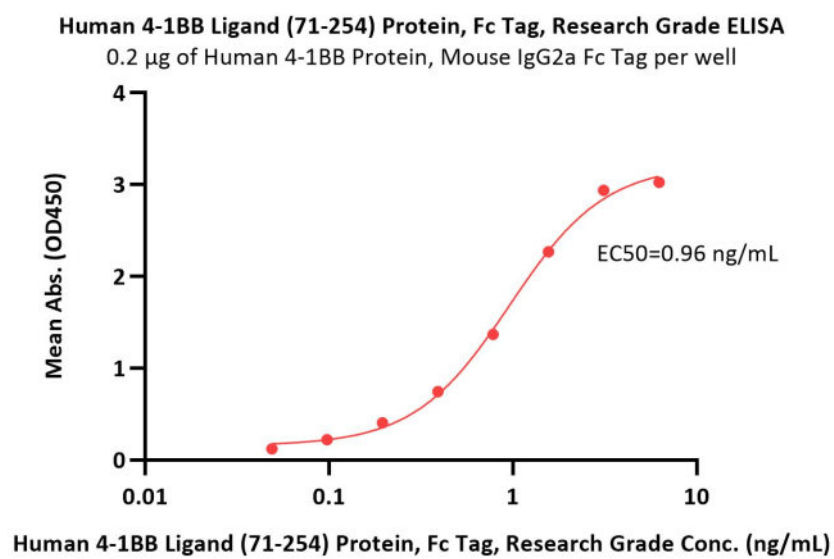
Human 4-1BB Ligand (71-254) Protein, Fc Tag, Research Grade on SDS-PAGE under reducing (R) and non-reducing (NR) conditions. The gel was stained with Coomassie Blue. The purity of the protein is greater than 95% (With [Star Ribbon Pre-stained Protein Marker](#)).

SEC-MALS



The purity of Human 4-1BB Ligand (71-254) Protein, Fc Tag, Research Grade (Cat. No. 41L-H5266) is more than 90% and the molecular weight of this protein is around 195-235 kDa verified by SEC-MALS.

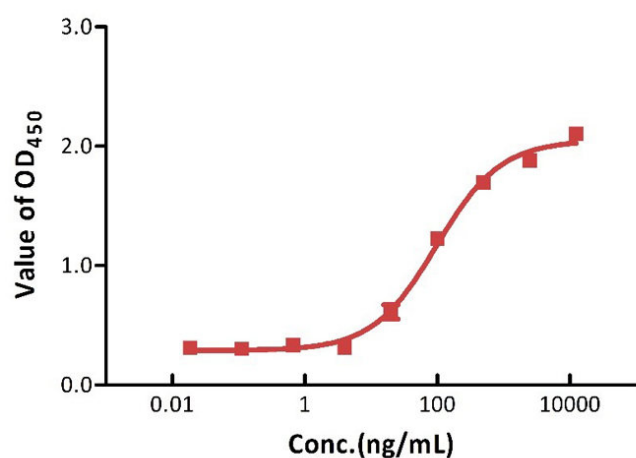
Bioactivity-ELISA



Immobilized Human 4-1BB Protein, Mouse IgG2a Fc Tag (Cat. No. 41B-H5256) at 2 $\mu\text{g}/\text{mL}$ (100 $\mu\text{L}/\text{well}$) can bind Human 4-1BB Ligand (71-254) Protein, Fc Tag, Research Grade (Cat. No. 41L-H5266) with a linear range of 0.05-2 ng/mL (QC tested).

Bioactivity-CELL BASE

Human 4-1BB Ligand (71-254) Protein, Fc Tag, Research Grade induce IL-8 secretion in HT1080 CD137 cell line



Human 4-1BB Ligand (71-254) Protein, Fc Tag, Research Grade (Cat. No. 41L-H5266) induce IL-8 secretion in HT1080 human CD137 cell line. The specific activity of Human 4-1BB Ligand (71-254) Protein, Fc Tag, Research Grade is $> 1.00 \times 10^5$ U/mg (QC tested).

Background

Tumor necrosis factor ligand superfamily member 9 (4-1BBL) is also known as 4-1BB ligand, CD137L or TNFSF9, which is a cytokine that binds to TNFRSF9. 4-1BBL is the high affinity ligand of 4-1BB. 4-1BBL induces the proliferation of activated peripheral blood T-cells. Also, 4-1BBL may have a role in activation-induced cell death (AICD). Furthermore, 4-1BBL may play a role in cognate interactions between T-cells and B-cells/macrophages. As for diseases, 4-1BBL is involved in cancers, infectious diseases and autoimmune diseases.



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