CD40L/CD154/TRAP Protein, Mouse (HEK293, His)

Cat. No.:	HY-P70808
Synonyms:	CD40 Ligand; CD40LG; HIGM1; T-B cell-activating molecule; T-BAM; TNFSF5; tumor necrosis factor (ligand) superfamily member 5; Tumor necrosis factor ligand superfamily member 5
Species:	Mouse
Source:	HEK293
Accession:	P27548 (M112-L260)
Gene ID:	21947
Molecular Weight:	Approximately 20.0 kDa

PROPERTIES

AA Sequence	MQRGDEDPQI AAHVVSEANS NAASVLQWAK KGYYTMKSNL VMLENGKQLT VKREGLYYVY TQVTFCSNRE PSSQRPFIVG LWLKPSSGSE RILLKAANTH SSSQLCEQQS VHLGGVFELQ AGASVFVNVT EASQVIHRVG FSSFGLLKL
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 μm filtered solution of 20 mM PB, 200 mM NaCl, 0.1 mM EDTA, pH 7.0.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US;may vary elsewhere.

DESCRIPTION

Background	CD40 Ligand (CD40L; CD154; TRAP) belongs to the tumor necrosis factor (TNF) family, is the ligand for CD40/TNFRSF5, specifically expressed on activated CD4+ T-lymphocytes[1]. CD40L is a type II transmembrane protein on B cells triggers important signals for B cell differentiation, maturation, and apoptosis[4]. CD40L acts function by cross-linking on T-cells to generate a costimulatory signal and thus enhances the production of IL4 and IL10 in conjunction with the TCR/CD3 ligation and CD28 costimulation, as well as promoting the production of interferon-γ, and TNF-α[1][4]. CD40L, binding with CD40 on antigen-presenting cells (APC), activates TNFR-associated factor 2- and IKK2-dependent

pathways with stimulating I-κB kinase (IKK), increasing NF-κB DNA binding, and p65 nuclear translocation. The activation of I-κB kinase leads to strongly c-Jun N-terminal kinase activation as well as GST-I-κB and GST-p65 phosphorylation[2].
CD40L involves in MAPK pathways that strongly repress Bcl-6 with inducing the phosphorylation of Erk1/2, p38 and Jnk1/2 and activating IRF4 mediated by NF-κB[3].
CD40L also binds to and signals through several integrins, including αvβ3 and α5β1, which bind to the trimeric interface of CD40L. CD40L plays a major role in immune response and is a major target for inflammation[5].
CD40L is widely found in different animals, while the sequence in Mouse is highly similar to Rat (93.85%), but very different from Human and Rhesus macaque with similarities of 77.69% and 77.31%, respectively. CD40L in Mouse is cleaved into 2 chains of membrane form (1-260 a.a.) and soluble form (112-260 a.a.), while the soluble form in human derives from the membrane form by proteolytic processing. Release of soluble CD40L from platelets is partially regulated by GP IIb/IIIa, actin polymerization, and a matrix metalloproteinases (MMP) inhibitor-sensitive pathway[6].

REFERENCES

[1]. Blotta MH, et al. Cross-linking of the CD40 ligand on human CD4+ T lymphocytes generates a costimulatory signal that up-regulates IL-4 synthesis. J Immunol. 1996 May 1;156(9):3133-40.

[2]. Schwabe RF, et al. CD40 activates NF-kappa B and c-Jun N-terminal kinase and enhances chemokine secretion on activated human hepatic stellate cells. J Immunol. 2001 Jun 1;166(11):6812-9.

[3]. Batlle A, et al. CD40 and B-cell receptor signalling induce MAPK family members that can either induce or repress Bcl-6 expression. Mol Immunol. 2009 May;46(8-9):1727-35.

[4]. Mikolajczak SA, et al. The modulation of CD40 ligand signaling by transmembrane CD28 splice variant in human T cells. J Exp Med. 2004 Apr 5;199(7):1025-31.

[5]. Takada YK, et al. Soluble CD40L activates soluble and cell-surface integrin αvβ3, α5β1, and α4β1 by binding to the allosteric ligand-binding site (site 2). J Biol Chem. 2021 Jan-Jun;296:100399.

[6]. Pietravalle F, et al. Human native soluble CD40L is a biologically active trimer, processed inside microsomes. J Biol Chem. 1996 Mar 15;271(11):5965-7.

[7]. Rahman M, et al. Platelet-derived CD40L (CD154) mediates neutrophil upregulation of Mac-1 and recruitment in septic lung injury. Ann Surg. 2009 Nov;250(5):783-90.

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