

GMP CD40L/CD154/TRAP Protein, Human (HEK293)

Cat. No.:	HY-P70609G
Synonyms:	CD40 ligand; CD40-L; TRAP; CD154; TNFSF5
Species:	Human
Source:	HEK293
Accession:	P29965 (M113-L261)
Gene ID:	959
Molecular Weight:	16-18 kDa

PROPERTIES

AA Sequence	<p> M Q K G D Q N P Q I A A H V I S E A S S K T T S V L Q W A E K G Y Y T M S N N L V T L E N G K Q L T V K R Q G L Y Y I Y A Q V T F C S N R E A S S Q A P F I A S L C L K S P G R F E R I L L R A A N T H S S A K P C G Q Q S I H L G G V F E L Q P G A S V F V N V T D P S Q V S H G T G F T S F G L L K L </p>
Biological Activity	Measured by its binding ability in a functional ELISA. The EC ₅₀ for the effect is < 0.5 µg/mL.
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	<0.1 EU/µg, determined by LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 µg/mL in injection water.
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	<p>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].</p> <p>CD40L is a type II transmembrane protein on B cells triggers important signals for B cell differentiation, maturation, and apoptosis^[4].</p> <p>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]}.</p>
------------	--

CD40L, binding with CD40 on antigen-presenting cells (APC), activates TNFR-associated factor 2- and IKK2-dependent pathways with stimulating I- κ B kinase (IKK), increasing NF- κ B DNA binding, and p65 nuclear translocation. The activation of I- κ B kinase leads to strongly c-Jun N-terminal kinase activation as well as GST-I- κ B 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- κ B^[3].

CD40L also binds to and signals through several integrins, including α v β 3 and α 5 β 1, 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 Human is highly similar to Rhesus macaque (98.08%), but very different from Rat and Mouse with similarities of 77.31% and 77.69%, respectively. CD40L in Human is cleaved into 2 chains of membrane form (1-261 a.a.) and soluble form (113-261 a.a.), while the soluble form 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]. Battle 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 α v β 3, α 5 β 1, and α 4 β 1 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]. Kotowicz K, et al. Biological function of CD40 on human endothelial cells: costimulation with CD40 ligand and interleukin-4 selectively induces expression of vascular cell adhesion molecule-1 and P-selectin resulting in preferential adhesion of lymphocytes. *Immunology.* 2000 Aug;100(4):441-8.
- [8]. Schönbeck U, et al. Soluble CD40L and cardiovascular risk in women. *Circulation.* 2001 Nov 6;104(19):2266-8.
-

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA