PRODUCT INFORMATION

CTLA-4 Extracellular Domain (human, recombinant)

Item No. 32009

Overview and Properties

Synonyms:	CD152, Cytotoxic T Lymphocyte-associated Antigen-4
Source:	Active recombinant C-terminal human IgG1 Fc-His-tagged CTLA-4 expressed in HEK293 cells
Amino Acids:	37-162
Molecular Weight:	41.6 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥92% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile PBS, pH 7.4
Bioactivity:	See figures for details

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images

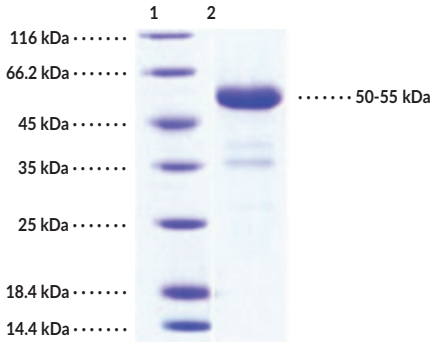

Figure 1: SDS-PAGE Analysis
Lane 1: MW Marker
Lane 2: CTLA4 (human, recombinant)

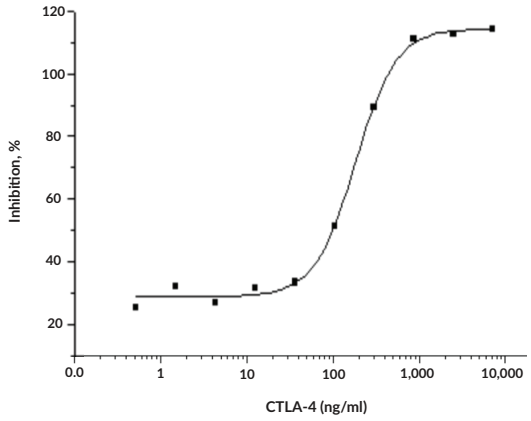

Figure 2: Ability to inhibit IL-2 secretion by stimulated Jurkat human acute T cell leukemia cells. Measured by its ability to inhibit IL-2 secretion by stimulated Jurkat human acute T cell leukemia cells. The ED_{50} for this effect is 0.2-1µg/mL when stimulated with 1 µg/mL Recombinant Human B7-1/CD80.

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Description

Cytotoxic T-lymphocyte protein 4 (CLTA-4) is a transmembrane glycoprotein that is a member of the CD28/B7 family of co-stimulatory receptors and is a negative regulator of T cell activation.[1,2] CLTA-4 exists as a homodimer and is composed of an extracellular immunoglobulin variable (IgV) domain that interacts with the co-stimulatory molecules CD80 (Item No. 32013) or CD86 and a cytoplasmic tail that mediates CTLA-4 trafficking and cellular localization, as well as association with the signal transduction enzymes PI3K, SHP-2, and PP2A and the clathrin adaptor proteins AP-1 and AP-2.[1] It is constitutively expressed on the surface of regulatory T cells and is confined within intracellular vesicles in naïve T cells.[2] CTLA-4 localizes to the cell surface upon activation of naïve T cells by antigen-presenting cells (APCs) displaying MHC-bound antigen and expressing CD80 and CD86. CTLA-4 competes with CD28 (Item No. 32014), a co-stimulatory molecule also expressed on T cells that drives T cell activation, for binding to CD80 or CD86, inhibiting T cell activation and promoting T cell anergy. *Ctla4*$^{-/-}$ mice develop a lymphoproliferative autoimmune disorder that is perinatal lethal.[3] High tumor levels of CTLA-4 have been associated with poor prognosis in individuals with nasopharyngeal carcinoma, melanoma, or non-small cell lung cancer (NSCLC).[1] SNPs in *CTLA4* have been found in individuals with various autoimmune diseases, including systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA), as well as cancer.[4] Formulations containing anti-CTLA-4 monoclonal antibodies have been used in the treatment of advanced melanoma.[1] Cayman's CTLA-4 Extracellular Domain (human, recombinant) protein can be used for cell-based assay applications. This protein is a disulfide-linked homodimer. The reduced monomer, comprised of CTLA-4 (amino acids 37-162) fused to His-tagged human IgG1 Fc at its C-terminus, consists of 374 amino acids, has a calculated molecular weight of 41.6 kDa, and a predicted N terminus of Ala37 after signal peptide cleavage. As a result of glycosylation, the monomer migrates at approximately 50 to 55 kDa by SDS-PAGE under reducing conditions.

References

1. Zhao, Y., Yang, W., Huang, Y., *et al*. Evolving roles for targeting CTLA-4 in cancer immunotherapy. *Cell. Physiol. Biochem*. **47(2)**, 721-734 (2018).
2. Buchbinder, E.I. and Desai, A. CTLA-4 and PD-1 pathways: Similarities, differences, and implications of their inhibition. *Am. J. Clin. Oncol*. **39(1)**, 98-106 (2016).
3. Waterhouse, P., Penninger, J.M., Timms, E., *et al*. Lymphoproliferative disorders with early lethality in mice deficient in Ctla-4. *Science* **270(5238)**, 985-988 (1995).
4. Ghaderi, A. CTLA4 gene variants in autoimmunity and cancer: A comparative review. *Iran J. Immunol*. **8(3)**, 127-149 (2011).

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