Human CTLA4 ECD Protein, Fc-fusion, Biotinylated, Recombinant

**Background:**
Cytotoxic T-lymphocyte antigen 4 (CTLA4), also known as CD152, is a single pass type I transmembrane glycoprotein of the Ig superfamily. It is composed of an IgV-type extracellular domain, a transmembrane domain, and a cytoplasmic tail. CTLA4 is the founding member of the CD28/CTLA-4 family. Members of the CD28/CTLA-4 family either promote T cell activation (CD28 and ICOS) or inhibit T cell activation (CTLA4 and PD-1). Both CTLA-4 and CD28 bind to the same B7 family ligands, CD80/B7-1 and CD86/B7-2. CTLA-4 binds to B7-1 and B7-2 with a 20-100 fold higher affinity than CD28. The CTLA4 gene is widely expressed with highest levels in lymphoid tissues. It is detected in activated T-cells where expression levels are 30- to 50-fold less than CD28 on the cell surface following activation. Mutations in CTLA4 gene is associated with insulin-dependent diabetes mellitus, Graves disease, Hashimoto thyroiditis, celiac disease, systemic lupus erythematous, thyroid-associated orbitopathy, and other autoimmune diseases. Alternate transcriptional splice variants, encoding different isoforms of CTLA4, have been characterized. The membrane-bound isoform functions as a homodimer interconnected by a disulfide bond, while the soluble isoform functions as a monomer. The engineered CTLA4-Fc fusion proteins inhibit T-cell-dependent immune responses and are used as immunosuppressive agents by acting as a competitive inhibitor of CD28. Blockade of CTLA4 inhibitory activity with monoclonal antibodies enhances antitumor immunity and has been proven to be an effective approach for cancer immunotherapy.

**References:**

**Construct Detail:**
The recombinant human CTLA4 ECD is expressed as a 355-amino acid protein consisting of Lys36-Asp161 region of CTLA4 (UniProt accession #Q16410) and a C-terminal Fc fusion from human IgG1, which exists as a dimer under non-reducing condition.

**Source:**
Human cells stably expressing CTLA4-Fc fusion and growing in chemical-defined media with no animal component or antibiotics.

**M.W.:**
Calculated molecular mass 39.1kDa; estimated by SDS-PAGE under reducing condition ~50 kDa probably due to glycosylation. Calculated extinction coefficients (M-1 cm-1, at 280nm): 46465.

**Purity:**
>95% judged by SDS-PAGE under reducing condition (see the gel image inserted).

**Formulation:**
Supplied at 0.5 mg/ml in sterile PBS pH 7.4 (concentration determined by UV spectrometry and verified by SDS-PAGE and Coomassie blue staining). The purified recombinant protein was labeled with Biotin (3-5 Biotin per molecule) using the standard procedure.

**Endotoxin:**
<0.1 EU per 1 µg of purified recombinant protein determined by the LAL method.

**Bioactivity:**
Binds to human B7 family ligands, CD80/B7-1 (SKU#: FCL0716 and FCL0723) and CD86/B7-2 (SKU#: FCL0718 and FCL0725), and anti-CTLA4 monoclonal antibody (SKU#: MAB1718, MAB0720, MAB0727). Inhibit IL-2 secretion in stimulated human Jurkat T cell lines.

**Storage:**
The product is shipped at 4°C. Upon receipt, centrifuge the product briefly before opening the vial. Store small aliquots at the temperature below ~20°C for long-term storage and the product is stable for at least 3 months. Avoid repeated freeze-thaw cycles.

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