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Recombinant Human CD3D & CD3E Heterodimer Protein (ECD, Flag &

Catalog Number:	632801, 632802
Size:	50 μg, 500 μg
Target Name:	CD3e, CD3d
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Bioassay
Format:	Lyophilized from sterile PBS, pH7.4.
Expression Host:	HEK293
Species:	Human
accession number:	P04234-1 & P07766-1
Sources:	A DNA sequence encoding the extracellular domain (Met1-Ala105) of human CD3D (P04234-1) was fused with a flag tag at the C-terminus, constructed the plasmid 1; A DNA sequence encoding the extracellular domain (Met1-Asp126) of human CD3E (P07766-1) was fused with a polyhistidine tag at the C-terminus, constructed the plasmid 2. The two plasmids were co-expressed and the human CD3D/CD3E heterodimer was purified.
Molecular Weight:	The recombinant heterodimer of human CD3D&CD3E comprises 271 (126+145) amino acids and has a calculated molecular mass of 31.05 (14.4+16.65)KDa. As a result of glycosylation, the apparent molecular mass of human CD3D&CD3E heterodimer is approximately 20, 22 and 26 KDa in SDS-PAGE under reducing conditions. The molecular weight of this protein is around 45.4 KDa verified by SEC-MALS(Routinely tested).
Affinity Tag:	C-FLAG & C-His
Purity:	≥95% as determined by SDS-PAGE. ≥95% as determined by SEC-HPLC. ≥95% as determined by SEC-MALS (Routinely tested).
Endotoxin level:	< 1.0 EU per μg protein
Protein Concentration:	Lyophilized
Storage and Handling:	Samples are stable for up to twelve months from date of receipt at -20℃ to -80℃. Store it under sterile conditions at -20℃ to -80℃. It is recommended that the protein be aliquoted for optimal storage. Avoid repeated freeze-thaw cycles.

BACKGROUND INFORMATION

CD3e and CD3d are two transmembrane components of the CD3 complex, a critical part of the T-cell receptor (TCR) signaling machinery. The CD3e/CD3d heterodimer associates with the TCRαβ or TCRγδ chains and helps transmit signals generated when the TCR recognizes antigen. Unlike the TCR chains, which provide antigen-recognition specificity, CD3 proteins contain intracellular signaling motifs that initiate downstream T-cell activation, differentiation, proliferation, and cytokine production.

Structurally, CD3e and CD3d are type I transmembrane glycoproteins with extracellular immunoglobulin-like domains, single-pass transmembrane regions, and cytoplasmic tails containing immunoreceptor tyrosine-based activation motifs (ITAMs). The CD3e/CD3d heterodimer forms one of the signaling modules within the multisubunit TCR-CD3 complex. CD3e and CD3d do not function as conventional ligand-binding receptors; instead, their extracellular regions contribute to assembly and stability of the TCR-CD3 complex, while their cytoplasmic signaling motifs interact with intracellular kinases.

The principal ligand for the overall TCR-CD3 complex is peptide–MHC (pMHC), rather than a ligand that binds specifically to CD3e/CD3d. Engagement of the TCR by antigen–MHC triggers phosphorylation of CD3 ITAMs and activation of signaling pathways involving ZAP-70, LAT, and downstream transcription factors. Abnormal TCR-CD3 signaling can contribute to autoimmune diseases, inflammatory disorders, immunodeficiency, and T-cell malignancies.

Because CD3 is expressed broadly on mature T cells, it is an important therapeutic target. Anti-CD3 antibodies can modulate or deplete T-cell populations and have been investigated for autoimmune diseases and transplantation. CD3-binding domains are also incorporated into bispecific T-cell engagers (T-cell engagers), which redirect T cells toward tumor cells. Consequently, CD3e/CD3d-containing complexes are important targets and reagents for studying T-cell biology, immunotherapy, and immune-mediated disease.

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