Recombinant Human PD-1 Fc Chimera

Catalog Number: 1086-PD

DESCRIPTION

Source

Mouse myeloma cell line, NS0-derived human PD-1 protein

Human PD-1 (Leu25-Gln167) Accession # Q15116.3	IEGRMD	Human IgG_1 (Pro100-Lys330)

N-terminus C-terminus

N-terminal Sequence Analysis	Leu25
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	42.6 kDa (monomer)

SPECIFICATIONS

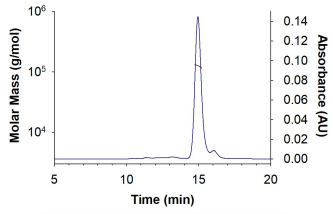
SDS-PAGE	60 - 70 kDa, under reducing conditions.
Activity	Measured by its binding ability in a functional ELISA. When Recombinant Human PD-1 Fc Chimera is immobilized at 0.1 µg/mL (100 µL/well), Recombinant Human B7-H1/PD-L1 Fc Chimera (Catalog # 156-B7) binds with a typical ED_{50} of 0.15-0.75 µg/mL.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 0.5 mg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

DATA

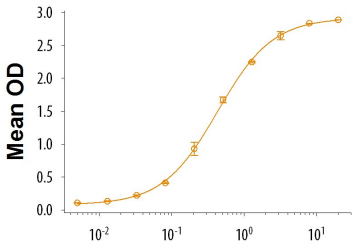
SEC-MALS



SEC-MALS Data	Result
Retention Time	14.7 - 15.2 min
MW - Predicted (Monomer)	42.6 kDa
MW - MALS	125.1 kDa
Polydispersity	1.001
System Suitability: BSA Monomer 66.4 ± 3.32 kDa	Pass

Recombinant Human PD-1 Fc Chimera Protein SEC-MALS. Recombinant human PD-1/Fc (Catalog # 1086-PD) has a molecular weight (MW) of 125.1 kDa as analyzed by SEC-MALS, suggesting that this protein is a homodimer. MW may differ from predicted MW due to post-translational modifications (PTMs) present (i.e. Glycosylation).

Bioactivity



Bioactivity of Human PD-1 Protein When Recombinant Human PD-1 Fc Chimera (Catalog # 1086-PD) is coated at 0.1 µg/mL, Recombinant Human B7-H1/PD-L1 Fc Chimera (Catalog # 156-B7) binds with a typical ED_{50} of 0.15-0.75 µg/mL.

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BACKGROUND

PD-1 (Programmed Death-1 receptor), also known as CD279, is a receptor expressed on T cells responsible for modulating T cell activation. Like CTLA-4, PD-1 is classified as an immune checkpoint inhibitory receptor. When PD-1 protein binds to PD-L1, it initiates a negative signaling cascade inhibiting activation of T cells. The cytoplasmic tail contains two tyrosine residues that form the immunoreceptor tyrosine-based inhibitory motif (ITIM) and immunoreceptor tyrosine-based switch motif (ITSM) that are important for mediating PD-1 signaling. Normally, PD-1 helps keep T cells from attacking other cells in the body. However, many cancers take advantage of this by expressing high amounts of PD-L1 allowing cancer cells to evade the body's own immune response. Blocking the PD-1:PD-L1 interaction has proven successful in treating many different cancer types.

PD-1 protein is type I transmembrane receptor belonging to the CD28 family of immune regulatory receptors (1). Other members of this family include CD28, CTLA-4, ICOS, and BTLA (2-5). Mature human PD-1 consists of an extracellular region (ECD) with one immunoglobulin-like V-type domain, a transmembrane domain, and a cytoplasmic region. The mature ECD of human PD-1 shares 61% amino acid sequence identity with mouse PD-1 ECD. PD-1 protein acts as a monomeric receptor and interacts in a 1:1 stoichiometric ratio with its ligands PD-L1 (B7-H1) and PD-L2 (B7-DC) (6, 7). PD-1 is expressed on activated T cells, B cells, monocytes, and dendritic cells while PD-L1 expression is constitutive on the same cells and also on nonhematopoietic cells such as lung endothelial cells and hepatocytes (8, 9). Ligation of PD-L1 with PD-1 induces co-inhibitory signals on T cells promoting their apoptosis, anergy, and functional exhaustion (10). Thus, the PD-1:PD-L1 interaction is a key regulator of the threshold of immune response and peripheral immune tolerance (11).

References:

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