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Biotin Human Mesothelin (E296-G580) Protein (C-His-Avi)

Catalog Number:	801303, 801304
Size:	25 ug, 100 ug
Target Name:	Mesothelin, MPF, MSLN
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	ELISA, BLI
Format:	Liquid, Biotinylated
Expression Host:	HEK293
Species:	Human
Sources:	Human Mesothelin protein (Accession # AAH09272.1) (Glu296-Gly580) with C-terminus His-Avi tag is expressed in HEK293 cells. This protein was site-specifically labeled with Biotin by BirA ligase.
Accession Number:	Q13421
Molecular Weight:	The protein has a predicted molecular weight of 36kDa. Under DTT-reducing conditions, it migrates at approximately 35-45 kDa.
Affinity Tag:	C-His-Avi
Purity:	>95% based on SDS-PAGE under reducing condition
Formulation:	1xPBS buffer, pH7.4, 0.22 µm filtered
Endotoxin level:	Not tested
Protein Concentration:	25µg size is bottled at 0.2mg/mL concentration. 100 µg size is supplied at a lot-specific concentration.
Storage and Handling:	Briefly centrifuge the vial upon receipt. An unopened vial can be stored at 4°C for up to 2 weeks, or at -20°C or below for up to six months. The protein may be further diluted to 0.1 mg/mL using 0.22 µm-filtered PBS buffer (pH 7.4). For long-term storage, the diluted stock solution should be aliquoted and stored at ≤ –70°C to minimize freeze-thaw cycles. If additional dilution is required, carrier proteins such as FBS or BSA should be added to maintain protein stability.
Recommended Usage:	For detection, use a secondary reagent with this product.

BACKGROUND INFORMATION

Mesothelin is a glycosylphosphatidylinositol (GPI)-anchored cell surface glycoprotein encoded by the MSLN gene. It is primarily expressed in normal mesothelial cells lining the pleura, pericardium, and peritoneum. Although its physiological role is not fully understood, mesothelin is believed to be involved in cell adhesion and signal transduction processes that maintain serosal membrane integrity. In normal tissues, mesothelin expression is limited, but in various malignancies, its expression is markedly

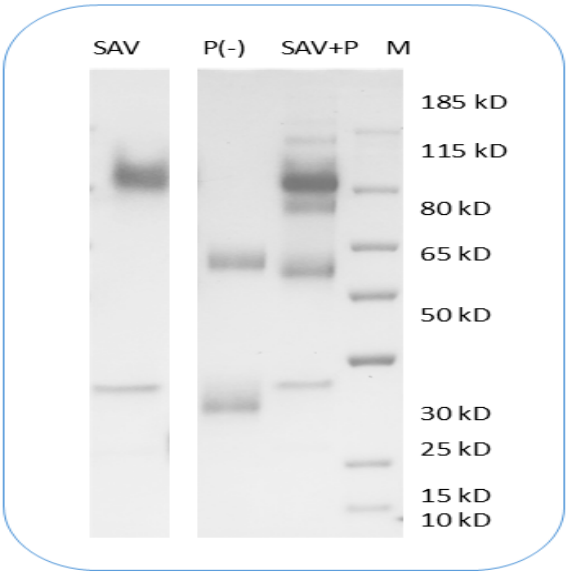
upregulated, making it a useful biomarker and therapeutic target.

Structurally, mesothelin is synthesized as a 71-kDa precursor protein that is cleaved by furin into two products: a 31-kDa soluble form known as megakaryocyte potentiating factor (MPF) and a 40-kDa mature membrane-bound form—mesothelin itself. The membrane-anchored mesothelin consists primarily of a single extracellular domain rich in beta strands and disulfide bonds, which contribute to its stability. The protein's GPI anchor tethers it to the outer leaflet of the plasma membrane, localizing it in lipid rafts where cell signaling complexes assemble.

One of mesothelin's best-characterized ligands is mucin 16 (MUC16), also known as CA125, a high-molecular-weight glycoprotein commonly expressed in ovarian and certain other tumors. The interaction between mesothelin and MUC16 promotes heterotypic cell adhesion, facilitating tumor cell implantation, metastasis, and peritoneal spread, particularly in ovarian and pancreatic cancers. This binding interaction has significant implications for cancer progression and represents a target for intervention.

Pathologically, mesothelin is overexpressed in several cancers, including malignant mesothelioma, pancreatic adenocarcinoma, ovarian carcinoma, and certain lung and gastrointestinal cancers. Its restricted expression in normal tissue and high tumor selectivity have made mesothelin a promising target for cancer therapy. Therapeutic strategies under development or testing include monoclonal antibodies (such as amatuximab), antibody-drug conjugates, chimeric antigen receptor (CAR) T cell therapies, and immunotoxins (including the recombinant immunotoxin SS1P). Additionally, mesothelin-targeted vaccines and bispecific antibodies are being explored to harness immune activation against mesothelin-expressing tumors. Clinical trials have demonstrated encouraging outcomes, particularly in mesothelioma and pancreatic cancer, positioning mesothelin as a significant molecular target in oncology.

PRODUCT DATA



Human Mesothelin (E296-G580, C-His-Avi) was biotinylated in vitro using BirA ligase. SDS-PAGE analysis under non-reducing (P−) conditions shows the protein has a purity greater than 95%. A gel shift assay using co-incubation with streptavidin indicates that the biotinylation efficiency of the Mesothelin protein exceeds 80%.

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