Recombinant Human EMMPRIN/CD147 (aa 138-323) His-tag

Catalog Number: 10611-EM

DESCRIPTION

Source	Human embryonic kidney cell, HEK293-derived human EMMPRIN/CD147 protein Glu138-Ala323, with a C-terminal 6-His tag Accession # P35613.2
N-terminal Sequence Analysis	Glu138
Predicted Molecular Mass	21 kDa

SPECIFICATIONS

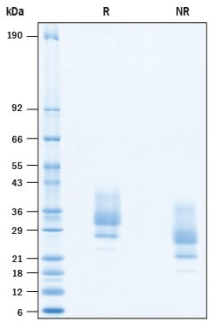
SDS-PAGE	25-41 kDa, under reducing conditions
Activity	Bioassay data are not available.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 500 µg/mL in 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

SDS-PAGE



Recombinant Human EMMPRIN/CD147 His-tag (aa 138-323) His-tag Protein SDS-PAGE. 2 µg/lane of Recombinant Human EMMPRIN/CD147 His-tag (aa 138-323) Protein (Catalog # 10611-EM) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 25-42 kDa and 20-37 kDa, respectively.

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BACKGROUND

Extracellular matrix metalloproteinase (MMP) inducer (EMMPRIN), also known as basigin and CD147, is a 44-66 kDa, variably N- and O-glycosylated, type I transmembrane protein that belongs to the immunoglobulin superfamily (1-4). Human EMMPRIN is 269 amino acids (aa) in length and contains a 24 aa signal sequence, a 183 aa extracellular domain (ECD), a 21 aa transmembrane (TM) segment and a 41 aa cytoplasmic tail. The ECD contains one C2-type and one V-type Ig-like domain. There is one 385 aa splice variant that contains an extra N-terminal IgCAM domain and is found only in the retina (5). There are additional multiple potential isoform variants for EMMMPRIN. Two that have been characterized are 205 and 176 aa in length. The 176 aa isoform utilizes an alternative start site at Met94, while the 205 aa isoform contains an 11 aa substitution for aa 1-75. Notably, the 176 aa isoform heterodimerizes with the standard EMMPRIN isoform and down-modulates its activity. This is in contrast to EMMPRIN homodimers that show full biological activity (6). EMMPRIN is expressed in areas of tissue remodeling, including endometrium, placenta, skin, and regions undergoing angiogenesis (1, 2, 7-10). It is also expressed on cells with high metabolic activity, such as lymphoblasts, macrophages and particularly tumor cells (2, 11). On such cells, EMMPRIN is often co-expressed with the amino acid transporter CD98h (12). EMMPRIN also interacts with caveolin-1 (via its C2-like domain), and this reduces the level of EMMPRIN glycosylation and subsequent EMMPRIN multimerization and activity (13). In addition, EMMMPRIN is reported to complex with both annexin II and β1 integrins α3 and α6, an interaction that contributes to tumor growth and metastasis (14-16). Finally, the soluble calcium-binding protein S100A9 has now been identified as a ligand for EMMPRIN, and may mediate many of the tumorigenic activities attributed to EMMPRIN (17). EMMPRIN's TM sequence contains a charged aa (Glu), and a Pro important for intracellular interactions with cyclophilins (CyP) (3, 18, 19). CyPA (cyclosporin A receptor) and CyP60 interactions with the TM segment promote leukocyte inflammatory chemotaxis and surface expression of EMMPRIN, respectively (18, 19). An active 22 kDa fragment can be shed from tumor cells by MT1-MMP (1). Tumor cells can also release active, full-length EMMPRIN in microvesicles (20, 21). Functionally, EMMPRIN is known to induce urokinase-type plasminogen activator (uPA), VEGF, hyaluronan and multiple MMPs (1, 2, 8-10). Human EMMPRIN (269 aa) shows 58%, 58%, 62% and 52% aa identity with mouse, rat, cow and chick EMMPRIN, respectively. It also shows 25% and 38% aa identity with the related proteins, embigin and neuroplastin (SDR-1), respectively. SARS-CoV-2 invades host cells via two receptors: angiotensin-converting enzyme 2 (ACE2) and EMMPRIN. Spike protein (SP) from virus binds to ACE2 or EMMPRIN on the host cell, mediating viral invasion and dissemination of virus among other cells (22). EMMPRIN is a second entry receptor for SARS-CoV-2 (22). It is present in multiple cellular types in lung and highly expressed in type II pneumocytes and macrophages at the edges of the fibrotic zones (22). Therefore, the blockade of EMMPRIN could also play a beneficial role in pulmonary fibrosis due to COVID-19 (22).

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