Recombinant Mouse Pro-EMAP-II Fusion Protein

Catalog Number: 2026-EM

DESCRIPTION

Source	*E. coli*-derived Ala2-Lys310, with an N-terminal Met and 6-His tag Accession # P31230
N-terminal Sequence Analysis	Met
Predicted Molecular Mass	34.7 kDa

SPECIFICATIONS

Activity	Measured by its ability to induce TNF-α secretion by RAW 264.7 mouse monocyte/macrophage cells. When rmEMAP-II is coated, it will induce TNF-α production by RAW 264.7 cells in the presence of Polymyxin B (20 µg/mL) with an ED_{50} range of 3-10 µg/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/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.

BACKGROUND

EMAP-II (endothelial monocyte-activating polypeptide II; also AIMP1 and SCYE1) is a 23 kDa polypeptide originally identified in the supernatant of TNF-α treated Meth-A fibrosarcoma cells (1, 2). In addition to EMAP-I/S100C and EMAP-III/VEGF, EMAP-II was one of three molecules presumed to enhance TNF-α-induced tissue factor expression on endothelial cells. Pro-EMAP-II, otherwise known as p43, is the 310 amino acid (aa) precursor to EMAP-II (3). It is considered to have widespread, if not ubiquitous expression, and is found both intra- and extracellularly (1, 4, 5). Pro-EMAP-II contains no canonical signal sequence. It does possess a 144 aa N-terminus that is characterized by the presence of two coiled-coil regions (aa 6 - 77) and two heparin-binding motifs (aa 71 - 73 and 120 - 122) (6, 7, 8). The C-terminal 166 aa are synonymous with EMAP-II. This region binds t-RNA (5, 8). Although Pro-EMAP-II is 34 kDa in size, it can run anomalously in SDS-page at 43 - 44 kDa (1, 5, 9, 10). When secreted, Pro-EMAP-II circulates as either a dimer or higher-order oligomer, likely due to its coiled-coil region (5). Mouse Pro-EMAP-II shares 89% and 86% aa identity with rat and human Pro-EMAP-II, respectively, and is known to be active on human cells (3, 11). Within the cell, Pro-EMAP-II is one of eleven subunits that constitute the mammalian multisynthetase complex. This is essential for ribosomal protein synthesis (12). When cells are stressed, they dissociate Pro-EMAP-II from this complex and release it (1, 10, 13). Although the particulars are unclear, it would appear that secreted Pro-EMAP-II binds to cell surface ATP synthase α-subunits (14). Here, it presumably either acts as a cytokine, or undergoes proteolytic cleavage, first by MMPs at Pro108 (based on human), and later by cathepsin L at Ser145 (10, 15). The cleavage products are monomers and likely not active cytokines (5, 10, 14). In theory, Pro-EMAP-II acts as a mediator of tissue restructuring. Upon cell stress (and subsequent apoptosis), Pro-EMAP-II is released and establishes an environment where phagocytic cells can migrate to, and actively remove, dying cells and cellular debris (1, 5, 10, 13, 16).

References:

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