Recombinant Human Granulysin
Catalog Number: 3138-GN/CF

**DESCRIPTION**

**Source**  
Mouse myeloma cell line, NS0-derived  
Met1-Leu145, with a C-terminal 10-His tag  
Accession # P22749

**N-terminal Sequence Analysis**  
Arg23

**Predicted Molecular Mass**  
15.4 kDa

**SPECIFICATIONS**

**SDS-PAGE**  
15 - 16 kDa, reducing conditions

**Activity**  
Measured by its ability to induce RANTES secretion by THP-1 human acute monocyte leukemia cells.  
The EC<sub>50</sub> for this effect is 0.3-1 µg/mL, in the presence of 10 µg/mL of a cross-linking antibody Mouse Anti-polyHistidine Monoclonal Antibody (Catalog # MAB050).

**Endotoxin Level**  
<1.0 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 Sodium Citrate and NaCl. 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**

Granulysin (formerly NKG5 or Lymphokine LAG-2) is a member of the saposin-like protein (SAPLIP) family of membrane disrupting proteins (1). Granulysin is expressed in granules of natural killer and activated cytotoxic T cells. It exhibits cytolytic activity against intracellular or extracellular microbes and also tumors, either alone or in synergy with perforin (2). Human granulysin has structural similarity and 30 - 40% aa identity to granulysins and NK-lysins of other mammals such as bovine, porcine and canine; similar peptides in rodents have not been identified (1). The 15 kDa unglycosylated protein contains five helical domains; helix 2 and 3 contain 9 arginines and one cysteine critical for activity. Peptides of either helix 2 or 3 will lyse bacteria, while helix 3 is needed to lyse tumor targets (3, 4). One isoform designated 519 uses a different start codon, has no signal peptide sequence and is poorly expressed (5). A post-translationally processed 9 kDa form is present in acidified granules and is less lytic than the 15 kDa form at granule pH (6). IL-15 is necessary and sufficient for granulysin upregulation in CD8 T cells (2). Nanomolar granulysin promotes chemotaxis and increases production of chemokines by monocytes by mononlcytic cells, while micromolar local concentrations are needed for lysis (7). Experimental evidence supports the following mechanism for activity against intracellular pathogens (8). First, granulysin forms clusters in lipid rafts due to interaction of positive charges in helices 2-3 with acidic sphingolipids. After endocytosis, early endosomes fuse with phagosomes, probably regulated by small GTPase rab5. Granulysin binds microbial membranes through charge interactions and disrupts them, probably via scissoring actions of granulysin molecules (9, 10).

**References:**