Recombinant Human IL-18/IL-1F4 GMP

Catalog Number: BT-018-GMP

DESCRIPTION

Source	*E. coli*-derived human IL-18/IL-1F4 protein Tyr37-Asp193 Accession # Q14116.1 Produced using non-animal reagents in an animal-free laboratory. Manufactured and tested under cGMP guidlines.
N-terminal Sequence Analysis	Tyr37-Phe-Gly-Lys-Leu-Glu-Ser-Lys-Leu-Ser
Predicted Molecular Mass	18 kDa

SPECIFICATIONS

SDS-PAGE	18 kDa, under reducing conditions.
Activity	Measured by its ability to induce IFN-γ secretion by KG-1 human acute myelogenous leukemia cells in the presence of TNF-α. The ED_{50} for this effect is 1.25-15.0 ng/mL. The specific activity of GMP Recombinant Human IL-18/IL-1F4 is > 5.00 x 10^6 units/mg, which is calibrated against the human IL-18 WHO Standard (NIBSC code: 03/200).
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE with quantitative densitometry by Coomassie® Blue Staining.
Mass Spectrometry	The molecular weight by mass spectrometry is 18205 Da ± 5 Da.
Host Cell Protein	<0.200 ng per µg of protein when tested by ELISA.
Mycoplasma	Negative for mycoplasma.
Host Cell DNA	<0.00150 ng per µg of protein when tested by PCR.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS and TCEP with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 500 µg/mL in sterile water.
Shipping	The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • A minimum of 12 months when stored at ≤ -20 °C as supplied. Refer to lot specific COA for the Use by Date. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, ≤ -20 °C under sterile conditions after reconstitution.

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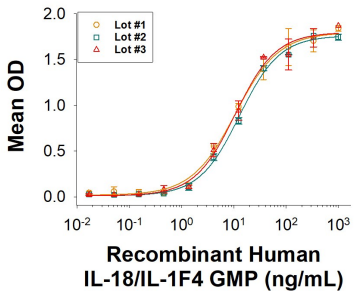
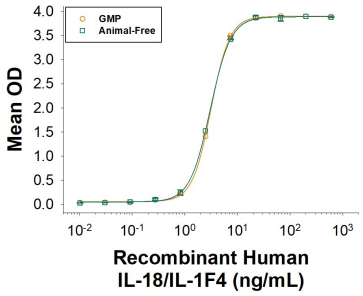
DATA

Bioactivity



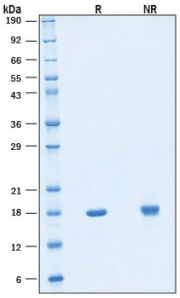
Recombinant Human IL-18/IL-1F4 GMP Protein Bioactivity. The bioactivity of Recombinant Human IL-18/IL-1F4 GMP Protein (Catalog # BT-018-GMP) was measured by its ability to induce IFN-γ secretion by KG-1 human acute myelogenous leukemia cells in the presence of TNF-α. Three independent lots were tested for bioactivity and plotted on the same graph to show lot-to-lot consistency of GMP IL-18/IL-1F4 protein.

Bioactivity



Equivalent Bioactivity of GMP and Animal-Free grades of Recombinant Human IL-18/IL-1F4. Equivalent bioactivity of GMP (Catalog # BT-018-GMP) and Animal-Free (Catalog # BT-018-AFL) grades of Recombinant Human IL-18/IL-1F4 as measured by its ability to induce IFN-γ secretion by KG-1 human acute myelogenous leukemia cells in the presence of TNF-α (orange and green, respectively).

SDS-PAGE



Recombinant Human IL-18/IL-1F4 GMP Protein SDS-PAGE. 2 µg/lane of Recombinant Human IL-18/IL-1F4 GMP Protein (Catalog # BT-018-GMP) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing a band at 18 kDa under reducing conditions.

BACKGROUND

Interleukin-18 (IL-18) is a proinflammatory cytokine in the IL-1 family that exerts distinct immune effects depending on the local cytokine environment. It is expressed as a 24 kDa precursor by endothelial and epithelial cells, keratinocytes, γδ T cells, and phagocytes. The precursor is activated intracellularly by Caspase-1 mediated proteolysis to release the 17 kDa mature cytokine. The precursor can also be released by necrotic cells for extracellular cleavage by multiple proteases. IL-18 activation is induced by infection or tissue damage and contributes to disease pathology in chronic inflammation (1-3). IL-18 binds to the widely expressed IL-18 Rα which recruits IL-18 Rβ to form the signaling receptor complex (4, 5). Its bioactivity is negatively regulated by interactions with IL-18 binding proteins and virally encoded IL-18BP homologs (6). In the presence of IL-12 or IL-15, IL-18 enhances anti-viral Th1 immune responses by inducing IFN-γ production and the cytolytic activity of $CD8^+$ T cells and NK cells (7, 8). In the absence of IL-12 or IL-15, however, IL-18 promotes production of the Th2 cytokines IL-4 and IL-13 by $CD4^+$ T cells and basophils (9, 10). In the presence of IL-1β or IL-23, IL-18 induces the antigen-independent production of IL-17 by γδ T cells and $CD4^+$ T cells (11). IL-18 also promotes myeloid dendritic cell maturation and triggers neutrophil respiratory burst (12, 13). In cancer, IL-18 exhibits diverse activities including enhancing anti-tumor immunity, inhibiting or promoting angiogenesis, and promoting tumor cell metastasis (14). Mature human IL-18 shares approximately 63% amino acid sequence identity with mouse and rat IL-18 (15). Alternative splicing in human ovarian cancer generates an isoform that is resistant to Caspase-1 activation (16). A cell surface form can be expressed on M-CSF induced macrophages and released in response to bacterial endotoxin (17).

References:

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- Mycoplasma testing by ribosomal RNA hybridization assay

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