Miltenyi Biotec

Human IL-18
research grade

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1. Description

Products

Human IL-18, research grade.

Recombinant human interleukin 18.

Content in µg	Order no.
10	130-101-717
25	130-101-719

Biological activity

The ED_{50} is ≤0.33 ng/mL corresponding to an activity of ≥3×10^6 U/mg.

▲ **Note:** The ED50 is determined by induction of IFN-γ secretion by KG-1 cells[1]. The bioassay was calibrated with the reference reagent for human IL-18 (NIBSC code 03/200) provided by the WHO/National Institute for Biological Standards and Control.

Primary structure

Single, non-glycosylated polypeptide chain (157 amino acid residues), engineered with substitutions at cysteine residues C74, C104, C112, and C163.

Molecular mass

18.2 kDa.

Source

Produced in *E. coli*.

Product format

Lyophilized from a filtered (0.2 µm) buffer solution.

Stabilizer

Mannitol and trehalose.

Purity

>95% as determined by SDS-PAGE analysis.

Endotoxin level

Low endotoxin (<1.0 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.

Storage

Lyophilized Human IL-18, research grade should be stored at –20 °C. The expiration date is indicated on the vial label. Upon reconstitution aliquots should be stored at –20 °C or below. Avoid repeated freeze-thaw cycles.

Reconstitution

It is recommended to reconstitute lyophilized Human IL-18, research grade with deionized sterile-filtered water to a final concentration of 0.1-1.0 mg/mL in a minimal volume of 100 µL. Further dilutions should be prepared with 0.1% bovine serum albumin (BSA) or human serum albumin (HSA) in phosphate-buffered saline.

1.1 Background information

Human Interleukin 18 (IL-18) is a pro inflammatory cytokine of the IL-1 family that plays a central role in both innate and adaptive immunity. IL-18 is produced by a broad range of cell types, including monocytes, macrophages, keratinocytes, mesenchymal cells, and epithelial cells.

IL-18 is synthesized as an inactive precursor that lacks a signal peptide and therefore accumulates in the cytosol. It requires caspase 1–mediated proteolytic cleavage for activation. Active caspase 1 simultaneously cleaves gasdermin D, liberating a pore -forming domain that enables secretion of the mature protein.

IL-18 exerts strong immunostimulatory effects, most notably by inducing IFN-γ production in T cells, natural killer (NK) cells, and NKT cells. Recombinant IL-18 is used in vitro to activate and enhance the effector functions of NK cells, including IFN-γ production and cytotoxicity. In synergy with cytokines such as IL-2, IL-12, IL-15, and IL-21, it promotes NK cell activation, proliferation, and inflammatory cytokine release. IL-18 can be used in combination with IL-12 and IL-15 to generate cytokine induced memory like (CIML) NK cells with increased longevity and anti cancer functionality. Exposure to IL-18 has also been shown to enhance the anti-cancer functions of CAR T cells.

IL-18 also stimulates additional immune cell types, including macrophages, B cells, and dendritic cells. The recombinant protein corresponds to the mature, bioactive form of IL-18 generated after caspase 1 cleavage.

1.2 Applications

Human IL-18 can be used for a variety of applications including:

- *In vitro* expansion and activation of NK cells.
- Generation of cytokine-induced memory-like NK cells (CIML NK).
- Enhancing T cell activation and effector functions in CAR-T cell applications.
- Investigation of IL-18 mediated signaling pathways.

Optimal concentration for a specific application should be determined by a dose-response experiment.

2. References

1. Konishi, K. *et al.* (1997) A simple and sensitive bioassay for the detection of human interleukin-18/interferon-gamma-inducing factor using human myelomonocytic KG-1 cells. J Immunol Methods 209 (2): 187–191.

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