Miltenyi Biotec

Human IL-23
research grade

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1. Description

Products	Human IL-23, research grade. Recombinant human interleukin 23.

Content in µg	Order no.
5	130-095-757
25	130-095-758
100	130-095-759

Biological activity	Induction of IFN-γ secretion by human peripheral blood mononuclear cells (PBMCs) with significant activity observed above 10 ng/mL in this assay.
Primary structure	Single glycosylated polypeptide chain, composed by p40 and p19 fused by a flexible linker region (504 amino acid residues).
Molecular mass	56 kDa.
Source	Produced in HEK293 cells.
Product format	Lyophilized from a filtered (0.2 µm) buffer solution.
Stabilizer	Mannitol and trehalose.
Purity	>97% 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-23, 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-23, research grade with deionized sterile-filtered water to a final concentration of 0.05–1.0 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

Interleukin 23 (IL-23) is a covalently linked heterodimeric cytokine, which is closely related to IL-12. Macrophages and dendritic cells (DCs) are the major sources of both IL-12 and IL-23, which act on receptors primarily expressed by T cells, NK cells, and NKT cells. IL-23 consists of the p40 subunit shared with IL-12 (IL-12B, IL-12 p40, IL-23 p40) and the 19 kDa protein p19 (IL-23 p19, IL-23A). Its effects are mediated by a receptor composed of IL-12 receptor subunit B1 and an IL-23 specific subunit. While IL-12 drives the development of T_H1 cells, IL-23 mediates the full differentiation and maintenance of T_H17 cells. IL-23 stimulates memory $CD4^+$ rather than naive T cells and promotes the production of pro-inflammatory cytokines. As a key cytokine in the survival and proliferation of T_H17 cells, IL-23 has central roles in autoimmune diseases and promotes chronic inflammation. It has been shown that single chain fusion proteins of naturally heterodimeric cytokines such as IL-12 or IL-23 are bioactive *in vitro* and *in vivo*.

1.2 Applications

Human IL-23 can be used for a variety of applications, including:

- *In vitro* differentiation of $CD4^+$ T cells towards T_H17 cells and proliferation of T_H17 cells.
- Exploration of the role of IL-23 in autoimmune diseases or inflammatory bowel diseases.
- Investigation of IL-23–mediated molecular signaling pathways.

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

2. References

1. Damsker, J.M. *et al.* (2010) Th1 and Th17 cells: adversaries and collaborators. Ann. N. Y. Acad. Sci. 1183: 211–221.
2. Lieschke, G.J. *et al.* (1997) Bioactive murine and human interleukin-12 fusion proteins which retain antitumor activity *in vivo*. Nat. Biotechnol. 15: 35–40.
3. Miller, J.M. *et al.* (2010) Vesicular stomatitis virus modified with single chain IL-23 exhibits oncolytic activity against tumor cells *in vitro* and *in vivo*. Int. J. Infereron Cytokine Mediator Res. 2010: 63–72.

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