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## 1. Description

<b>Components</b>	<b>Human IL-21, research grade:</b> Purified recombinant human interleukin 21.
<b>Sizes</b>	10 µg, 25 µg.
<b>Biological activity</b>	The ED <sub>50</sub> is ≤100 ng/mL* corresponding to a specific activity of ≥1×10 <sup>4</sup> U/mg.
<b>Primary structure</b>	Single, non-glycosylated polypeptide chain (133 amino acid residues).
<b>Molecular mass</b>	15.5 kDa.
<b>Source</b>	Produced in <i>E. coli</i> .
<b>Product format</b>	Lyophilized from a 0.2 µm filtered buffer solution.
<b>Stabilizer</b>	Mannitol and trehalose.
<b>Purity</b>	>97% as determined by SDS-PAGE analysis.
<b>Endotoxin level</b>	Low endotoxin (<1.0 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.
<b>Storage</b>	Lyophilized Human IL-21, 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.
<b>Reconstitution</b>	It is recommended to reconstitute lyophilized Human IL-21 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.

\* The ED<sub>50</sub> is determined by proliferation assay using mouse B9 hybridoma cells.

## 1.1 Background information

Interleukin 21 (IL-21) is a four α-helix bundle cytokine and closely related to IL-2, IL-4, and IL-15. IL-21 expression is restricted to activated CD4<sup>+</sup> T helper cells and NKT cells. Among T helper subsets, IL-21 is strongly produced by follicular T helper cells and Th17 cells, where IL-21 serves as an autocrine regulator and seems to sustain Th17 development. The functional receptor for IL-21, composed of the IL-21 receptor and the common γ-chain, is expressed on various hematopoietic cells including T, B, NK, and dendritic cells. Accordingly, IL-21 exerts pleiotropic effects on both cellular and humoral immune responses, such as stimulation of lymphocyte proliferation, promotion of CD8<sup>+</sup> T cell and NK cell cytotoxicity, and differentiation of B cells into plasma cells. Important roles for IL-21 have been proposed with regard to its anti-tumor activity and for the development of autoimmune diseases.<sup>1</sup>

## 1.2 Applications

Human IL-21 can be used for a variety of applications, including:

- *In vitro* differentiation of naive CD4<sup>+</sup> T cells towards Th17 cells.
- Study of IL-21 influence on NK cell development and function.
- *In vitro* differentiation of plasma cells from naive B cells.
- Investigation of IL-21-mediated molecular signaling pathways.

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

## 2. Reference

1. Spolski, R. and Leonard, W. J. (2008) Interleukin-21: basic biology and implications for cancer and autoimmunity. *Annu. Rev. Immunol.* 26: 57–79.

All protocols and data sheets are available at [www.miltenyibiotec.com](http://www.miltenyibiotec.com).

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