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## 1. Description

<b>Components</b>	Human IL-1 $\beta$ , research grade: Purified recombinant human interleukin 1 $\beta$ .
<b>Sizes</b>	10 $\mu$ g, 25 $\mu$ g, 1000 $\mu$ g
<b>Biological activity</b>	The ED <sub>50</sub> is $\leq 0.1$ ng/mL* corresponding to a specific activity of $\geq 1 \times 10^7$ IU/mg.
<b>Primary structure</b>	Single, non-glycosylated polypeptide (153 amino acid residues).
<b>Molecular mass</b>	17.4 kDa.
<b>Source</b>	Produced in <i>E. coli</i> .
<b>Product format</b>	Lyophilized from a 0.2 $\mu$ m filtered buffer solution.
<b>Stabilizer</b>	None.
<b>Purity</b>	>97% as determined by SDS-PAGE analysis.
<b>Endotoxin level</b>	Low endotoxin (<1.0 EU/ $\mu$ g cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.
<b>Storage</b>	Lyophilized Human IL-1 $\beta$ , 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-1 $\beta$ with deionized sterile-filtered water to a final concentration of 0.1–1.0 mg/mL in a minimal volume of 100 $\mu$ L. 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 D10.G4.1 or TF-1 cells according to Poole and Gaines-Das<sup>1</sup> and Kitamura *et al.*<sup>2</sup>, respectively. The proliferation assay was calibrated with the international standard for human IL-1 $\beta$  (NIBSC code 86/680) provided by the WHO/National Institute for Biological Standards and Control.

## 1.1 Background information

Interleukin 1 $\beta$  (IL-1 $\beta$ ) is a proinflammatory cytokine that is secreted by monocytes and macrophages. IL-1 $\beta$  secretion has also been reported for a variety of other cells, including B cells, NK cells, dendritic cells, astrocytes, and microglial cells. It mediates inflammatory response in B cells, T cells, and NK cells by inducing the production of cytokines, such as IL-2, IL-3, IL-6, as well as interferons. Upon exposure to IL-1 $\beta$ , endothelial cells and smooth muscle cells synthesize prostaglandins and other derivatives of arachidonic acid. In addition, IL-1 $\beta$  is found in synovial fluid of arthritis patients, causing degranulation of basophils and eosinophils as well as activation of osteoclasts. IL-1 $\beta$  is mitogenic for mesangial cells, glial cells, and keratinocytes. It has been shown that IL-1 $\beta$  is a potent modulator of CD40L-induced cytokine secretion by human dendritic cell (DC) subsets, such as monocyte-derived dendritic cells (Mo-DC), CD34<sup>+</sup>-derived DCs, and peripheral blood DCs<sup>3</sup>.

## 1.2 Applications

- Human IL-1 $\beta$  can be used for a variety of applications, including induction of Mo-DC maturation, chemotaxis assays, and investigation of IL-1 receptor signaling.

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

## 2. References

1. Poole, S. and Gaines-Das, R. E. (1991) The international standards for interleukin-1 alpha and interleukin-1 beta. Evaluation in an international collaborative study. *J. Immunol. Methods* 142: 1–13.
2. Kitamura, T. *et al.* (1991) IL-1 up-regulates the expression of cytokine receptors on a factor-dependent human hemopoietic cell line, TF-1. *Int. Immunol.* 3: 571–577.
3. Luft, T. *et al.* (2002) IL-1 beta enhances CD40 ligand-mediated cytokine secretion by human dendritic cells (DC): a mechanism for T cell-independent DC activation. *J. Immunol.* 168: 713–722.

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

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