

## IL-1 beta Protein, Human (E6K, His)

<b>Cat. No.:</b>	HY-P73149
<b>Synonyms:</b>	Interleukin-1 beta; IL-1 $\beta$ ; IL1F2; IL-1 beta; IL1B
<b>Species:</b>	Human
<b>Source:</b>	E. coli
<b>Accession:</b>	P01584/NP_000567.1 (M1-S269, E6K)
<b>Gene ID:</b>	3553
<b>Molecular Weight:</b>	Approximately 32-34 kDa

### PROPERTIES

<b>AA Sequence</b>	<p> MAEVPKLASE    MMAYYSGNED    DLFFEADGPK    QMKCSFQDL D  LCPLDGGIQL    RISDHHYSKG    FRQAASVVVA    MDKLRKMLVP  CPQTFQENDL    STFFPFI FEE    EPIFFDTWDN    EAYVHDAPVR  SLNCTLRDSQ    QKSLVMSGPY    ELKALHLQGQ    DMEQQVVFMS  SFVQGEESND    KIPVALGLKE    KNLYLSCVLK    DDKPTLQLES  VDPKNYPKKK    MEKRFFVFNKI    EINNKLEFES    AQFPNWI ST  SQAENMPVFL    GGTKGGQDIT    DFTMQFVSS </p>
<b>Biological Activity</b>	<p>1. Measured by its binding ability in a functional ELISA. Immobilized human IL1B at 10 <math>\mu</math>g/mL (100 <math>\mu</math>l/well) can bind human IL1R1 and the EC<sub>50</sub> is 0.198 <math>\mu</math>g/mL.</p> <p>2. Measured in a proliferation assay using CTLL-2 Cells. The ED<sub>50</sub> for this effect is <math>\leq</math>3.746 pg/mL, corresponding to a specific activity is <math>\geq</math>2.67<math>\times</math>10<sup>8</sup> units/mg.</p>
<b>Appearance</b>	Lyophilized powder
<b>Formulation</b>	Lyophilized from a 0.2 $\mu$ m filtered solution of PBS, pH 7.4 or 50 mM Tris-HCL, 300 mM NaCl, 200 mM arginine, pH 8.0.
<b>Endotoxin Level</b>	<1 EU/ $\mu$ g, determined by LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 $\mu$ g/mL in ddH <sub>2</sub> O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
<b>Storage &amp; Stability</b>	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
<b>Shipping</b>	Room temperature in continental US; may vary elsewhere.

### DESCRIPTION

## Background

Interleukin-1 $\beta$  (IL-1 $\beta$ ) is one of the pro-inflammatory cytokines and is produced and secreted by a variety of cell types although the vast majority of studies have focussed on its production within cells of the innate immune system, such as monocytes and macrophages<sup>[1][2]</sup>.

IL-1 $\beta$  is produced as inactive pro-IL-1 $\beta$  (encoded by pro-IL-1 $\beta$ ) in response to inflammatory stimuli, including both microbial products and endogenous danger-associated molecules. IL-1 $\beta$  gene expression and synthesis of pro-IL-1 $\beta$  occurs after activation of pattern recognition receptors (PRRs). Inflammatory stimuli also drive activation of cytosolic CARD and PYHIN domain-containing PRRs that recruit ASC and caspase-1 (Casp-1) to assemble into the multiprotein complex inflammasome. Pro-Casp-1 (encoded by pro-Casp-1), activated by the inflammasome, cleaves pro-IL-1 $\beta$  into the bioactive IL-1 $\beta$ . IL-1 $\beta$  acts in an autocrine/paracrine manner via the type I IL-1 receptor (IL-1R1)<sup>[1][2][3]</sup>.

IL-1 $\beta$  could regulate the inflammatory response, and is involved in a variety of cellular activities, including cell proliferation, differentiation, and apoptosis. IL-1 $\beta$  also plays a significant regulator of reproduction in females<sup>[1][2][3]</sup>.

## REFERENCES

- [1]. Jan Petrasek, et al. IL-1 receptor antagonist ameliorates inflammasome-dependent alcoholic steatohepatitis in mice. *J Clin Invest*. 2012 Oct;122(10):3476-89.
- [2]. Karina Zitta, et al. Interleukin-1 $\beta$  regulates cell proliferation and activity of extracellular matrix remodelling enzymes in cultured primary pig heart cells. *Biochem Biophys Res Commun*. 2010 Sep 3;399(4):542-7.
- [3]. Kenichi Shimada, et al. Caspase-1 dependent IL-1 $\beta$  secretion is critical for host defense in a mouse model of *Chlamydia pneumoniae* lung infection. *PLoS One*. 2011;6(6):e21477.

**Caution: Product has not been fully validated for medical applications. For research use only.**

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