

# Human Interleukin-1 $\beta$ (hIL-1 $\beta$ )

**Orders** ■ 877-616-CELL (2355)  
orders@cellsignaling.com

**Support** ■ 877-678-TECH (8324)  
info@cellsignaling.com

**Web** ■ www.cellsignaling.com

rev. 03/10/20

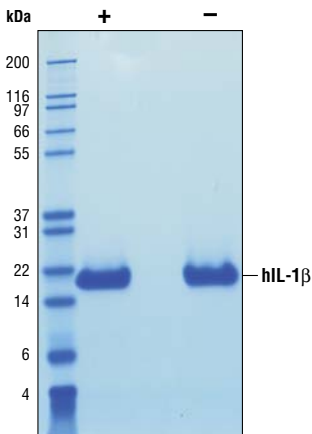
**For Research Use Only. Not For Use In Diagnostic Procedures.**

**Source:** Recombinant human IL-1 $\beta$  (hIL-1 $\beta$ ) Ala117-Ser269 (Accession #NM\_000576) was produced in *E. coli* at Cell Signaling Technology.

**Molecular Characterization:** Recombinant hIL-1 $\beta$  does not have a Met on the amino terminus and has a calculated MW of 17,377. DTT-reduced and non-reduced protein migrate as 18 kDa polypeptides. The expected amino-terminal APVRS of recombinant hIL-1 $\beta$  was verified by amino acid sequencing.

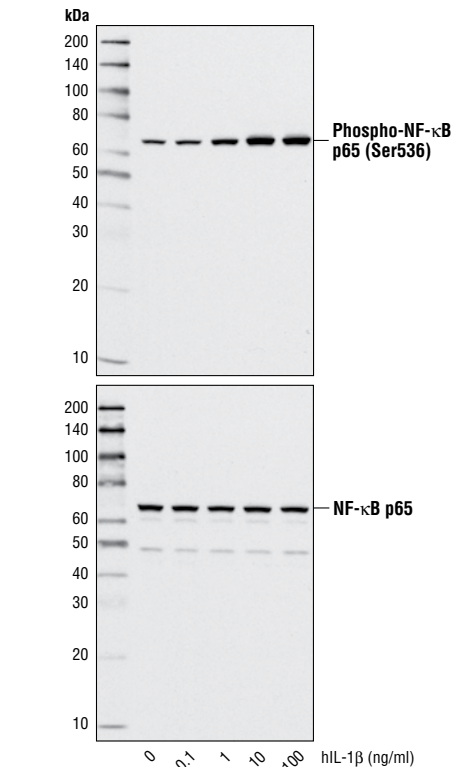
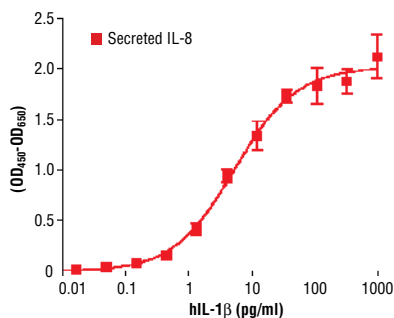
**Endotoxin:** Less than 0.01 ng endotoxin/1  $\mu$ g hIL-1 $\beta$ .

**Purity:** >98% as determined by SDS-PAGE of 6  $\mu$ g reduced (+) and non-reduced (-) recombinant hIL-1 $\beta$ . All lots are greater than 98% pure.



The purity of recombinant hIL-1 $\beta$  was determined by SDS-PAGE of 6  $\mu$ g reduced (+) and non-reduced (-) recombinant hIL-1 $\beta$  and staining overnight with Coomassie Blue.

**Bioactivity:** The bioactivity of recombinant IL-1 $\beta$  was determined by its ability to induce IL-8 production by primary human fibroblasts. The ED<sub>50</sub> of each lot is between 5-20 pg/ml.



Western blot analysis of extracts from MCF-7 cells, untreated or treated with hIL-1 $\beta$  for 20 minutes, using Phospho-NF- $\kappa$ B p65 (Ser536) (93H1) Rabbit mAb #3033 (upper) and NF- $\kappa$ B p65 Antibody #3034 (lower).

**Formulation:** With carrier: Lyophilized from a 0.22  $\mu$ m filtered solution of PBS, pH 7.2 containing 20  $\mu$ g BSA per 1  $\mu$ g hIL-1 $\beta$ .

Carrier free: Lyophilized from a 0.22  $\mu$ m filtered solution of PBS, pH 7.2.

**Reconstitution:**

With carrier: Add sterile PBS or PBS containing 1% bovine or human serum albumin or 5-10% FBS to a final hIL-1 $\beta$  concentration of greater than 50  $\mu$ g/ml. Solubilize for 30 minutes at room temperature with occasional gentle vortexing.

Carrier free: Add sterile PBS or PBS containing protein to minimize absorption of hIL-1 $\beta$  to surfaces. Solubilize for 30 minutes at room temperature with occasional gentle vortexing. Stock hIL-1 $\beta$  should be greater than 50  $\mu$ g/ml.

**Storage:** Stable in lyophilized state at -20°C for 1 year after receipt. Sterile stock solutions reconstituted with carrier protein are stable at 4°C for 2 months and at -20°C for 6 months. Avoid repeated freeze-thaw cycles.

Maintain sterility. Storage at -20°C should be in a manual defrost freezer.

**Applications:** Optimal concentration for the desired application should be determined by the user.

**Background:** IL-1 $\beta$  is a pro-inflammatory cytokine produced predominantly by activated monocytes and epithelial cells (1). Precursor IL-1 $\beta$  is cleaved by caspase-1 and mature IL-1 $\beta$  is then secreted (1-3). Target cells include macrophages and many other cell types. Signaling by IL-1 $\beta$  involves IL-1 $\beta$  binding to IL-1 accessory protein (IL-1AcP) and then the complex binds to IL-1RI (1,2). Signaling is through activation of MAP kinase and NF- $\kappa$ B pathways (1,2). IL-1 $\beta$  also binds to IL-1RII that lacks an intracellular signaling domain and thereby serves as a high affinity decoy receptor. IL-1 $\beta$  binding to IL-1RI is inhibited by the negative regulator, IL-1R antagonist (IL-1Ra). IL-1Ra binding to IL-1RI does not signal and serves to block IL-1 $\beta$  signaling. IL-1 $\beta$  plays critical roles in the acute phase response and sepsis (1-3).

**Background References:**

- (1) Dinarello, C.A. (1996) *Blood* 87, 2095-147.
- (2) Allan, S.M. et al. (2005) *Nat Rev Immunol* 5, 629-40.
- (3) Kramer, F. et al. (2008) *Mol Immunol* 45, 2678-89.

◀ The production of IL-8 by primary human fibroblasts cultured with increasing concentrations of human IL-1 $\beta$  was assessed. Media from cells incubated with IL-1 $\beta$  for 24 hours was collected and assayed for IL-8 by ELISA and the OD<sub>450</sub>-OD<sub>650</sub> was determined.