

# Cytokines

## Human Recombinant IFN-beta



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### Interferon-beta

Catalog # 78113  
78113.1

5 µg  
25 µg

## Product Description

Interferon beta (IFN- $\beta$ ), also known as type I interferon, is produced by fibroblasts, and in smaller amounts by plasmacytoid dendritic cells. Macrophages and endothelial cells secrete IFN- $\beta$  in response to a viral infection (Reder & Feng). IFN- $\beta$  binds to a receptor complex composed of IFNAR1 and IFNAR2, and initiates signal transduction via the JAK/STAT pathway; this culminates in the transcription and activation of many genes that control dendritic cell activation, T cell survival, NK cell activation, chemokine expression, lymph node retention, and antiproliferative and antiviral effects (Dunn et al.). IFN- $\beta$  is a first-line treatment for multiple sclerosis. It suppresses Th17 cells by affecting expression of IL-4, IL-10, and IL-27. IFN- $\beta$  was also shown to expand regulatory T cells and limit T cell trafficking to the central nervous system (Inoue & Shinohara). Out of the two variants of IFN- $\beta$  (IFN- $\beta$ 1 and IFN- $\beta$ 3), this product is the IFN- $\beta$ 1 form.

## Product Information

**Alternative Names:** B cell interferon, Fibroblast interferon, IFNB1, Leukocyte interferon, Type I interferon

**Accession Number:** P01574

**Amino Acid Sequence:** MSYNLLGFLQ RSSNFQCQKL LWQLNGRLEY CLKDRMNFDI PEEIKQLQQF QKEDAALTY EMLQNIFAIF RQDSSSTGWN ETIVENLLAN VYHQINHLKT VLEEKLEKED FTRGKLMSSL HLKRYYYGRIL HYLKAKEYSH CAWTIVRVEI LRNFYFINRL TGYLRN

**Predicted Molecular Mass:** 20 kDa

**Species:** Human

**Cross Reactivity:** Mouse

**Formulation:** Lyophilized after dialysis against phosphate-buffered saline.

**Source:** HEK293

## Specifications

**Activity:** The specific activity is  $\geq 1.0 \times 10^7$  units/mg ( $EC_{50} \leq 0.1$  ng/mL) as determined by a cell proliferation assay of TF-1 cells.

**Purity:**  $\geq 95\%$

**Endotoxin Level:** Measured by kinetic Limulus amoebocyte lysate (LAL) analysis and is  $\leq 0.2$  EU/µg protein.

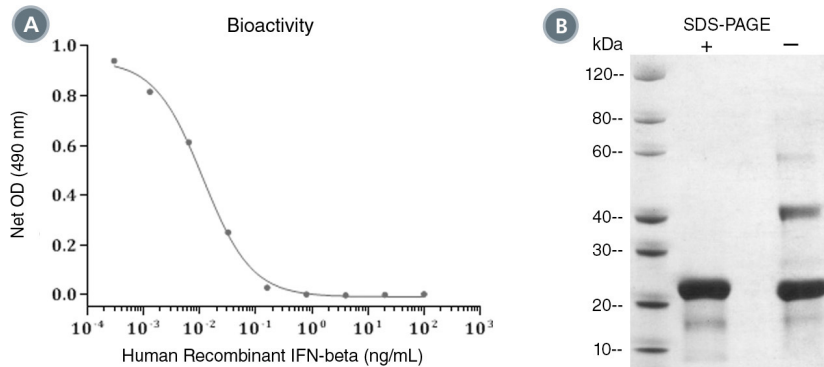
## Preparation and Storage

**Storage:** Store at  $-80^\circ\text{C}$ .

**Stability:** Stable as supplied for 12 months from date of receipt.

**Preparation:** Centrifuge vial before opening. Resuspend the product in sterile water or phosphate-buffered saline containing 0.1% bovine serum albumin (BSA) to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. Store at  $2 - 8^\circ\text{C}$  for up to 1 week or at  $-20^\circ\text{C}$  to  $-80^\circ\text{C}$  for up to 3 months. Avoid repeated freeze-thaw cycles.  
NOTE: If reconstituted product will be used immediately BSA is not required.

## Data



(A) The biological activity of Human Recombinant IFN-beta was tested by its ability to inhibit the proliferation of TF-1 cells. Cell proliferation was measured using a fluorometric assay method. The EC50 is defined as the effective concentration of the growth factor at which cell proliferation is at 50% of maximum. The EC50 in the above example is less than 0.1 ng/mL.

(B) 2 µg of Human Recombinant IFN-beta was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining.

## Related Products

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## References

- Dunn GP et al. (2006) Interferons, immunity and cancer immunoediting. *Nat Rev Immunol* 6(11): 836–48.
- Inoue M & Shinohara ML. (2013) The role of interferon- $\beta$  in the treatment of multiple sclerosis and experimental autoimmune encephalomyelitis - in the perspective of inflammasomes. *Immunology* 139(1): 11–8.
- Reder AT & Feng X. (2013) Aberrant type I interferon regulation in autoimmunity: opposite directions in MS and SLE, shaped by evolution and body ecology. *Front Immunol* 4: 281.

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