PRODUCT INFORMATION

IFN-β (human, recombinant)

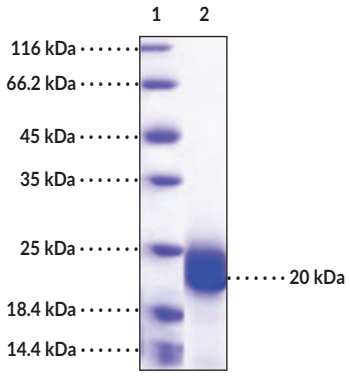
Item No. 31528

Overview and Properties

Synonyms:	Fibroblast Interferon, IFNB1, Interferon-β
Source:	Active recombinant human IFN-β expressed in CHO cells
Amino Acids:	22-187
Uniprot No.:	P01574
Molecular Weight:	20 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥95% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile 10 mM sodium acetate with 40 mM Arg, 0.12 mg/ml Met, 146 mg/ml sucrose, and 0.1% PF-68, pH 4.5
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay
Bioactivity:	See figures for details

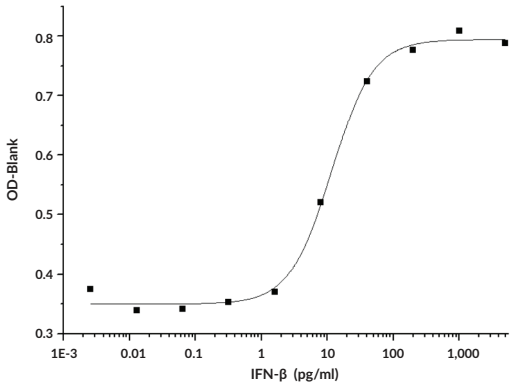
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: IFN-β

SDS-PAGE Analysis of IFN-β.



IFN-β Bioactivity in an Antiviral Assay Using WISH Cells Infected with Vesicular Stomatitis Virus. The EC_{50} value for this effect is typically 2-20 pg/ml.

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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Description

Interferon-β (IFN-β) is a cytokine and type I IFN with roles in antiviral responses and regulation of innate and adaptive immunity.[1] It is produced mainly by fibroblasts in response to viral pathogens, which are detected by a diverse repertoire of pathogen recognition receptors (PRRs).[1,2] IFN-β binds to the IFN-α/β receptor (IFNAR) and induces signal transduction through the canonical JAK/STAT signaling pathway to induce the expression of IFN-stimulated genes (ISGs), which encode proteins that have antiviral, antiproliferative, or immunomodulatory properties, leading to the induction of an antiviral state in infected and neighboring cells and inhibiting viral replication.[1] IFN-β inhibits the replication of a variety of viral pathogens, including severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the causative agent of COVID-19, and induces cell cycle arrest at the S phase and apoptosis in Huh7 hepatocellular carcinoma cells *in vitro*.[3,4] Formulations containing IFN-β have been used in the treatment of multiple sclerosis. Cayman's IFN-β (human, recombinant) protein can be used for cell-based assays. This protein consists of 166 amino acids, has a calculated molecular weight of 20 kDa, and a predicted N-terminus of Met22 after signal peptide cleavage.

References

1. Ivashkiv, L.B. and Donlin, L.T. Regulation of type I interferon responses. *Nat. Rev. Immunol.* **14(1)**, 36-49 (2014).
2. Haller, O., Kochs, G., and Weber, F. The interferon response circuit: Induction and suppression by pathogenic viruses. *Virology* **344(1)**, 119-130 (2006).
3. Mantlo, E., Bukreyeva, N., Maruyama, J., *et al.* Antiviral activities of type I interferons to SARS-CoV-2 infection. *Antiviral Res.* **179**, 104811 (2020).
4. Murata, M., Nabeshima, S., Kikuchi, K., *et al.* A comparison of the antitumor effects of interferon-α and β on human hepatocellular carcinoma cell lines. *Cytokine* **33(3)**, 121-128 (2006).

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