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1. Description

Components	Mouse IFN- α : Purified recombinant mouse interferon α .
Sizes	0.2 mL, 1 mL.
Biological activity	1×10^7 IU/mL. Bioactivity was calibrated against the international reference standard for mIFN- α (Ga02-90-1511).
Molecular mass	20 kDa.
Source	Produced in human embryonic kidney cells (HEK293).
Product format	The protein is supplied in PBS without stabilizers and carriers.
Purity	>95% as determined by SDS-PAGE analysis.
Endotoxin level	Low endotoxin as determined by Limulus Amebocyte Lysate (LAL) assay.
Storage	Avoid repeated freeze-thaw cycles to prevent denaturation. It is recommended to aliquot the solution and to store the aliquots at -20 °C. The expiration date is indicated on the vial label.

1.1 Background information

Type I interferons (IFNs), including IFN- α , are a family of cytokines that exert multiple functions in the immune system^{1,2}. The most prominent effect of IFN- α is its antiviral activity. Upon virus infections, host cells release IFN- α , which can act in an autocrine or paracrine manner to activate intracellular antiviral defense mechanisms and therefore restrict viral replication. Furthermore, IFN- α affects the generation and function of various dendritic cell populations. Immunomodulatory activity and anti-tumor effects have been described both *in vivo* and *in vitro*. IFN- α binds to the IFN- α R1/IFN- α R2 receptor complex, activating signal transduction mediated by the Janus kinase-signal transducer and activator of transcription (Jak-STAT) pathway. Consequently, genes are induced whose promoters contain the IFN-stimulated response element (ISRE)^{3,4}.

1.2 Applications

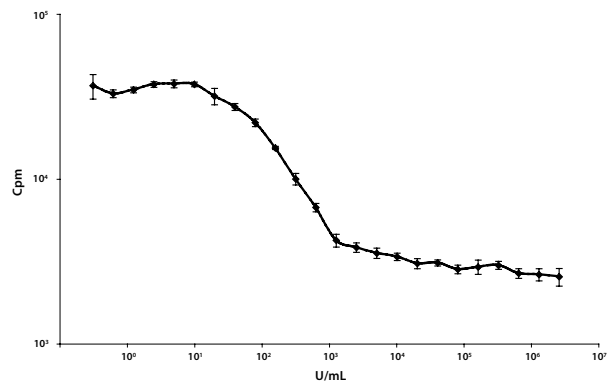
- Investigation of anti-tumor effects, that is, anti-proliferative capacity of IFN- α on tumor cell lines.
- Stimulation of IFN- α -dependent cell lines.
- Studies on signal transduction and gene expression induced by IFN- α in cell lines.
- Investigation of anti-tumor effects of IFN- α in murine disease models.
- Studies on transgenic mice expressing Cre recombinase under the control of the IFN-inducible Mx promoter, that is, Mx-Cre transgenic mice⁵.

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

2. Example for inhibition of T lymphoma cell proliferation by IFN- α

T lymphoma cells (cell line BW) were suspended in autoconditioned medium at a density of 5×10^5 cells/mL. 100 μ L aliquots of the cell suspension were added to various dilutions of IFN- α in a microtiter plate. The cells were cultured for 16 hours and labeled with [³H]-thymidine for the next 30 hours. Subsequently, cells were harvested and [³H]-thymidine incorporation was determined by liquid scintillation counting.

Recombinant IFN- α blocked the proliferation of BW cells in a concentration-dependent manner as reflected by a decrease of [³H]-thymidine incorporation.



3. References

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2. Takaoka, A. and Yanai, H. (2006) Interferon signalling network in innate defence. *Cell. Microbiol.* 8: 907–922.
3. Darnell, J. E. Jr. *et al.* (1994) Jak-STAT pathways and transcriptional activation in response to IFNs and other extracellular signaling proteins. *Science* 264: 1415–21.
4. van Boxel-Dezaire, A. H. *et al.* (2006) Complex modulation of cell type-specific signaling in response to type I interferons. *Immunity* 25: 361–72.
5. Kühn, R. *et al.* (1995) Inducible gene targeting in mice. *Science* 269: 1427–1429.

All protocols and data sheets are available at www.miltenyibiotec.com.

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