Cytokines

Human Recombinant LIF, ACF

Leukemia inhibitory factor, animal component-free

Catalog #	78149	25 µg
	78149.1	100 µg
	78149.2	1000 µg

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Product Description

Leukemia inhibitory factor (LIF) is an interleukin 6 class cytokine that regulates a broad variety of developmental functions. After LIF binds to LIF receptor (LIFR), LIFR associates with gp130 and activates JAK/STAT and MAPK signaling (Auernhammer & Melmed; Suman et al.). LIFR activation of STAT3 is essential for maintaining the mouse embryonic stem cell phenotype (Niwa et al.). Produced by the endometrium, LIF plays an important autocrine and paracrine role in implantation by regulating proliferation, invasion, and differentiation of trophoblasts following blastocyst attachment (Auernhammer & Melmed; Suman et al.). Human LIF can be used for the maintenance of mouse embryonic stem cells, however mouse LIF cannot bind to the human receptor, thus rendering mouse LIF inactive (Dahéron et al.). LIF is produced by CD4+ and activated regulatory T cells, and promotes Foxp3 expression, while repressing Th17 lineage-specific genes (Metcalfe). LIF is also secreted by mesenchymal stromal cells, where it supports hematopoiesis and immune modulation (Nasef et al.). This product is animal component-free.

Product Information

Alternative Names:	CDF, Cholinergic differentiation factor, D Factor, DIA, Differentiation-inducing factor, Differentiation inhibitory activity, Differentiation-stimulating factor, Emfilermin, Hepatocyte-stimulating factor III, HILDA, MLPLI
Accession Number:	P15018
Amino Acid Sequence:	MSPLPITPVN ATCAIRHPCH NNLMNQIRSQ LAQLNGSANA LFILYYTAQG EPFPNNLDKL CGPNVTDFPP FHANGTEKAK LVELYRIVVY LGTSLGNITR DQKILNPSAL SLHSKLNATA DILRGLLSNV LCRLCSKYHV GHVDVTYGPD TSGKDVFQKK KLGCQLLGKY KQIIAVLAQA F
Predicted Molecular Mass:	19.8 kDa
Species:	Human
Cross Reactivity:	Mouse
Formulation:	Lyophilized from a sterile-filtered aqueous solution containing 0.1% trifluoroacetic acid
Source:	E. coli

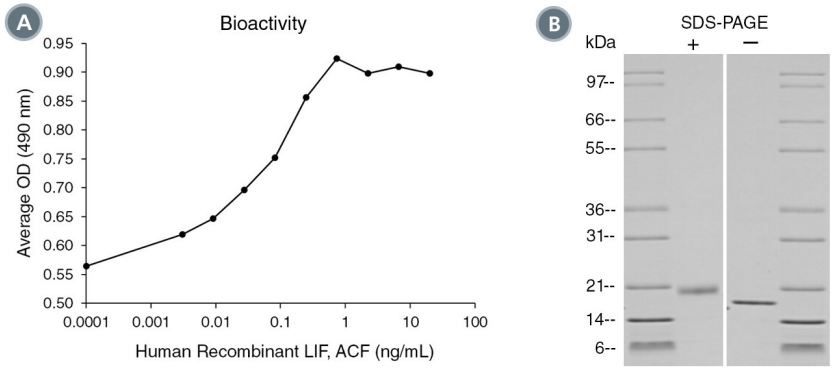
Specifications

Activity:	The specific activity is ≥ 5.0 x 10^6 units/mg (EC50 ≤ 0.2 ng/mL) as determined by proliferation using TF-1 cells.
Purity:	≥ 95%
Endotoxin Level:	Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 1 EU/µg protein.

Preparation and Storage

Storage:	Store at -20°C to -80°C.
Stability:	Stable as supplied for 12 months from date of receipt.
Preparation:	Centrifuge vial before opening. Reconstitute the product in 10 mM acetic acid to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. OPTIONAL: After reconstitution, if product will not be used immediately, dilute with concentrated bovine serum albumin (BSA) to a final BSA concentration of 0.1%. The effect of storage of stock solution on product performance should be tested for each application. As a general guide, do not store at 2 - 8°C for more than 1 month or at -80°C for more than 3 months. Avoid repeated freeze-thaw cycles.

Data



(A) The biological activity of Human Recombinant LIF, ACF was tested by its ability to promote the proliferation of TF-1 cells. Cell proliferation was measured after 66 hours of culture 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 example above is 0.06 ng/mL.
(B) 1 µg of Human Recombinant LIF, ACF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining.

Related Products

For a complete list of cytokines, as well as related products available from STEMCELL Technologies, visit www.stemcell.com/cytokines or contact us at techsupport@stemcell.com.

References

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Dahéron L et al. (2004) LIF/STAT3 signaling fails to maintain self-renewal of human embryonic stem cells. Stem Cells 22(5): 770–8.
Metcalfe SM. (2011) LIF in the regulation of T-cell fate and as a potential therapeutic. Genes Immun 12(3): 157–68.
Nasef A et al. (2008) Leukemia inhibitory factor: Role in human mesenchymal stem cells mediated immunosuppression. Cell Immunol 253(1-2): 16–22.
Niwa H et al. (1998) Self-renewal of pluripotent embryonic stem cells is mediated via activation of STAT3. Genes Dev 12(13): 2048–60.
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