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Human Recombinant M-CSF (HEK293-expressed)

Macrophage colony-stimulating factor

Catalog #100-1723	100 µg
Catalog #100-1724	1000 µg

Product Description

Macrophage colony-stimulating factor (M-CSF) is a homodimeric glycoprotein growth factor that regulates proliferation and differentiation of myeloid hematopoietic progenitor cells to mononuclear phagocytic cell lineages, including monocytes, macrophages, and osteoclasts. M-CSF is a crucial factor for the development of tissue-resident macrophages in most tissues (Ginhoux & Jung). It is required for the maturation and activation of monocytes and macrophages, and regulates inflammatory responses in conjunction with other stimuli such as IFN-γ, LPS, and IL-4 (Murray et al.). M-CSF is also required for bone resorption by osteoclasts, and is involved in the development and regulation of placenta, mammary glands, and brain. M-CSF is produced by monocytes, fibroblasts, osteoclasts, stromal cells, endothelial cells, and tumor cells (Chockalingam & Ghosh).

M-CSF exerts its biological effects by signaling through a receptor tyrosine kinase (CSF-1R or M-CSF-R) encoded by the c-fms proto-oncogene (Hamilton). CSF-1R shares similar structural features with other growth factor receptors, including the stem cell factor (SCF) receptor, platelet-derived growth factor receptor (PDGF-R), and Flt3/Flk-2 receptor tyrosine kinase. Stimulation of the CSF-1R upon binding to M-CSF activates MAPK, PI3K, and PLCγ signaling pathways (Chockalingam & Ghosh). Human and mouse M-CSF sequences are highly conserved both at nucleotide and amino acid levels (80% homology; DeLamarter et al.).

Product Information

Alternative Names:	Colony stimulating factor 1, CSF-1
Accession Number:	P09603
Amino Acid Sequence:	EEVSEYCSHM IGSGHLQSLQ RLIDSQMETS CQITFEFVDQ EQLKDPVCYL KKAFLLVQDI MEDTMRFRDN TPNAIAIVQL QELSLRLKSC FTKDYEEHDK ACVRTFYETP LQLLEKVKNV FNETKNLLDK DWNIFSKNCN NSFAECSSQD VVTKPDCN
Predicted Molecular Mass:	18.4 kDa
Species:	Human
Product Formulation:	Lyophilized from sterile phosphate-buffered saline, pH 7.4, 5% Trehalose, 5% Mannitol, 0.01% Tween®-80.
Source:	HEK293
Purity:	≥ 82%

Specifications

Activity:	The specific activity is ≥ 6.7 × 10^4 units/mg (EC50 ≤ 15 ng/mL), as determined by a cell proliferation assay using mouse M-NFS-60 cells.
Endotoxin Level:	Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 1 EU/µg protein.

Preparation and Storage

Stability and Storage:	Store at -20 to -80°C. Stable as supplied for 12 months from date of receipt.
Preparation:	Centrifuge vial before opening. Reconstitute the product in sterile water to at least 0.25 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. 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

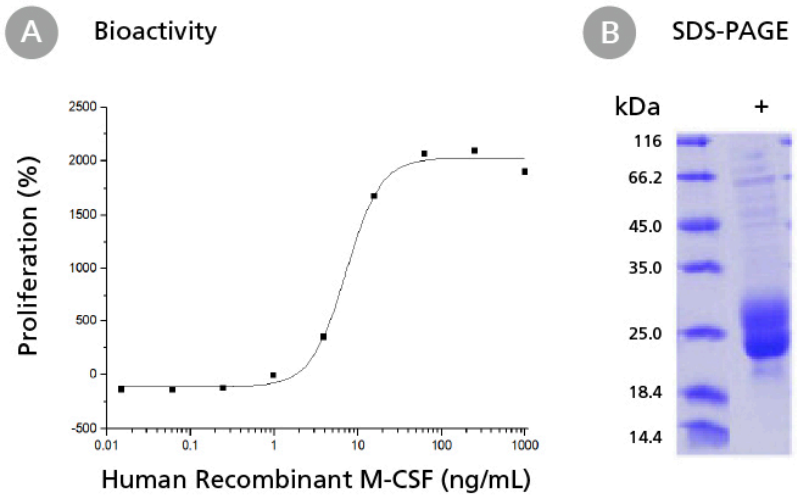

Figure 1. Biological Activity and Molecular Mass of Human Recombinant M-CSF (HEK293-expressed)

(A) The biological activity of Human Recombinant M-CSF (HEK293-expressed) was tested by its ability to promote the proliferation of M-NFS-60 myelogenous leukemia lymphoblast cells. 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 ≤ 15 ng/mL. (B) Human Recombinant M-CSF (HEK293-expressed) was resolved with SDS-PAGE under reducing conditions. Human Recombinant M-CSF has a predicted total molecular mass of 18.4 kDa. The recombinant protein migrates with an apparent molecular mass of 20 - 30 kDa.

Related Products

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

References

Chockalingam S & Ghosh SS. (2014) Macrophage colony-stimulating factor and cancer: a review. Tumour Biol 35(11): 10635–44.

DeLamarter JF et al. (1987) Nucleotide sequence of a cDNA encoding murine CSF-1 (Macrophage-CSF). Nucleic Acids Res 15(5): 2389–90.

Ginhoux F & Jung S. (2014) Monocytes and macrophages: developmental pathways and tissue homeostasis. Nat Rev Immunol 14(6): 392–404.
Hamilton JA. (1997) CSF-1 signal transduction. J Leukoc Biol 62(2): 145–55.