

Cytokines

Mouse Recombinant M-CSF



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Macrophage colony-stimulating factor

Catalog #	78059.1	10 µg
	78059	100 µg
	78059.3	500 µg
	78059.2	1000 µg

Product Description

Macrophage colony-stimulating factor (M-CSF) is a homodimeric glycoprotein growth factor that regulates proliferation and differentiation of myeloid hematopoietic progenitors 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 gland, 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 PLC γ signaling pathways (Chockalingam & Ghosh).

Product Information

Alternative Names:	Colony stimulating factor 1, CSF-1
Accession Number:	P07141
Amino Acid Sequence:	MKEVSEHCSH MIGNGHLKVL QQLIDSQMET SCQIAFEFVD QEQLDDPVCY LKKAFFLVQD IIDETMRFKD NTPNANATER LQELSNLNS CFTKDYEEQN KACVRTFHET PLQLLEKIKN FFNETKNLLE KDWNIFTKNC NNSFAKCSSR DVVTKP
Predicted Molecular Mass:	18.2 kDa monomer; 36.4 kDa dimer
Species:	Mouse
Cross Reactivity:	Reported to be species-specific
Formulation:	Lyophilized from a sterile-filtered aqueous solution containing sodium phosphate and sodium chloride, pH 7.5.
Source:	E. coli

Specifications

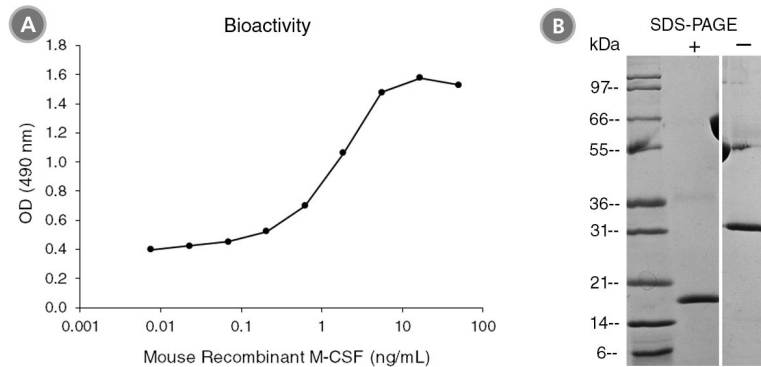
Activity:	The specific activity is $\geq 1 \times 10^5$ units/mg ($EC_{50} \leq 10$ ng/mL) as determined by a cell proliferation assay using NFS-60 cells.
Purity:	$\geq 95\%$
Endotoxin Level:	Measured by kinetic Limulus amoebocyte lysate (LAL) analysis and is ≤ 1 EU/ μ g protein.

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 sterile water 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 -20°C to -80°C for more than 3 months. Avoid repeated freeze-thaw cycles.

Data



(A) The biological activity of Mouse Recombinant M-CSF was tested by its ability to promote the proliferation of NFS-60 cells. Cell proliferation was measured after 44 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 above example is 1.1 - 1.6 ng/mL.

(B) 1 µg of Mouse Recombinant M-CSF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Mouse Recombinant M-CSF is a homodimer of 18.2 kDa subunits with a predicted total molecular mass of 36.4 kDa.

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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- Ginhoux F & Jung S. (2014) Monocytes and macrophages: developmental pathways and tissue homeostasis. *Nat Rev Immunol* 14(6): 392–404.
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- Murray PJ et al. (2014) Macrophage Activation and Polarization: Nomenclature and Experimental Guidelines. *Immunity* 41(1): 14–20.

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