

Cytokines

Human Recombinant M-CSF

Macrophage colony-stimulating factor



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Catalog #	78057.1	10 µg
	78057	100 µg
	78057.2	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). Human and mouse M-CSF sequences are highly conserved both at nucleotide and amino acid levels (80% homology; DeLamar et al.).

Product Information

Alternative Names:	Colony stimulating factor 1, CSF-1
Accession Number:	P09603
Amino Acid Sequence:	MEEVSEYCSH MIGSGHLQSL QRLIDSQMET SCQITFEFVD QEQLKDPVCY LKKAFLVQD IMEDTMRFRD NTPNAIAIVQ LQELSLRLKS CFTKDYEEHD KACVRTFYET PLQLLEKVKN VFNETKNLLD KDOWNIFSKNC NNSFAECSSQ GHERQSEGS
Predicted Molecular Mass:	18.5 kDa monomer; 37.1 kDa dimer
Species:	Human
Cross Reactivity:	Mouse
Formulation:	Lyophilized from a sterile filtered aqueous solution containing sodium phosphate and sodium chloride, pH 8.0.
Source:	E. coli

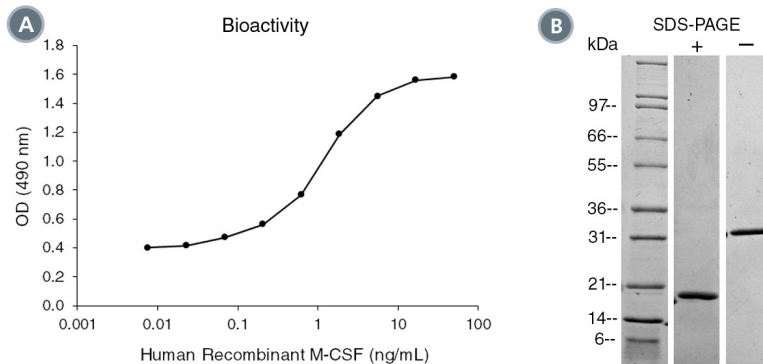
Specifications

Activity:	The specific activity is $\geq 1 \times 10^5$ units/mg ($EC_{50} \leq 0.01$ µg/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/µg protein.

Preparation and Storage

Storage:	Store at -20°C to -80°C.
Stability:	Stable as supplied for 12 months from date of receipt.
Reconstitution:	Centrifuge vial before opening. Resuspend the product in sterile water containing 0.1% bovine serum albumin (BSA) to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. Store at 2 - 8°C for up to 1 month or at -20°C to -80°C for up to 3 months. Avoid repeated freeze-thaw cycles. NOTE: If reconstituted product will be used immediately BSA is not required.

Data



(A) The biological activity of Human 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 0.9 - 1.4 ng/mL.

(B) 1 µg of Human Recombinant M-CSF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human Recombinant M-CSF is a homodimer of 18.5 kDa subunits with a predicted total molecular mass of 37.1 kDa.

Related Products

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References

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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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