

Product No. M-9667
Macrophage-Colony
Stimulating Factor (M-CSF)
Human, Recombinant
Expressed in *E. coli*

Description

Four distinct colony-stimulating factors (CSFs) that promote survival, proliferation and differentiation of bone marrow precursor cells have been well characterized: granulocyte macrophage-CSF (GM-CSF), granulocyte-CSF (G-CSF), macrophage-CSF (M-CSF), and Interleukin-3 (IL-3, Multi-CSF).^{1,2} Both GM-CSF and IL-3 are multipotential growth factors, stimulating proliferation of progenitor cells from more than one hematopoietic lineage. In contrast, G-CSF and M-CSF are lineage-restricted hematopoietic growth factors, stimulating final mitotic divisions and the terminal cellular maturation of the partially differentiated hematopoietic progenitors.

Macrophage CSF, also known as CSF-1, is produced by monocytes, fibroblasts and endothelial cells. It stimulates the formation of macrophage colonies,³ enhances antibody-dependent, cell-mediated cytotoxicity by monocytes and macrophages,⁴ and inhibits bone resorption by osteoclasts.⁵ Natural human M-CSF is a dimeric glycoprotein of 70-90 kD molecular weight, existing in multiple glycosylation forms.⁶ It binds to a 165 kD glycoprotein of the receptor tyrosine kinase subclass III,⁷ a family that includes the receptors for platelet derived growth factor (PDGF) and stem cell factor (SCF).

Performance Characteristics

Human, recombinant M-CSF is active in human and mouse bone marrow cell culture. The proliferative activity of human M-CSF is tested in culture using mouse M-NFS-60 cells.⁸ The EC₅₀ is defined as the effective concentration of growth factor that elicits a 50% increase in cell growth in a cell based bioassay.

Product Information

Expressed in *E. coli*
Molecular weight: 18.5 kD (recombinant protein containing an N-terminal methionine)
Purity: ≥ 97% by SDS-PAGE
EC₅₀: 0.1 - 0.7 ng/ml
Package size: 2 µg/vial

Formulation: Lyophilized from 0.2 µm-filtered PBS, pH 7.4.

Carrier Protein: 100 µg human serum albumin (HSA)

Sterility: 0.2 µm-filtered, aseptic fill

Endotoxin: ≤ 0.1 ng/µg M-CSF

Reconstitution and Use

The contents of the vial may be reconstituted using sterile buffered saline containing 0.1-1.0 % BSA or HSA to a final concentration of 1.0 µg/ml. If aseptic technique is used, additional filtration should not be necessary and should be avoided due to possible adsorption onto the filter membrane.

Storage

Prior to reconstitution, store at -20°C. After reconstitution, store at 2-8°C for a maximum of 3 months. For extended storage, freeze in working aliquots at -70°C or -20°C. Repeated freezing and thawing is not recommended.

References

1. Mazur, E., and Cohen, J., Clin. Pharmacol. Ther., **46**, 250 (1989).
2. Morstyn, G., and Burgess, A., Cancer Res., **48**, 5624 (1988).
3. Metcalf, D., Blood, **67**, 257 (1986).
4. Mufson, R., et al., Cell. Immunol., **119**, 182 (1989).
5. Hattersley, G., et al., J. Cell Physiol., **137**, 199 (1988).
6. Welte, K., et al., Proc. Natl. Acad. Sci. USA, **82**, 1526 (1985).
7. Yarden, Y. and Ullrich, A., Ann. Rev. Biochem., **57**, 443 (1988).
8. Halenbeck, R., et al., Biotechnology, **7**, 710 (1989).

BIOHAZARD: Handle as if capable of transmitting infectious agents. Refer to MSDS.

Source material tested and found negative for antibody to HIV and HBsAG.