Recombinant Human M-CSF Protein

Product Name

Recombinant Human M-CSF Protein

Size / Catalog Number

10μg / TL514-0010

50μg / TL514-0050

Product Information

Synonyms: Lanimostim, Colony timulating factor 1(CSF1), Proteoglycan macrophage colony-stimulating factor

Accession: UniProt P09603-3

Expressed Region: Glu33-Ser190

Tag: C-terminal 6×His-tag

Predicted Expression system: *E. coli*

Molecular weight: 19.6 kDa

Purity: > 90% as determined by SDS-PAGE

Endotoxin: < 0.1 EU per 1 μg of protein (LAL method)

Activity: Measured in a cell proliferation assay using M-NFS-60 cells, corresponding to a specific activity of ≥ 1×10^7 IU/mg.

Form: Lyophilized from sterile PBS (pH7.4), typically supplemented with 6% mannitol as a protectant.

Background

M-CSF is a disulfide-linked homodimeric glycoprotein and core member of the colony-stimulating factor family. By specifically binding c-Fms receptor (CSF-1R/CD115), it induces receptor dimerization/internalization and activates PI3K-AKT/mTOR and Ras-MAPK signaling to drive hematopoietic stem cell differentiation toward monocyte/macrophage lineages while promoting osteoclast precursor proliferation and bone remodeling. This protein exists as two bioactive isoforms: glycosylated and chondroitin sulfate-modified proteoglycan variants-the latter extends local bioactivity via extracellular matrix anchoring. Immunologically, it mediates endothelial progenitor mobilization and neovascularization through macrophage-derived VEGF secretion while upregulating proinflammatory chemokines to potentiate innate immunity. For cell therapy applications, it serves as a critical component in: 1) *ex vivo* macrophage differentiation systems, synergizing with GM-CSF to induce M1-polarized anti-tumor macrophages for CAR-M therapies with enhanced tumor infiltration and phagocytosis; 2) 3D bioscaffold cultures where spatiotemporal release kinetics engineer functional vascular networks to improve survival of tissue-engineered grafts.

Stability & Storage

Lyophilized powder: Stable for 12 months at -80°C or 6 months at -20°C when stored in the original sealed container under desiccant.

Reconstitution: Dissolve in sterile water for injection, 0.9% NaCl, or PBS (pH7.4), maintaining a final concentration ≥ 100 μg/mL to prevent adsorption. For 10 μg vial size, dissolve contents in 200 μL of the above solvents.

Handling: Aliquot to avoid repeated freeze-thaw cycles.

References

1. Praloran V. Structure, biosynthesis and biological roles of monocyte-macrophage colony stimulating factor (CSF-1 or M-CSF). Nouv Rev Fr Hematol (1978). 1991;33(4):323-33.

2. Fixe P, Praloran V. M-CSF: haematopoietic growth factor or inflammatory cytokine? Cytokine. 1998 Jan;10(1):32-7.

3. Motoyoshi K. Biological activities and clinical application of M-CSF. Int J Hematol. 1998 Feb;67(2):109-22.

4. Barceló C, Sisó P, de la Rosa I, *et al*. M-CSF as a therapeutic target in $BRAF^{V600E}$ melanoma resistant to BRAF inhibitors. Br J Cancer. 2022 Oct;127(6):1142-1152.

Intended Us

For research and manufacturing purposes only.