

Human Macrophage Colony Stimulating Factor (hM-CSF)

<input type="checkbox"/> SC 5 µg (With Carrier)	<input type="checkbox"/> LC 25 µg (With Carrier)
<input type="checkbox"/> SF 5 µg (Carrier Free)	<input type="checkbox"/> LF 25 µg (Carrier Free)

Multi-milligram quantities available

rev. 11/13/09



Cell Signaling
TECHNOLOGY®

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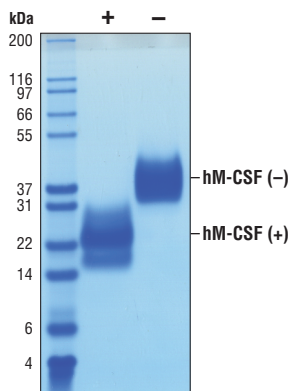
This product is intended for research purposes only. This product is not intended to be used for therapeutic or diagnostic purposes in humans or animals.

Source: Recombinant human M-CSF (hM-CSF) Glu33-Ser190 (Accession #P09603-3) was expressed in human 293 cells at Cell Signaling Technology.

Molecular Characterization: Recombinant hM-CSF contains no "tags" and the nonglycosylated protein has a calculated MW of 18,403. DTT-reduced protein migrates as a 16-26 kDa polypeptide and the non-reduced cystine-linked homodimer migrates as a 34-40 kDa protein. Heterogeneity in SDS PAGE is due to glycosylation. The expected amino-terminal EEVSE of recombinant hM-CSF was verified by amino acid sequencing.

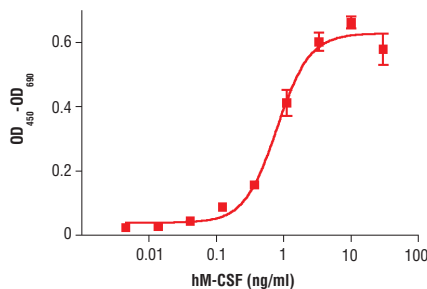
Endotoxin: Less than 0.01 ng endotoxin/1 µg hM-CSF.

Purity: >98% as determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant hM-CSF. All lots are greater than 98% pure.

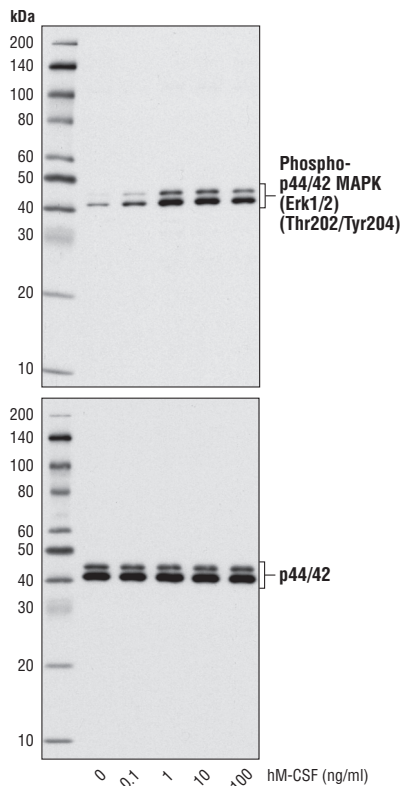


The purity of recombinant hM-CSF was determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant hM-CSF and staining overnight with Coomassie Blue.

Bioactivity: The bioactivity of recombinant hM-CSF was determined in a M-NFS-60 cell proliferation assay. The ED₅₀ of each lot is between 0.5-2.0 ng/ml.



◀ The proliferation of M-NFS-60 cells treated with increasing concentrations of hM-CSF was assessed. After 48 hour treatment with hM-CSF, cells were incubated with a tetrazolium salt and the OD₄₉₀ - OD₆₅₀ was determined.



Western blot analysis of extracts from M-NFS-60 cells, untreated or treated with hM-CSF for 10 minutes, using Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb #4370 (upper) and p44/42 MAPK (Erk1/2) (137F5) Rabbit mAb #4695 (lower).

Formulation: With carrier: Lyophilized from a 0.22 µm filtered solution of PBS, pH 7.2 containing 20 µg BSA per 1 µg hM-CSF. Carrier free: Lyophilized from a 0.22 µm filtered solution of PBS, pH 7.2.

Reconstitution:

With carrier: Add sterile PBS or PBS containing 1% bovine or human serum albumin or 5-10% FBS to a final hM-CSF concentration of greater than 50 µg/ml. Solubilize for 30 minutes at room temperature with occasional gentle vortexing.

Carrier free: Add sterile PBS or PBS containing protein to minimize absorption of hM-CSF to surfaces. Solubilize for 30 minutes at room temperature with occasional gentle vortexing. Stock hM-CSF should be greater than 50 µg/ml.

Storage: Stable in lyophilized state at 4°C for 1 year after receipt. Sterile stock solutions reconstituted with carrier protein are stable at 4°C for 2 months and at -20°C for 6 months. Avoid repeated freeze-thaw cycles.

Maintain sterility. Storage at -20°C should be in a manual defrost freezer.

Applications: Optimal concentration for the desired application should be determined by the user.

Background: Macrophage-colony stimulating factor (M-CSF) is produced by fibroblasts, endothelial cells, stromal cells, macrophages, osteoblasts and other cell types (1). M-CSF is required for growth and differentiation of monocytes and macrophages (1,2). M-CSF polarizes macrophages into the M2 phenotype where anti-inflammatory IL-10 is produced, rather than the M1 phenotype where inflammatory cytokines are produced. M-CSF also recruits monocytes and enhances angiogenesis by inducing VEGF production (1,2). M-CSF binds to its receptor (CSF1R); downstream signaling involves PI3K/Akt, ERK and STATs 1, 3, and 5 (1,3). An increase in M-CSF expression may contribute to cancer progression and a higher plasma M-CSF level is associated with rheumatoid arthritis (1,4,5).

Background References:

- (1) Hamilton, J.A. (2008) *Nat Rev Immunol* 8, 533-44.
- (2) Curry, J.M. et al. (2008) *PLoS One* 3, e3405.
- (3) Hamilton, J.A. (1997) *J Leukoc Biol* 62, 145-55.
- (4) Rioja, I. et al. (2008) *Arthritis Rheum* 58, 2257-67.
- (5) Skrzypski, M. et al. (2008) *Clin Cancer Res* 14, 4794-9.

Material Safety Data Sheet (MSDS) for Human Macrophage Colony Stimulating Factor (hM-CSF)



I. Identification:

Product name: Human Macrophage Colony Stimulating Factor (hM-CSF)

Product Catalog: 8929

CAS#: 81627-83-0

Manufacturer Supplier: Cell Signaling Technology

3 Trask Lane

Danvers, MA 01923 USA

978-867-2300 TEL

978-867-2400 FAX

978-578-6737 EMERGENCY TEL

Substance Name: Human Macrophage Colony Stimulating Factor 1

Synonyms: CSF-1, Colony Stimulating Factor-1, hM-CSF

Ingredients:	Carrier-Free	With Carrier	CAS#
Human Macrophage Colony Stimulating Factor 1	98%	5%	81627-83-0
Bovine serum albumin	0%	95%	9048-46-8

II. Composition/Information:

This product is a lyophilized mixture of proteins. According to 29 CFR 1910.1200(d), mixtures with hazardous ingredients at less than <1% and carcinogens at less than <0.1% are considered non-hazardous.

III. Hazard Identification:

This product is not for use in humans. It is intended for research purposes only.

To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been established.

IV. First Aid Measures:

Inhalation: If inhaled, remove to fresh air. If breathing is difficult, get medical attention.

Ingestion: If swallowed, wash out mouth with water provided person is conscious. Get medical attention.

Skin exposure: In case of contact, immediately wash skin with soap and water for at least 15 minutes. Remove contaminated clothing. Wash clothing before reuse.

Eye exposure: In case of contact with eyes, immediately flush eyes with water for at least 15 minutes. Get medical attention.

V. Fire Fighting Measures:

Flash Point: Data not available.

Autoignition Temperature: Data not available.

Explosion: Data not available.

Fire extinguishing media: Water spray, dry chemical, alcohol foam, or carbon dioxide.

Firefighting: Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes. May emit toxic fumes under fire conditions.

VI. Accidental Release Measures: Wear appropriate personal protective equipment. Sweep up material and avoid raising dust. Transfer to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

VII. Handling And Storage:

Store in tightly closed container at 4°C. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

VIII. Exposure Controls/Personal:

Ventilation System: A system of local and/or general exhaust is recommended.

Skin Protection: Wear compatible chemical resistant gloves and protective clothing.

Eye protection: Wear protective safety glasses or chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

IX. Physical And Chemical Properties

Appearance: lyophilized powder

pH: data not available

Melting Point: data not available

Boiling Point: data not available

Freezing Point: data not available

Volatile Organic Compounds: data not available

Solubility in water: soluble

X. Stability and Reactivity:

Stability: Stable under normal conditions.

Conditions/materials to avoid: Data not available.

Hazardous Decomposition: Data not available.

XI. Toxicological Information:

Acute Effects: Data not available.

Chronic Effects: Data not available.

Potential Health Effects: Not established.

Inhalation: May be harmful, may be irritating to mucous membranes and upper respiratory tract.

Skin: May be harmful if absorbed through skin. May cause skin irritation.

Eyes: May cause eye irritation.

Ingestion: May be harmful if swallowed.

XII. Ecological Information:

No data available

XIII. Disposal Considerations: Dispose of in accordance with federal, state and local environmental regulations.

XIV. Transport Information:

DOT: This substance is considered Non-Hazardous for transport.

IATA: This substance is considered Non-Hazardous for air transport.

XV. Regulatory Information:

EU Regulations/Classifications/Labeling Information: None.

US Regulatory Information:

SARA Listed: No.

Canada (WHMIS): DSL No, NDSL No.

XVI. Other Information:

This compound is sold for research use only. It is not for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as a guide for safe use of this product in a laboratory setting by experienced personnel. The burden of safe use of this material rests entirely with the user. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.