Sterile

#8922

Human Granulocyte Macrophage Colony Stimulating Factor (hGM-CSF)

- ☐ SC 10 µg (With Carrier)
- ☐ SF 10 µg (Carrier Free)
- ☐ LC 50 µg (With Carrier)
- ☐ LF 50 µg (Carrier Free)

Multi-milligram quantities available

rev. 11/13/09

Cell Signaling TECHNOLOGY®

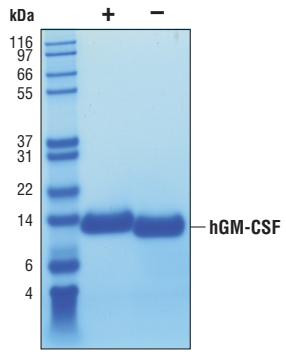
Orders ■ 877-616-CELL (2355)
orders@cellsignal.com
Support ■ 877-678-TECH (8324)
info@cellsignal.com
Web ■ www.cellsignal.com

Source: Recombinant human GM-CSF (hGM-CSF) Ala18 – Glu144 (Accession # NM_000758) was produced in *E. coli* at Cell Signaling Technology.

Molecular Characterization: Recombinant hGM-CSF does not have a Met on the amino terminus and has a calculated MW of 14477. DTT-reduced protein migrates as a 14 kDa polypeptide and non-reduced protein has slightly greater mobility due to intramolecular cystines. The expected amino-terminal APARS of recombinant hGM-CSF was verified by amino acid sequencing.

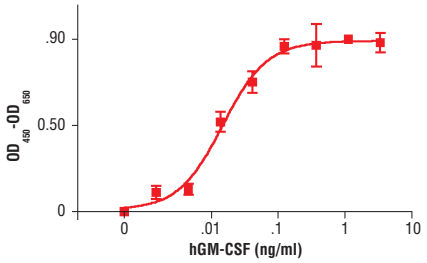
Endotoxin: Less than 0.01 ng endotoxin/1µg hGM-CSF.

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

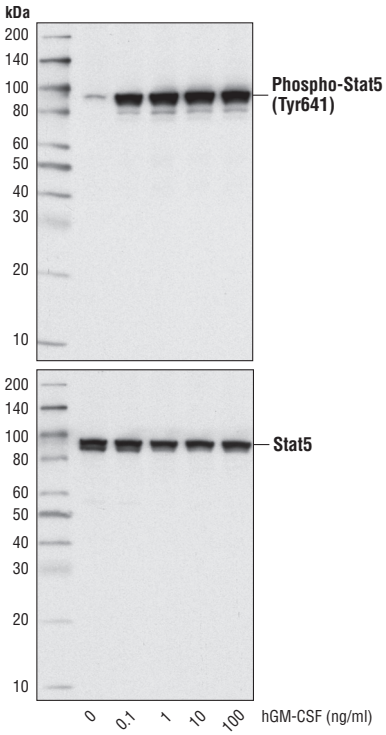


The purity of recombinant hGM-CSF was determined by SDS-PAGE of 6 µg reduced (+) and non-reduced (-) recombinant hGM-CSF and staining overnight with Coomassie Blue.

Bioactivity: The bioactivity of recombinant hGM-CSF was determined in a TF-1 cell proliferation assay. The ED_{50} of each lot is between 5-30 pg/ml.



The proliferation of TF-1 cells treated with increasing concentrations of hGM-CSF was assessed. After 48 hour treatment with hGM-CSF, cells were incubated with a tetrazolium salt and the OD_{450} - OD_{650} was determined.



Western blot analysis of extracts from TF-1 cells, untreated or treated with hGM-CSF for 10 minutes, using Phospho-Stat5 (Tyr694) (C11C5) Rabbit mAb #9359 (upper) and Stat5 (3H7) Rabbit mAb #9358 (lower).

Formulation: With carrier: Lyophilized from a 0.22 µm filtered solution of PBS, pH 7.2 containing 20 µg BSA per 1 µg hGM-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 hGM-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 hGM-CSF to surfaces. Solubilize for 30 minutes at room temperature with occasional gentle vortexing. Stock hGM-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: GM-CSF is produced by activated T cells, NK cells and macrophages (1,5). Target cells include granulocyte, monocyte precursors and subsets of differentiated myeloid cells (1,2,3). Many target cells require GM-CSF for survival. GM-CSF induces proliferation, is involved in hematopoietic differentiation of dendritic cells and is a key factor in differentiation pathways leading from stem cells. GM-CSF activates effector functions of myeloid cells, thereby linking adaptive and innate immunity and in turn may boost anti-tumor immunity (4). GM-CSF receptor is composed of GM-CSFRα and the common β chain, βC, which is also utilized by IL-3 and IL-5 (1). Binding of GM-CSF initiates the Jak2, Stat5 and PI3K/Akt pathways (1).

Background References:

(1) Guthridge, M.A. et al. (1998) *Stem Cells* 16, 301–13.

(2) Sonoda, Y. et al. (1988) *Proc Natl Acad Sci USA* 85, 4360–4.

(3) Sonoda, Y. et al. (1988) *Blood* 72, 1381–6.

(4) de la Cruz-Merino, L. et al. (2008) *Oncologist* 13, 1246–54.

(5) Zhang, A.L. et al. (2007) *Blood* 110, 2484–93.

#8922 MSDS

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

Cell Signaling TECHNOLOGY®

Product name: Human Granulocyte-Macrophage Colony Stimulating Factor (hGM-CSF)
Product Catalog: 8922
CAS#: None
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

II. Composition/Information:

Substance Name: Human Granulocyte-Macrophage Colony-Stimulating Factor (hGM-CSF), recombinant

Ingredients:	Carrier-Free	With Carrier	CAS#
GM-CSF, human, recombinant	98%	5%	None
Bovine serum albumin	0%	95%	9048-46-8

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.

EMERGENCY OVERVIEW: No known hazards.

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 -20°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 in phosphate buffered saline

X. Stability and Reactivity:

Stability: Stable under normal conditions.
Conditions/materials to avoid: Strong oxidizing agents.
Hazardous Decomposition: Data not available.

XI. Toxicological Information:

Acute Effects: Not established.
Chronic Effects: Not established.
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, 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 only 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.