

**DA3505XD****Recombinant Human GM-CSF / CSF2****Alternate names:**

CSF2, Colony stimulating factor 2, GMCSF, Granulocyte-macrophage colony-stimulating factor, Molgramostin, Sargramostim

**Quantity:**

50 µg

**Background:**

Granulocyte Macrophage Colony Stimulating Factor (GM-CSF), a 14,6 kDa protein consisting of 127 amino acid residues (Ala18-Glu144) and fused to a C-terminal His-tag (6x His), is a potent species specific stimulator of bone marrow cells and several other cell types.

GM-CSF was initially characterized as a growth factor that can support the in vitro colony formation of granulocyte-macrophage progenitors. It is produced by a number of different cell types (including activated T cells, B cells, macrophages, mast cells, endothelial cells and fibroblasts) in response to cytokine or immune and inflammatory stimuli. Besides granulocyte-macrophage progenitors, GM-CSF is also a growth factor for erythroid, megakaryocyte and eosinophil progenitors. On mature hematopoietic cells, GM-CSF is a survival factor for and activates the effector functions of granulocytes, monocytes/macrophages and eosinophils. GM-CSF has also been reported to have a functional role on non-hematopoietic cells. It can induce human endothelial cells to migrate and proliferate. Additionally, GM-CSF can also stimulate the proliferation of a number of tumor cell lines, including osteogenic sarcoma, carcinoma and adenocarcinoma cell lines. GM-CSF is species specific and human GM-CSF has no biological effects on mouse cells. GM-CSF exerts its biological effects through binding to specific cell surface receptors. The high affinity receptors required for human GM-CSF signal transduction have been shown to be heterodimers consisting of a GM-CSF-specific  $\alpha$  chain and a common  $\beta$  chain that is shared by the high-affinity receptors for IL-3 and IL-5.

**Uniprot ID:**

[P04141](#)

**NCBI:**

[NP\\_000749.2](#)

**GeneID:**

[1437](#)

**Species:**

Human

**Source:**

Insect cells

**Format:**

**State:** Lyophilized without preservatives and stabilizers

**Purity:** >98% pure by SDS-PAGE and visualised by silver stain.

**Buffer System:** PBS

**Endotoxin Level:** < 0.1 ng per µg of GM-CSF

**Reconstitution:** The lyophilized GM-CSF is soluble in water and most aqueous buffers. The lyophilized powder can be reconstituted in water to a concentration of 0.1 mg/ml. This solution can be diluted into other buffered solutions or stored at -20°C for future use.

**Description:**

Recombinant human GM-CSF.

**Biological Activity:** Human GM-CSF is fully biologically active when compared to standards.

Measured in a cell proliferation assay using TF-1 human erythroleukemic cells [Kitamura T et al, J Cell Physiol, 1989]. The ED50 for this effect is typically < 0.1ng/ml corresponding to a specific activity of  $\geq 1 \times 10^7$  units/mg.

**Molecular weight:** 14.6 kDa

**Storage:**

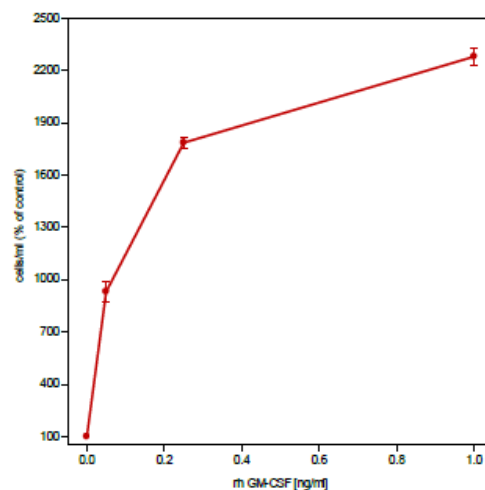
Store lyophilized at 2-8°C for 6 months or at -20°C long term.  
After reconstitution store the antibody undiluted at 2-8°C for one month or (in aliquots) at -20°C long term.  
Avoid repeated freezing and thawing.  
Shelf life: one year from despatch.

**General Readings:**

1. Martinez-Moczygemba and Huston (2003) J. Allergy Clin Immunol 112:653
2. Barreda et al, (2004) Dev Comp Immunol 28:509
2. Eksioglu EA, Mahmood SS, Chang M, Reddy V. GM-CSF promotes differentiation of human dendritic cells and T lymphocytes toward a predominantly type 1 proinflammatory response. Exp Hematol. 2007 Aug;35(8):1163-71. Epub 2007 Jun 11. PubMed PMID: 17562355.
3. Cao Y. Angiogenesis modulates adipogenesis and obesity. J Clin Invest. 2007 Sep;117(9):2362-8. PubMed PMID: 17786229.
4. Fleetwood AJ, Cook AD, Hamilton JA. Functions of granulocyte-macrophage colony-stimulating factor. Crit Rev Immunol. 2005;25(5):405-28. PubMed PMID: 16167889.
5. Diederichs K, Boone T, Karplus PA. Novel fold and putative receptor binding site of granulocyte-macrophage colony-stimulating factor. Science. 1991 Dec 20;254(5039):1779-82. PubMed PMID: 1837174.
6. Gough NM, Gough J, Metcalf D, Kelso A, Grail D, Nicola NA, et al. Molecular cloning of cDNA encoding a murine haematopoietic growth regulator, granulocyte-macrophage colony stimulating factor. Nature. 1984 Jun 28-Jul 4;309(5971):763-7. PubMed PMID: 6610831.

**Pictures:**

Dose-dependent stimulation of cell proliferation in TF-1 cells by recombinant human GM-CSF. Values are the means ( $\pm$ SD) of triplicate determinations and expressed as percentage of control.



SDS-PAGE analysis of recombinant human GM-CSF. Sample was loaded in 15% SDS-polyacrylamide gel under reducing condition and stained with Coomassie blue. There are different glycosylation forms visible.

