Recombinant Human Granulocyte Macrophage Colony-Stimulating Factor (GM-CSF)

20131118BB

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Cat.-no:	**400-010S**
Size:	2 µg
Lot. No.:	According to product label
Country of origin:	Germany

Scientific Background

Gene:	*Csf2*
Synonyms:	Colony-stimulating factor, GM-CSF

Granulocyte Macrophage Colony Stimulating Factor (GM-CSF), a 14.6kDa 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 α chain and a common β chain that is shared by the high-affinity receptors for IL-3 and IL-5.

References

1. Martinez-Moczygemba and Huston (2003) J. Allergy Clin Immunol 112:653
2. Barreda et al, (2004) Dev Comp Immunol 28:509
3. Eksioglu et al, (2007) Exp Hematol 35:1163
4. Cao Y, (2007) J Clin Invest 117:2362
5. Fleetwood et al, (2005) Crit Rev Immunol 25:405
6. Diederichs et al, (1991) Science 254:1779
7. Gough et al, (1984) Nature 309:763.

Sequence

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APARSPSPSTQPWEHVNAIQEARRLLNLSRDTAAEMNETVEVISEMFDLQEP
TCLQTRLELYKQGLRGSLTKLKGPLTMMASHYKQHCPPTPETSCATQIITFE
SFKENLKDFLLVIPFDCWEPVQETRHHHHHH
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Database References

Protein RefSeq:	NP_0000749
Uniprot ID:	P04141
mRNA RefSeq:	NM_000758

Product Specifications

Expressed in	Insect cells
Purity	> 98% by SDS-PAGE & silver stain
Buffer	PBS
Stabilizer	None
Formulation	lyophilized
Length (aa):	135
MW:	~15.0 – 18.0 kDa
Result by N-terminal sequencing	MAPARSPST

Stability: The lyophilized powder although stable at room temperature for 3 weeks, is best stored desiccated at -20°C. Reconstituted GM-CSF should be stored in working aliquots at –20°C. For long term storage it is recommended to add a carrier protein (0.1% HAS or BSA).

Reconstitution: The lyophilized rh GM-CSF is soluble in water and most aqueous buffers and 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.

AVOID REPEATED FREEZE AND THAW CYCLES!

Biological Activity: Measured in a cell proliferation assay using TF−1 human erythroleukemic cells [Kitamura T et al, J Cell Physiol, 1989]. The ED_{50} for this effect is typically <0.1ng/ml corresponding to a specific activity of ≥1 x 10^7 units/mg.

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Handling/Application

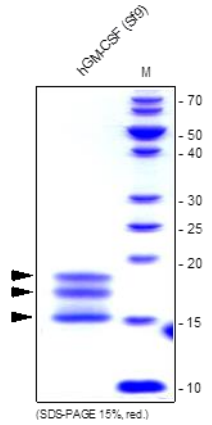

Fig. 1: SDS-PAGE analysis of recombinant human GM-CSF. Sample was loaded in 15% SDS-polyacrylamide gel under reducing condition and stained with Coomassie blue. There are different glycosylation forms visible.

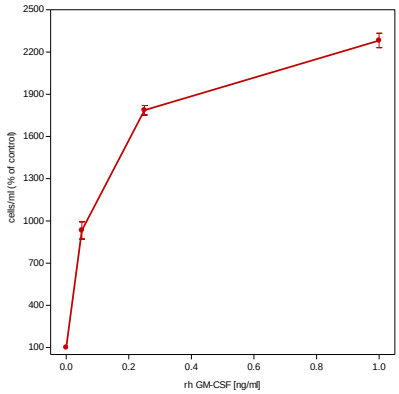

Fig. 2: Dose-dependent stimulation of cell proliferation in TF-1 cells by recombinant human GM-CSF. Values are the means (±SD) of triplicate determinations and expressed as percentage of control.

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