Cytokines

Human Recombinant G-CSF

Granulocyte colony-stimulating factor

Catalog #	78012.1	10 µg
	78012	100 µg
	78012.3	500 µg
	78012.2	1000 µg

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Product Description

Granulocyte colony-stimulating factor (G-CSF) is a member of the CSF family of glycoproteins that regulate hematopoietic cell proliferation, differentiation, and function. It is a key cytokine involved in the production of neutrophils and the stimulation of granulocyte colony formation from hematopoietic progenitor cells (Metcalf & Nicola). G-CSF causes a range of effects including a transient reduction of SDF-1 expression (Petit et al.), the activation of metalloproteases that cleave VCAM-1 (Levesque et al.), and the release of norepinephrine from the sympathetic nervous system (Katayama et al.), leading to the release or mobilization of hematopoietic stem cells from the bone marrow into the periphery. The G-CSF receptor is expressed on a variety of hematopoietic cells, including myeloid-committed progenitor cells, neutrophils, granulocytes, and monocytes. In addition to hematopoietic cells, G-CSF is also expressed in cardiomyocytes, neuronal cells, mesothelial cells, and endothelial cells. Binding of G-CSF to its receptor leads to activation of the JAK/STAT, MAPK, PI3K, and AKT signal transduction pathways.

Product Information

Alternative Names:	Colony-stimulating factor 3, CSF-3, MGI-1G, Pluripoietin
Accession Number:	P09919
Amino Acid Sequence:	MTPLGPASSL PQSFLLKCLE QVRKIQGDGA ALQEKLCATY KLCHPEELVL LGHSLGIPWA PLSSCPSQAL QLAGCLSQLH SGLFLYQGLL QALEGISPEL GPTLDTLQLD VADFATTIWQ QMEELGMAPA LQPTQGAMPA FASAFQRRAG GVLVASHLQS FLEVSYRVLR HLAQP
Predicted Molecular Mass:	18.8 kDa
Species:	Human
Cross Reactivity:	Mouse
Formulation:	Lyophilized from a sterile-filtered aqueous solution containing 0.1% trifluoroacetic acid.
Source:	E. coli

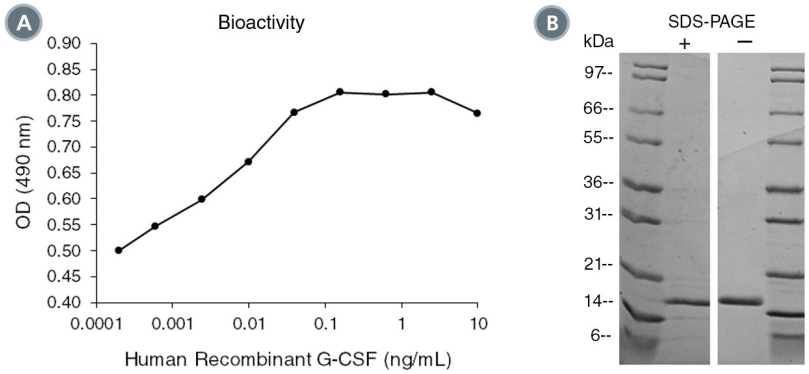
Specifications

Activity:	The specific activity is ≥ 2 x 10^7 units/mg (EC50 ≤ 0.05 ng/mL) as determined by a cell proliferation assay using NFS-60 cells.
Purity:	≥ 95%
Endotoxin Level:	Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 1 EU/µg protein.

Preparation and Storage

Storage:	Store at -20°C to -80°C.
Stability:	Stable as supplied for 12 months from date of receipt.
Preparation:	Centrifuge vial before opening. Bring vial and sterile water to room temperature (15 - 25°C). Reconstitute the product in sterile water to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. Let solution sit for 1 minute at room temperature (15 - 25°C). If precipitate is observed, centrifuge at 16,000 x g for 1 minute. Remove supernatant and transfer to a new tube, taking care not to disturb the pellet. Discard the pellet. A 10% overfill has been added to compensate for any loss of protein in the precipitate. OPTIONAL: After reconstitution, if product will not be used immediately, dilute with concentrated bovine serum albumin (BSA) to a final BSA concentration of 0.1%. The effect of storage of stock solution on product performance should be tested for each application. As a general guide, do not store at 2 - 8°C for more than 1 month or at -80°C for more than 3 months. Avoid repeated freeze-thaw cycles.

Data



(A) The biological activity of Human Recombinant G-CSF was tested by its ability to promote the proliferation of NFS-60 cells. Cell proliferation was measured after 62 hours of culture using a fluorometric assay method. The EC50 is defined as the effective concentration of the growth factor at which cell proliferation is at 50% of maximum. The EC50 in the above example is 0.01 ng/mL.
(B) 1 µg of Human Recombinant G-CSF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human Recombinant G-CSF has a predicted molecular mass of 18.8 kDa.

Related Products

For a complete list of cytokines, as well as related products available from STEMCELL Technologies, visit www.stemcell.com/cytokines or contact us at techsupport@stemcell.com.

References

Katayama Y et al. (2006) Signals from the sympathetic nervous system regulate hematopoietic stem cell egress from bone marrow. Cell 124(2): 407–21.
Lévesque JP et al. (2001) Vascular cell adhesion molecule-1 (CD106) is cleaved by neutrophil proteases in the bone marrow following hematopoietic progenitor cell mobilization by granulocyte colony-stimulating factor. Blood 98(5): 1289–97.
Metcalf D & Nicola NA. (1983) Proliferative effects of purified granulocyte colony-stimulating factor (G-CSF) on normal mouse hemopoietic cells. J Cell Physiol 116(2): 198–206.
Petit I et al. (2002) G-CSF induces stem cell mobilization by decreasing bone marrow SDF-1 and up-regulating CXCR4. Nat Immunol 3(7): 687–94.