

G-CSF Protein, Human, Recombinant (Isoform 2)

General Information

Synonyms:	G-CSF;colony stimulating factor 3 (granulocyte);CSF3OS;C17orf33OS;GCSF;C17orf33
Protein Construction:	A DNA sequence encoding the human CSF3 (NP_757373.1) (Met1-Pro204) was expressed with an initial Met. Predicted N terminal: Thr 31
Species:	Human
Expression Host:	HEK293 Cells
Accession:	P09919-2
Molecular Weight:	18.7 kDa (predicted); 19 kDa (reducing conditions)

QC Testing

Biological Activity:	Measured in a cell proliferation assay using NFS-60 mouse myelogenous leukemia lymphoblast cells. The ED50 for this effect is 40-200pg/mL.
Purity:	≥ 95 % as determined by SDS-PAGE. ≥ 95 % as determined by SEC-HPLC.
Endotoxin:	< 10 EU/mg of the protein.
Formulation:	Lyophilized from a solution filtered through a 0.22 µm filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Granulocyte-colony stimulating factor (G-CSF) is a growth factor and an essential cytokine belonging to the CSF family of hormone-like glycoproteins. It is produced by numerous cell types including immune and endothelial cells. G-CSF binding to its receptor G-CSF-R which belongs to the cytokine receptor type I family depends on the interaction of alpha-helical motifs of the former and two fibronectin type III as well as an immunoglobulin-like domain of the latter. Recent animal studies have also revealed that G-CSF activates multiple signaling pathways,

such as Akt and also the Janus family kinase-2 and signal transducer and activation of transcription-3 (Jak2-STAT3) pathway, thereby promoting survival, proliferation, differentiation and mobilisation of haematopoietic stem and progenitor cells. G-CSF is a cytokine that have been demonstrated to improve cardiac function and perfusion in myocardial infarction. And it was initially evaluated as a stem cell mobilizer and erythropoietin as a cytoprotective agent. G-CSF prevents left ventricular remodeling after myocardial infarction by decreasing cardiomyocyte death and by increasing the number of blood vessels, suggesting the importance of direct actions of G-CSF on the myocardium rather than through mobilization and differentiation of stem cells. Accordingly, recombinant human (rh)G-CSF has been extensively used in clinical haematology and oncology to enable bone marrow transplantation or to treat chemotherapy-associated neutropenia. In preclinical study, G-CSF improved cardiac function and perfusion by angiomyogenesis and protection of cardiomyocytes in myocardial infarction. Cancer ImmunotherapyImmune CheckpointImmunoTherapyTargeted Therapy

Reference

- Takano H, et al. (2007) G-CSF therapy for acute myocardial infarction. *Trends Pharmacol Sci.* 28(10): 512-7.
- Klocke R, et al. (2008) Granulocyte colony-stimulating factor (G-CSF) for cardio- and cerebrovascular regenerative applications. *Curr Med Chem.* 15(10): 968-77.
- Kang HJ, et al. (2008) G-CSF- and erythropoietin-based cell therapy: a promising strategy for angiomyogenesis in myocardial infarction. *Expert Rev Cardiovasc Ther.* 6(5): 703-13.
- Beekman R, et al. (2010) G-CSF and its receptor in myeloid malignancy. *Blood.* 115(25): 5131-6.

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