

### General Information

Synonyms	Colony stimulating factor 2, CSF-2, GMCSF
Accession #	P04141
Source	Human embryonic kidney cell, HEK293-derived human GM-CSF/CSF2 protein
	Ala18-Glu144
Predicted Molecular weight	14.5 kDa

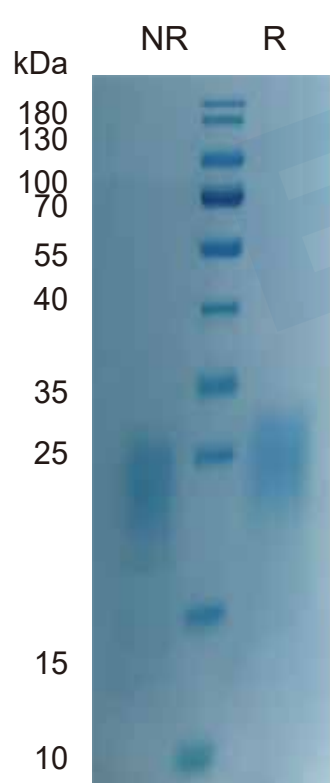
### Components and Storage

Formulation	Solution protein. Dissolved in sterile PBS buffer. This solution can be diluted into other aqueous buffers. Centrifuge the vial prior to opening.
Storage and Stability	Avoid repeated freeze-thaw cycles. It is recommended that the protein be aliquoted for optimal storage. 12 months from date of receipt, -20 to -70 °C as supplied.
Shipping	Shipping with dry ice.

### Quality

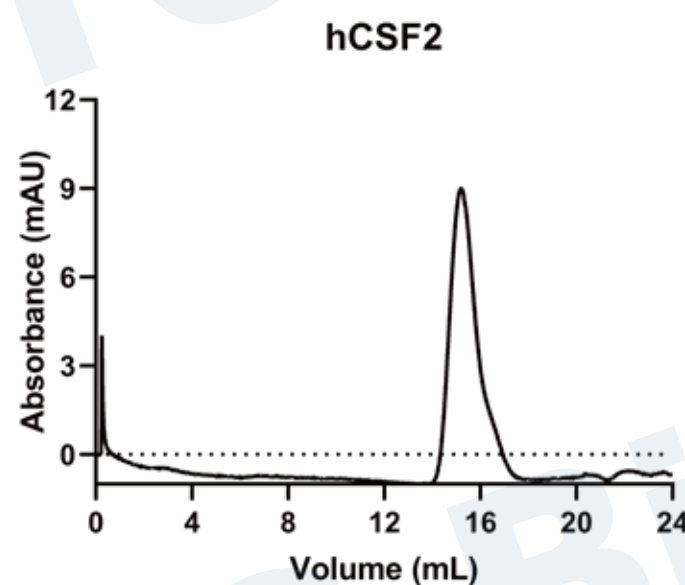
Purity	> 95%, determined by SDS-PAGE.
Endotoxin Level	<0.010 EU per 1 ug of the protein by the LAL method.
Activity	Measured in a cell proliferation assay using TF-1 human erythroleukemic cells. The EC50 for this effect is 2-20 pg/mL.

### SDS-PAGE



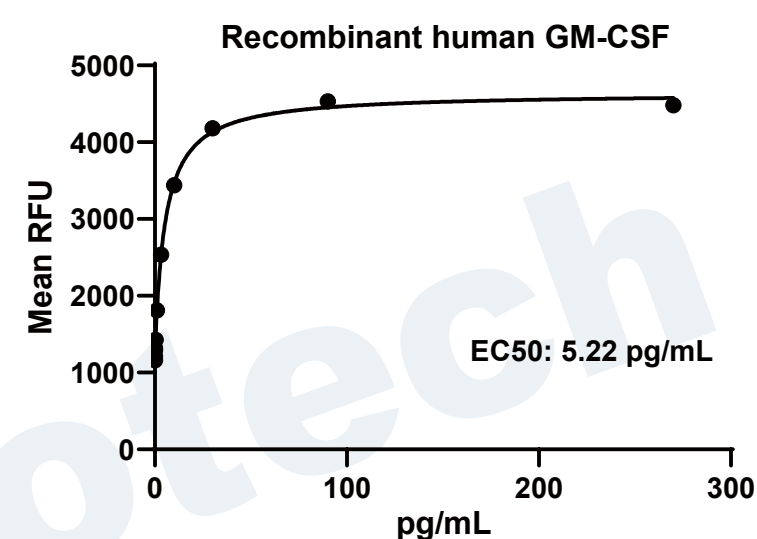
2 ug/lane protein was resolved with SDS-PAGE under non-reducing (NR) and reducing (R) conditions and visualized by Coomassie Blue staining.

### Gel filtration



Size-exclusion chromatography of recombinant human GM-CSF protein (280 nm absorbance)

### Bioactivity



Recombinant human CSF2 (Catalog # HF-2004) stimulates cell proliferation of the TF-1 human erythroleukemic cells.

### Background

**Granulocyte Macrophage Growth Factor (GM-CSF)** is one of an array of cytokines with pivotal roles in embryo implantation and subsequent development. In response to cytokine or inflammatory stimuli, GM-CSF is produced by a number of different cell types, including T cells, B cells, macrophages, mast cells, endothelial cells, fibroblasts, and adipocytes (1). As a survival factor, GM-CSF activates the effector functions of granulocytes, monocytes/macrophages, and eosinophils (1, 2). GM-CSF promotes a Th1 biased immune response, angiogenesis, allergic inflammation, and the development of autoimmunity (3-5). It shows clinical effectiveness in ameliorating chemotherapy-induced neutropenia, and GM-CSF transfected tumor cells are utilized as cancer vaccines (6, 7). Mature human GM-CSF shares 63%-70% amino acid sequence identity with canine, feline, porcine, and rat GM-CSF and 54% with mouse GM-CSF. GM-CSF exerts its biological effects through a heterodimeric receptor complex composed of GM-CSF R alpha /CD116 and the signal transducing common beta chain (CD131) which is also a component of the high-affinity receptors for IL-3 and IL-5 (8, 9). In addition, GM-CSF binds a naturally occurring soluble form of GM-CSF R alpha (10).

### Reference

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