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Recombinant Human GM-CSF Protein

Catalog Number:	630601, 630602
Size:	20 µg, 100 µg
Target Name:	GM-CSF, GMCSF, CSF Protein,
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Bioassay
Format:	Lyophilized from sterile PBS, pH 7.4.
Expression Host:	HEK293
Species:	Human
accession number:	NP_000749.2
Sources:	A DNA sequence encoding human GMCSF (NP_000749.2) (Met1-Glu144) was expressed.
Molecular Weight:	The recombinant human GMCSF consists of 127 amino acids and predicts a molecular mass of 14.5 kDa. As a result of glycosylation, it migrates as an approximately 19-29 kDa band in SDS-PAGE under reducing conditions.
Affinity Tag:	None
Purity:	≥ 95 % as determined by SDS-PAGE. ≥ 95 % as determined by SEC-HPLC.
Endotoxin level:	
Protein Concentration:	Lyophilized
Storage and Handling:	Proteins are stable for up to twelve months from date of receipt at -20℃ to -80℃. Store it under sterile conditions at -20℃ to -80℃. It is recommended that the protein be aliquoted for optimal storage. Avoid repeated freeze-thaw cycles.

BACKGROUND INFORMATION

Human granulocyte-macrophage colony-stimulating factor (GM-CSF), also known as CSF-2, is a multifunctional cytokine that regulates the production, differentiation, and activation of myeloid lineage cells, including granulocytes, macrophages, and dendritic cells. It is produced by T cells, macrophages, endothelial cells, and fibroblasts in response to immune stimuli. GM-CSF enhances antigen presentation, promotes inflammatory responses, and supports host defense by stimulating the functional activity of mature immune cells.

Structurally, GM-CSF is a single-chain glycoprotein with a four α-helical bundle typical of many cytokines. It functions by binding to the GM-CSF receptor, a heterodimer composed of a specific α chain (CSF2RA) and a shared β common chain (βc, CD131), which is also utilized by IL-3 and IL-5 receptors. Ligand binding induces receptor dimerization and activation of intracellular signaling pathways, including JAK2/STAT5, MAPK, and PI3K/AKT, leading to cell survival, proliferation, and activation. GM-CSF itself acts as the primary ligand for its receptor.

Dysregulated GM-CSF signaling is implicated in inflammatory and autoimmune diseases such as rheumatoid arthritis, multiple sclerosis, and pulmonary alveolar proteinosis. Elevated GM-CSF levels can drive chronic inflammation, while impaired signaling may compromise immune defense. Therapeutically, recombinant GM-CSF is used to stimulate white blood cell recovery following chemotherapy or bone marrow transplantation. Conversely, GM-CSF–neutralizing antibodies and receptor antagonists are being developed to treat inflammatory disorders by dampening excessive immune activation.