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# Recombinant Human M-CSF Protein

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| **Catalog Number:** | 630501, 630502 |
| **Size:** | 20 µg, 100 µg |
| **Target Name:** | MCSF, CSF1, CSF-1 |
| **Regulatory Status:** | RUO |

## PRODUCT DETAILS

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| **Application:** | Bioassay |
| **Format:** | Lyophilized from sterile PBS, pH 7.4. |
| **Expression Host:** | HEK293 |
| **Species:** | Human |
| **accession number:** | P09603-1 |
| **Sources:** | A DNA sequence encoding the human CSF1 (P09603-1) (Met1-Asn190) was expressed with an initial Met. |
| **Molecular Weight:** | The recombinant human CSF1 consists 158 amino acids and predicts a molecular mass of 18.4 kDa. |
| **Affinity Tag:** | None |
| **Purity:** | > 85 % as determined by SDS-PAGE. |
| **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 macrophage colony-stimulating factor (M-CSF), also known as CSF-1, is a key cytokine that regulates the survival, proliferation, and differentiation of monocytes, macrophages, and osteoclasts. It is produced by a variety of cell types, including fibroblasts, endothelial cells, and stromal cells, and plays a central role in innate immunity, tissue homeostasis, and bone remodeling. M-CSF is essential for the development of the mononuclear phagocyte system and influences macrophage polarization and function in response to environmental cues.

Structurally, M-CSF exists as a homodimeric glycoprotein and can be found in secreted, membrane-bound, and proteoglycan-associated forms generated through alternative splicing. Its primary receptor is CSF-1R (CD115), a class III receptor tyrosine kinase expressed on monocytes and macrophages. Binding of M-CSF induces receptor dimerization and autophosphorylation, activating downstream signaling pathways such as PI3K/AKT, MAPK, and ERK, which promote cell survival and differentiation. M-CSF shares its receptor with another ligand, IL-34, which can also activate CSF-1R and modulate similar biological

processes.

Dysregulation of M-CSF signaling is implicated in various diseases, including cancer, where it promotes tumor-associated macrophage development and immune suppression, as well as in inflammatory conditions and bone disorders such as osteoporosis. Therapeutically, targeting the M-CSF/CSF-1R axis with inhibitors or antibodies is being explored to modulate macrophage activity in cancer and chronic inflammation. Conversely, recombinant M-CSF has potential applications in enhancing immune recovery and tissue repair.

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