

General Information

Synonyms	C-C motif chemokine ligand 2; CCL2; GDCF-2; HC11; HSMCR30; MCAF; M _{cp} 1; MCP-1; SCYA2
Accession #	P10148
Source	Human embryonic kidney cell, HEK293-derived mouse CCL2/MIP-1 protein
	Gln24-Arg96
Predicted Molecular weight	13.8 kDa

Components and Storage

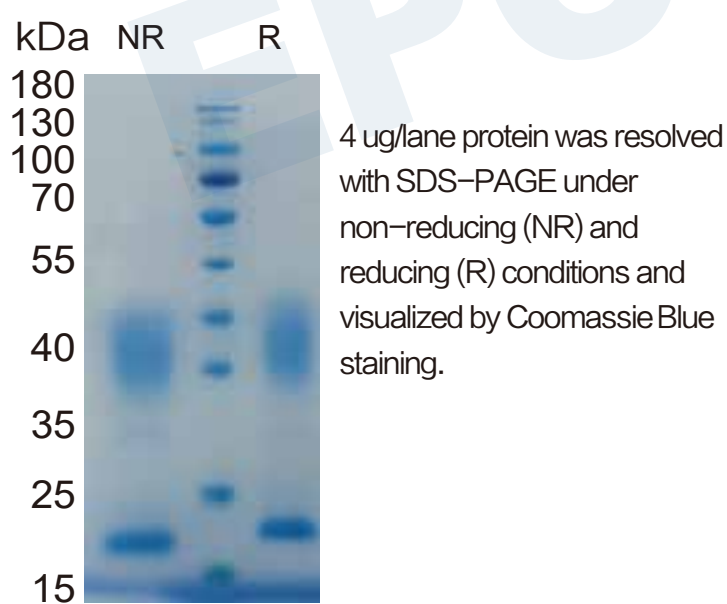
Formulation	Solution protein. Dissolved in sterile PBS buffer . This solution can be diluted into other aqueous buffers. Centrifuge the vial prior to opening.
Storage and Stability	Avoid repeated freeze-thaw cycles. It is recommended that the protein be aliquoted for optimal storage. 12 months from date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

Shipping Shipping with dry ice

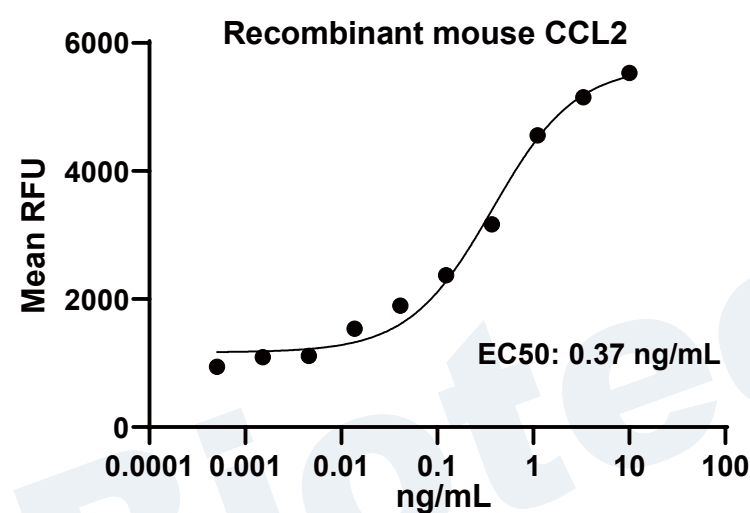
Quality

Purity	> 95%, determined by SDS-PAGE
Endotoxin Level	<0.010 EU per 1 ug of the protein by the LAL method
Activity	Measured by its ability to chemoattract BaF3 mouse pro-B cells transfected with human CCR2A. The EC50 for this effect is typically 0.2-1 ng/mL.

SDS-PAGE



Bioactivity



Measured by its ability to chemoattract BaF3 mouse pro-B cells transfected with human CCR2A.

Background

CCL2, also called monocyte chemoattractant protein-1 (MCP-1) or JE, is a member of the C-C or beta chemokine family that is best known as a chemotactic agent for mononuclear cells (1, 2). Mouse CCL2 cDNA encodes a 148 amino acid (aa) precursor protein with a 23 aa signal peptide and a 125 aa mature protein (1). Removal of the first 5 aa of the mature protein, including the N-terminal pyrrolidone carboxylic acid-modified glutamine, occurs naturally by metalloproteinase cleavage and downregulates activity but not receptor binding (3). Mouse CCL2 forms a broad band around 25 kDa on SDS-PAGE due to non-covalent dimerization and variable carbohydrate content (1). Mouse and rat express a form of CCL2 that is extended by 49 aa compared to other species. Mature mouse CCL2 shares 82% amino acid (aa) identity with rat CCL2 over the entire sequence, and 58%, 56%, 55%, 53% and 53% aa identity with human, equine, porcine, bovine and canine CCL2, respectively, over aa 24 - 101. Human CCL2 can, however, induce a limited response in rodent cells, and mouse CCL2 has full activity on human cells (2, 4). Fibroblasts, glioma cells, smooth muscle cells, endothelial cells, lymphocytes and mononuclear phagocytes can produce CCL2 either constitutively or upon mitogenic stimulation, but monocytes and macrophages appear to be the major source (1, 2). In addition to its chemotactic activity, CCL2 induces enzyme and cytokine release by monocytes, NK cells and lymphocytes, and histamine release by basophils that express its receptor, CCR2 (2). Additionally, it promotes Th2 polarization in CD4+ T cells (5). CCL2-mediated recruitment of monocytes to sites of inflammation is proposed to play a role in the pathology of atherosclerosis, multiple sclerosis and allergic asthma (6, 7).

Reference

1. Rollins, B.J. et al. (1988) Proc. Natl. Acad. Sci. USA. 85:3738.	5. Luther, S.A. and J.G. Cyster (2001) Nat. Immunol. 2:102.
2. Deshmane, S.L. et al. (2009) J. Interferon Cytokine Res. 29:313.	6. Daly, C. et al. (2003) Microcirculation 10:247.
3. Dean, R.A. et al. (2008) Blood. 112:3455.	7. Aukrust, P. et al. (2008) Arterioscler. Thromb. Vasc. Biol. 28:1909.
4. Van Riper, G. et al. (1993) J. Exp. Med. 177:851.	

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