Recombinant Rat CCL19/MIP-3β

Catalog Number: 7800-M3/CF

DESCRIPTION

Source	*E. coli*-derived Gly26-Ser108 Accession # NP_001102131
N-terminal Sequence Analysis	Starts at Gly26
Structure / Form	Monomer
Predicted Molecular Mass	9.1 kDa

SPECIFICATIONS

SDS-PAGE	10 kDa, reducing conditions
Activity	Measured by its ability to chemoattract BaF3 mouse pro-B cells transfected with human CCR7. The ED_{50} for this effect is 2-10 ng/mL.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 3 months, -20 to -70 °C under sterile conditions after reconstitution.

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BACKGROUND

CCL19 (also known as Mip-3β, ELC, CKβ-11, Scya19 and Exodus-3) is a 9 kDa secreted member of the CC family of chemotactic cytokines (1-4). Cells known to express CCL19 are limited in number, and include activated monocytes (5), stromal cells in nodal T zones (6), $CD8^+$ dendritic cells (DC) (6), vascular endothelial cells (7), visceral smooth muscle and mast cells (8), and thymic stromal cells (9). Rat CCL19 is synthesized as a precursor that is 1108 amino acids (aa) in length. The precursor contains a 25 aa signal sequence plus an 83 aa mature region (aa 26-108) (10). The signature CC chemokine motif occurs at Cys33Cys34 and there are no potential N-linked glycosylation sites. It is unclear if rat CCL19 forms homodimers. Mature rat CCL19 shares 72% and 89% aa sequence identity with human and mouse CCL19, respectively (3, 4, 10).

CCL19 is known to bind to CCR7 (3, 4), CCLR2/CRAM (L-CCR in rodent) (11, 12, 13) and CCX-CKR (14), with the last two receptors representing scavenger, or chemokine-sink receptors. Cells expressing the signaling receptor (CCR7) are varied in type, and include $CD56^+$ NK cells (15), naïve $CD4^+$ T and activated B cells (4), mature bone marrow-derived dendritic and Langerhans cells (16), Collagen I+III+Fibronectin+ fibrocytes (17) and $CD4^+$ Tregs (9). Upon CCR7 engagement, CCL19 has a number of documented effects. In the case of the DC, it reportedly induces DC cytoplasmic extension, increases endocytic activity, protects DC from apoptosis, increases the speed of DC migration, and promotes its secretion of cytokines (18). Notably, while CCL19 is a potent chemoattractant, this activity seems to be dependent upon concomitant EP2 and EP4 receptor activation, coupled to an increase in the presence of NO (18). CCL19 is perhaps best known as a secondary lymphoid organ homing molecule for naïve lymphocytes. Here, a CCL21 gradient is believed to first draw naïve $CD4^+$ T cells into tissue lymphatic channels. At this point, CCL19 becomes predominate, amplifying chemoattraction and inducing an up-regulation of EDG1, a receptor for sphingosine-1 phosphate/S1P. Upon entry into the lymph node, the naïve $CD4^+$ T cells encounters APCs/DCs which may, or may not, be presenting compatible antigen. If so, an immunological synapse is generated and the activated T cell remains in the node. If not, the continuous CCL19:CCR7 interaction results in an internalization of CCR7, with a resultant loss of chemoattractive activity. The activity of up-regulated EDG1 now predominates, and naïve T cells migrate out of the node, and into the blood in response to a constitutive gradient of S1P. The exact source of S1P is unclear, but may represent a natural difference between plasma and tissue levels (19, 20).

References:

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