Pacific Biomarkers
The Value of Expertise

PARC (Pulmonary and Activation-Regulated Cytokine)□ (CCL-18)

Analyte: Pulmonary and Activation-regulated Cytokine
Specimen Type: Serum, EDTA Plasma
Optimum Volume: 0.3 mL
Stability:

2-8 Degrees C	-20 Degrees C	-70 Degrees C
6 days	N.A.*	N.A.*

Reporting Units: ng/mL
Method: ELISA

Biological or Clinical Significance:
Chemokines are small cytokines (8 – 10 kDa). The major role of chemokines is to act as a chemoattractant to guide the migration of cells. Some chemokines control cells of the immune system during processes of immune surveillance, such as directing lymphocytes to the lymph nodes so they can screen for invasion of pathogens by interacting with antigen-presenting cells residing in these tissues. These are known as homeostatic chemokines and are produced and secreted without any need to stimulate their source cell(s).

Other chemokines have roles in development, and still others chemokines are inflammatory and are released from a wide variety of cells in response to bacterial infection, viruses and agents that cause physical damage such as the urate crystals that occur in gout. Certain inflammatory chemokines activate cells to initiate an immune response or promote wound healing. They are released by many different cell types and serve to guide cells of both innate immune system and adaptive immune system.

The chemokines are classified based on their structural characteristics. They all possess sets of conserved cysteine residues that are important for creating their tertiary structure. Thus, two or four cysteines are present that form specific pairing. The chemokines with two cysteine residues are named XCLn (currently, n = 1 – 2). Those with four cysteines may have 0, 1 or 3 amino acids between a cysteine pair near the N-terminus, and therefore are called CCLn (currently, n = 1 – 28); CXCLn (currently, n = 1 – 17); and CX3Ln (currently, n = 1), respectively.

The mature CCL18 is a 69 amino acids peptide with a calculated molecular weight of 7.85 KDa. N-terminal and C-terminal truncated forms have been isolated but it is not known if this is an artifact of purification, or has biochemical and functional significance.

CCL18, also called PARC (pulmonary and activation-regulated chemokine; see reference 2 for more information), is known to trigger biological responses in vitro in T cells, B cells, dendritic cells, hematopoietic progenitor cells, fibroblasts, and potentially, in monocytes/macrophages, but not in neutrophils. Among other activities, CCL18 stimulates collagen production in lung fibroblasts. Rather high basal levels of immunoreactive CCL18 have been consistently detected in normal human plasma (approximately 20 ng/ml) (reference 3). Therefore, CCL18 seems to be one of several constitutively produced plasma chemokines.

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CCL18 has been reported to play roles in pulmonary disorders and many other conditions, including cancer, allergy, rheumatoid arthritis, Sjögren's syndrome, hepatitis C and dermatitis. CCL18 is the most consistently increased chemokine in lungs, affected by hypersensitivity pneumonitis or idiopathic pulmonary fibrosis (see references 4 and 5).

Principle of Test Method:

The CCL18 immunoassay is a solid-phase ELISA designed to measure human CCL18 in cell culture supernates,and biological fluids This assay employs the quantitative sandwich enzyme immunoassay technique.

*Please contact PBI for stability information.

References:

1, Schutyser E, Richmond A, Van Damme J. Involvement of CC chemokine ligand 18 (CCL18) in normal and pathological processes. J Leukoc Biol. 2005; 78:14-26.

2. Struyf S, Schutyser E, Gouwy M, Gijsbers K, Proost P, Benoit Y, Opdenakker G, Van Damme J, Laureys G. PARC/CCL18 is a plasma CC chemokine with increased levels in childhood acute lymphoblastic leukemia. Am. J. Pathol. 2003; 163:2065–2075.

3. Pardo A, Smith KM, Abrams J, Coffman R, Bustos M, McClanahan TK, Grein J, Murphy EE, Zlotnik A, Selman M. CCL18/DC-CK-1/PARC up-regulation in hypersensitivity pneumonitis. J. Leukoc. Biol 2001; 70:610–616.

4. Prasse, Antje, Dmitri V. Pechkovsky, Galen B. Toews, Markus Schäfer, Stephan Eggeling, Corinna Ludwig, Martin Germann, Florian Kollert, Gernot Zissel, and Joachim Müller-Quernheim. CCL18 as an Indicator of Pulmonary Fibrotic Activity in Idiopathic Interstitial Pneumonias and Systemic Sclerosis. Arthritis & Rheumatism 2007; 56.5:1685-693.

5. Boot, RG, et. al. Marked Elevation of the Chemokine CCL18/PARC in Gaucher Disease: a novel surrogate marker for assessing therapeutic intervention. Blood 2004; 103:33-9.