Cytokine Detection ELISAs

Cytokines are a class of small soluble protein molecules that participate in autocrine, paracrine, and endocrine cell signaling in a wide variety of cell types. Generally, there are two groups of cytokines: pro-inflammatory and anti-inflammatory. 1) Pro-inflammatory cytokines are predominantly produced by activated macrophages, Th1 cells, and Th17 cells, and are involved in the up-regulation of inflammatory reactions. The pro-inflammatory cytokines include interleukin (IL)-1β, IL-17, and tumor necrosis factor (TNF)-α. 2) Anti-inflammatory cytokines, produced mainly by inducible T regulatory (iTreg) cells and Th2 cells, modulate pro-inflammatory cytokine signaling by down-regulating the expression of pro-inflammatory cytokines and their associated receptors. The anti-inflammatory cytokines include IL-4, IL-10, and IL-13. Interestingly, cytokines such as leukemia inhibitory factor, interferon (IFN)-α, IL-6, and transforming growth factor (TGF)-β, have been categorized as having both pro-inflammatory and anti-inflammatory activities (1,2).

Within the immune system, the cytokine microenvironment plays specific and important roles in naive CD4+ T-cell differentiation in response to different antigens. For instance, IFN-γ, IL-4, and TGF-β respectively promote Th1, Th2, and Th17 cell differentiation (3); unregulated release of the effector cytokines from the differentiated T-cells results in an imbalance in the homeostasis, which may cause the pathogenesis of chronic inflammatory disorders and autoimmune diseases. Thus, cytokines are target molecules for new therapeutics to attenuate or control inflammatory responses in these diseases.

Chondrex, Inc. provides cytokine detection ELISA kits for mouse and human samples to study the complicated physiological and pathological roles of cytokines in systemic inflammatory reactions. For more information about these products, please contact Chondrex, Inc. at support@chondrex.com.

Cytokine	Mouse Kit	Human Kit
Interleukin-1β (IL-1β)	6705	6805
Interleukin-2 (IL-2)	6711	6811
Interleukin-4 (IL-4)	6703	6803
Interleukin-5 (IL-5)	6713	6813
Interleukin-6 (IL-6)	6702	6802
Interleukin-10 (IL-10)	6706	6806
Interleukin-13 (IL-13)	6712	6812
Interleukin-17 (IL-17)	6708	6808
Interleukin-23 (IL-23)	6714	(Coming soon!)
Interferon-γ (IFN-γ)	6704	6804
Transforming Growth Factor-β1 (TGF-β1)	6709	6809
Tumor Necrosis Factor-Alpha (TNF-α)*	6701	6801
Vascular Endothelial Growth Factor (VEGF)	6710	6810

*A rat TNF-α detection ELISA kit (Cat # 6901) is also available. Please contact Chondrex, Inc. at support@chondrex.com for more information.

References

1. C. Dinarello. Proinflammatory cytokines. *Chest journal* **118.2**: 503-508 (2000).
2. S. Opal, Steven M. and V. DePalo. Anti-inflammatory cytokines. *Chest journal* **117.4**: 1162-1172 (2000).
3. R. Luckheeram, R. Zhuo, A. Verma, B. Xia. CD4+ T cells: differentiation and functions. Clinical and *Developmental Immunology ePub*: Article ID 925135 (2012).

Chemokine Detection ELISAs

Chemokines, 8 to 12 kDa proteins, are a sub-class of the cytokine family. They are classified into four highly conserved groups, sharing 20 to 70 percent of their amino acid sequences. The alpha and beta-chemokines, which contain four cysteines, are the two major families. Among alpha chemokines, one amino acid separates the first two cysteine residues (CXC), whereas in the beta chemokines, the first two cysteine residues are adjacent to each other (CC). There are two minor chemokine groups, one which only has two cysteines (C) and the other which has the first two cysteine residues separated by three amino acids (CXXXC) (1, 2).

Chemokines induce inflammatory cell migration and activation by binding to specific G-protein-coupled cell-surface receptors expressed on different types of leukocytes. The alpha chemokines specifically attract neutrophils, but do not act on lymphocytes. Conversely, beta chemokines do not act on neutrophils, but selectively attract and activate monocytes and lymphocytes. In fact, chemokine signaling attracts and accumulates leukocytes in injured or damaged tissues, initiating both acute and chronic inflammatory responses. Therefore, elevated chemokine levels are observed in many inflammatory diseases (3-5). Furthermore, in malignant cancers, chemokines play roles both in inducing immune-cell infiltration, as well as in cancer-cell proliferation (6).

Chondrex, Inc. provides chemokine detection ELISA kits to study the complicated pathological roles of chemokines in the many systemic inflammatory reactions in diseases and cancer. For more information about these products, please contact Chondrex, Inc. at support@chondrex.com.

Chemokine	Mouse Kit	Human Kit
CCL2	6721	6821
CCL5	6722	6822
CCL17	6730	(Coming soon!)
CCL20	6731	(Coming soon!)
CCL22	6732	(Coming soon!)
CCL25	6723	6823
CCL28	6724	6824
CXCL1	6725	6825
CXCL12	(Coming soon!)	(Coming soon!)
CXCL13	6729	(Coming soon!)
CXCL14	6727	6827
CXCL17	6728	(Coming soon!)

References

1. L. C. Borish, J. W. Steinke, 2. Cytokines and chemokines. *Journal of Allergy and Clinical Immunology*. **111**, S460–S475 (2003).
2. A. D. Luster, Chemokines-chemotactic cytokines that mediate inflammation. *N Engl J Med*. **338**, 436–445 (1998).
3. G. E. White, A. J. Iqbal, D. R. Greaves, CC chemokine receptors and chronic inflammation--therapeutic opportunities and pharmacological challenges. *Pharmacological Reviews*. **65**, 47–89 (2013).
4. P. Proost, A. Wuyts, J. van Damme, The role of chemokines in inflammation. *Int. J. Clin. Lab. Res*. **26**, 211–223 (1996).
5. C. M. M. Martínez, R. H. Pando, Chemokines, a new family of cytokines in inflammatory cell recruitment. *Rev. Invest. Clin*. **51**, 255–268 (1999).
6. F. Balkwill, Cancer and the chemokine network. *Nat Rev Cancer*. **4**, 540–550 (2004).