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Interleukin-6 (IL-6) is an endogenous chemical which is active in inflammation and in B cell maturation. Besides being an immune protein, it is also a pyrogen, and is responsible for fever in autoimmune, infectious or non-infectious disease. It is produced in the body, wherever there is inflammation, either acute or chronic. It interacts with interleukin-6 receptor alpha to induce transcription of inflammatory gene products.

IL-6 is one of the key proinflammatory cytokines in triggering this response and is almost entirely responsible for inducing fever and the acute phase response in the liver. In life-threatening infections, the IL-6 level is elevated and correlates with the severity of sepsis and death rate. IL-6 levels are also raised in almost all diseases that involve chronic inflammation such as diabetes and rheumatoid arthritis.

Interleukin-6 (IL-6) has been emphasized by reports of elevated circulating as well as intracardiac IL-6 levels in patients with congestive heart failure (CHF). IL-6 may contribute to the progression of myocardial damage and dysfunction in chronic heart failure syndrome resulting from different causes. As the cause of CHF in cardiomyopathy, myocarditis, allograft rejection, and left ventricular assist device (LVADs) conditions, circulating IL-6 levels are associated with the severity of left ventricular dysfunction, and are also strong predictors of subsequent clinical outcomes.

Anti-Human IL-6 Monoclonal Antibodies

Four anti-human IL-6 monoclonal antibodies were recently developed by CUSAg, which make possible the development of highly sensitive and rapid sandwich immunoassays. Our in-house assays have a linear detection range from 0~1500 pg/mL. All recommended MAb combinations were evaluated in medium-scale clinical trials with blood samples from normal and patients with chronic infections, autoimmune disorders, certain cancers, and Alzheimer’ s disease.

Properties	Specification
Target species	Human
Host animal	Mice Balb/c
Cell line used for fusion	Sp2/0
Immunogen	Human IL-6
Purification method	Protein G affinity chromatography
Presentation	MAb solution in PBS (pH 7.4)
Application	CLIA and others
Catalog Number	CSB-DA436EmN① CSB-DA436EmN② CSB-DA436EmN③ CSB-DA436EmN④

IL-6
IL-6

IL-6

1 Calibration Curve

All MAbs were tested in pairs as capture and detection antibodies to select the best two-site MAb combinations for the development of a quantitative sandwich immunoassay. Calibration curves for several best two-site combinations, which utilized different anti-IL-6 MAbs, are shown in Fig.1. Detection antibodies were labeled with horseradish peroxidase (HRP). The best selected MAb combinations for the development of quantitative human IL-6 immunoassays are (capture-detection respectively):

MAb combination A: CSB-DA436EmN①- CSB-DA436EmN④;
MAb combination B: CSB-DA436EmN②- CSB-DA436EmN④;
MAb combination C: CSB-DA436EmN③- CSB-DA436EmN④;
MAb combination D: CSB-DA436EmN④- CSB-DA436EmN②.

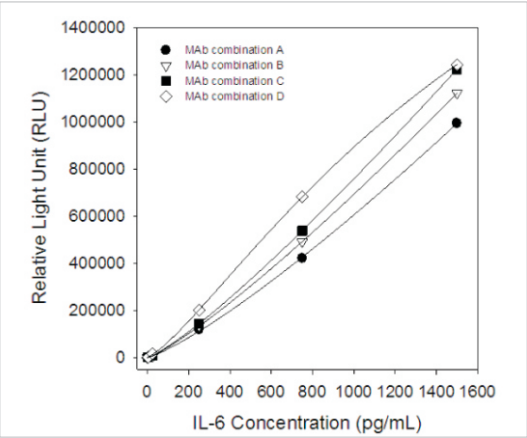

Fig.1 Six-point calibration curve for IL-6 sandwich chemiluminescence immunoassay (Calibrator concentrations: 0, 2.5, 25, 250, 750, 1500 pg/mL)

2 Precision

One high control (700 pg/mL) and one low control (5 pg/mL) were evaluated by our CUSAg CLIA IL-6 assay using the MAb combination B in 10 consecutive runs, the results are summarised in the table below:

Sample	n	Mean Conc. (pg/L)	SD	%CV
Control 1	10	4.46	0.33	7.4
Control 2	10	688.51	28.65	4.2

3 Recovery

Known concentrations of IL-6 were added to five aliquots of human serum. The concentration of IL-6 was determined by CUSAg CLIA platform and the resulting percent recovery was calculated. The recovery percentage mean value of the IL-6 immunoassay using MAb combination B was 87.0%.

4 Clinical Comparison

23 samples from apparently healthy donors and patients with chronic infections were detected with CUSAg CLIA IL-6 assays using MAb combination B. As shown in Fig.2, The correlation coefficient between our home-grown assay and comparison assay is over 0.97, these results reveal these monoclonal antibodies can be applied to double-MAb-sandwich-immunoassays.

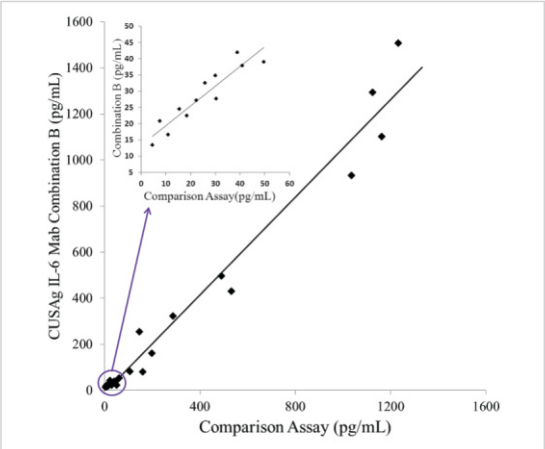

Fig.2 Comparison of CUSAg IL-6 CLIA and commercial diagnostic assays

Reference

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