

Overview

Useful For

Evaluation of patients with suspected systemic inflammation associated with infections, autoimmunity, and cancers

Method Name

Electrochemiluminescence (ECL)

NY State Available

Yes

Specimen

Specimen Type

Plasma EDTA

Specimen Required

Collection Container/Tube: Lavender-top (EDTA)

Submission Container/Tube: Plastic vial

Specimen Volume: 0.5 mL

Collection Instructions:

1. Immediately after specimen collection, place the tube on wet ice.
2. Centrifuge at 1500 x g for 10 minutes and aliquot plasma into plastic vial.
3. Freeze specimen within 30 minutes.

Specimen Minimum Volume

0.3 mL

Reject Due To

| | |
|-----------------------|--------|
| Gross hemolysis | OK |
| Gross lipemia | Reject |
| Gross icterus | OK |
| Heat-treated specimen | Reject |

Specimen Stability Information

| Specimen Type | Temperature | Time | Special Container |
|---------------|--------------------|----------|-------------------|
| Plasma EDTA | Frozen (preferred) | 21 days | |
| | Refrigerated | 24 hours | |

Clinical & Interpretive

Clinical Information

Interleukin-6 (IL-6) is an important pro-inflammatory cytokine, which plays critical roles in both innate and adaptive immunity.(1,2) IL-6 is produced by a variety of different cell types, including macrophages, endothelial cells, and T cells. Its production can be initiated in response to microbial invasion or other cytokines, such as tumor necrosis factor alpha (TNF-alpha) and IL-1 beta. As part of the innate immune system, IL-6 acts on hepatocytes to induce expression of C-reactive protein, fibrinogen, and serum amyloid A, also known as the acute phase reactants. IL-6 also plays a key role in activating antibody-producing B cells to proliferate, leading to an enhanced antibody response.(1)

[Under normal conditions, IL-6 plays an important role in cellular homeostasis. However, during inflammatory conditions, the concentration of IL-6 increases in several folds, highlighting its clinical relevance as a major alarm signal in humans in response to infections \(sepsis/septicemia\), inflammation, autoimmunity, and cancer.\(2-4\) Increased concentrations of IL-6 have been reported in localized \(prosthetic joint infections \[PJI\], periodontitis\), and systemic \(eg, sepsis, COVID-19\) infections, autoimmune conditions \(eg, rheumatoid arthritis \[RA\] systemic lupus erythematosus, ankylosing spondylitis, and inflammatory bowel disease\), and cancers.\(4-8\) Thus, IL-6 serum levels have evaluated and reported to predict severity and response to IL-6 targeted therapies in PJI,\(4\) sepsis,\(5\) COVID-19,\(6\) and RA.\(7-8\) Overall, IL-6 cytokine is a nonspecific biomarker of systemic inflammation that may have relevance in clinical decision making in the appropriate context.](#)

Reference Values

< or =1.8 pg/mL

Interpretation

Elevated concentrations of interleukin-6 (IL-6) may indicate an ongoing inflammatory response.

Cautions

Interleukin-6 (IL-6) is a nonspecific marker associated with an inflammatory response and is not diagnostic for any specific disease or disease process. Elevated concentrations of IL-6 must be interpreted within the clinical context of the patient.

Normal concentrations of IL-6 do not exclude the possibility of an ongoing inflammatory process.

IL-6 has limited stability. Following centrifugation, plasma must be either immediately frozen or refrigerated. Specimens can be stored at refrigerated temperatures for only 24 hours, after which they must be frozen. Storage of plasma for any length of time at ambient temperature is not acceptable.

Clinical Reference

1. Hilligan KL, Ronchese F: Antigen presentation by dendritic cells and their instruction of CD4+ T helper cell responses. *Cell Mol Immunol.* 2020 Jun;17(6):587-599
2. Rose-John S: Interleukin-6 signalling in health and disease. *F1000Res.* 2020 Aug 20;9:F1000 Faculty Rev-1013
3. Jones SA, Jenkins BJ: Recent insights into targeting the IL-6 cytokine family in inflammatory diseases and cancer. *Nat Rev Immunol.* 2018 Dec;18(12):773-789
4. Rose-John S, Winthrop K, Calabrese L: The role of IL-6 in host defence against infections: immunobiology and clinical implications. *Nat Rev Rheumatol.* 2017 Jul;13(7):399-409

5. Gallo J, Svoboda M, Zapletalova J, et al: Serum IL-6 in combination with synovial IL-6/CRP shows excellent diagnostic power to detect hip and knee prosthetic joint infection. PLoS One. 2018 Jun;13(6):e0199226
6. Song J, Park DW, Moon S, et al: Diagnostic and prognostic value of interleukin-6, pentraxin 3, and procalcitonin levels among sepsis and septic shock patients: a prospective controlled study according to the Sepsis-3 definitions. BMC Infect Dis. 2019 Nov;19(1):968
7. Galvan-Roman JM, Rodriguez-Garcia SC, Roy-Vallejo E, et al: IL-6 serum levels predict severity and response to tocilizumab in COVID-19: an observational study. J Allergy Clin Immunol. 2021 Jan;147(1):72-80
8. Udomsinprasert W, Jittikoon J, Sangroongruangsri S, Chaikledkaew U: Circulating levels of interleukin-6 and interleukin-10, but not tumor necrosis factor-alpha, as potential biomarkers of severity and mortality for COVID-19: Systematic review with meta-analysis. J Clin Immunol. 2021 Jan;41(1):11-22
9. Boyapati A, Schwartzman S, Msihid J, et al: Association of high serum interleukin-6 levels with severe progression of rheumatoid arthritis and increased treatment response differentiating sarilumab from adalimumab or methotrexate in a post hoc analysis. Arthritis Rheumatol. 2020 Sept;72(9):1456-1466

Performance

Method Description

The interleukin-6 (IL-6) cytokine assay measures human cytokines in a 96-well spotted plate. The assay employs a sandwich immunoassay format where capture antibodies are coated on a single spot on the bottom of each well. Diluted samples, calibrators, and controls are added to the plate. If present, IL-6 will bind to the capture antibodies. After incubation, a solution containing detection antibodies conjugated with electrochemiluminescent labels is added. After a final incubation, a buffer is added that creates the appropriate chemical environment for electrochemiluminescence. The plate is then read on the MSD QuickPlex SQ120. The machine applies a voltage that causes bound labels to emit measurable light. The MSD QuickPlex SQ120 measures the intensity of emitted light and correlates it to a set of standards of known quantity via a 4-point logistics curve fitting method. (Package insert: Human IL-6 V-plex. Mesoscale Discovery; 2014)

PDF Report

No

Day(s) Performed

Monday, Wednesday, Friday

Report Available

2 to 8 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & Codes**Fees**

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact [Customer Service](#).

Test Classification

This test was developed, and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

83529

LOINC® Information

| Test ID | Test Order Name | Order LOINC® Value |
|---------|------------------|--------------------|
| IL6 | Interleukin 6, P | 26881-3 |

| Result ID | Test Result Name | Result LOINC® Value |
|-----------|------------------|---------------------|
| 63020 | Interleukin 6, P | 26881-3 |