MAYO CLINIC LABORATORIES

Test Definition: SILRP

Interleukin 2 Receptor Alpha Soluble, Plasma

Overview

Useful For

Measuring the concentration of soluble interleukin 2 receptor alpha (sIL-2Ra) in plasma

Aids in the diagnosis, evaluation and monitoring of patients with hemophagocytic lymphohistiocytosis, macrophage activation syndrome, sarcoidosis, and lymphoid malignancies

Highlights

This test aids the diagnosis and evaluation of lymphoproliferative disorders and hyperinflammatory syndromes such as hemophagocytic lymphohistiocytosis, and macrophage activation syndrome.

Method Name

Immunoassay

NY State Available

No

Specimen

Specimen Type

Plasma EDTA

Ordering Guidance

If this test is ordered with TH1CP / T-Helper Cell Type 1 Cytokine Panel, Plasma or CYTOP / Cytokine Panel, Plasma, this test will be canceled as duplicate and TH1CP or CYTOP performed as ordered.

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube: Lavender top (EDTA)
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL Plasma
Collection Instructions:
1. Immediately after specimen collection, place the tube on wet ice.
2. Within 2 hours of collection, centrifuge at 4 degrees C, 1500 x *g* for 10 minutes, and aliquot plasma into a plastic vial.
3. Freeze immediately.
Additional Information:
1. Plasma for this test cannot be shared with other tests. Submit specimen for this test in its own vial.
2. This test **cannot be** added onto a previously collected specimen.
3. If a refrigerated centrifuge is not available, it is acceptable to use a room temperature centrifuge, provided the sample is kept on ice before centrifugation and is frozen immediately afterward.

Specimen Minimum Volume

Plasma: 0.3 mL

Reject Due To

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

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma EDTA	Frozen	14 days	

Clinical & Interpretive

Clinical Information

The interleukin 2 receptor alpha chain (IL-2Ra, CD25) is a cell-surface transmembrane protein known to be upregulated on activated T cells. During lymphocyte activation, the extracellular domain is cleaved via extracellular proteolysis to generate a soluble form, soluble IL-2 receptor alpha (sIL-2Ra, sCD25), which circulates in plasma, serving as a marker of T cell and broader lymphocyte activation.

The primary application of sIL-2Ra is the evaluation and monitoring of hemophagocytic lymphohistiocytosis (HLH) and macrophage activation syndrome (MAS) in both adult and pediatric patients.(1,2) According to the HLH-2004 diagnostic and therapeutic guidelines(2), an elevated sIL-2Ra concentration is one of eight diagnostic criteria used in the evaluation of HLH and reflects the marked T cell activation observed in hyperinflammatory disorders such as HLH and MAS. The HLH-2004 diagnostic and therapeutic guidelines established a threshold of greater than 2400 U/mL, derived largely in a pediatric context.(2) A later study in adults reported a comparable optimal threshold of 2515 U/mL.(1) It is important to note, however, that sIL-2Ra measurements are not harmonized across laboratories, and these thresholds do not generalize across assays.(3) Consequently, it has been suggested that a value of approximately 4 times the laboratory-specific upper reference limit may offer a more comparable interim approach across laboratories, pending large multicenter validation studies.(4)

Beyond hyperinflammatory disorders, sIL-2Ra is a clinically established marker in other T cell driven and granulomatous conditions such as sarcoidosis(5) and lymphoproliferative disorders, including T-cell leukemia/lymphoma where sIL-2Ra serves as a marker of tumor burden and prognosis.(6)

Reference Values

<18 years: Not established

> or =18 years: < or =1929 pg/mL

Interpretation

Elevated concentrations of soluble interleukin 2 receptor alpha (sIL-2Ra) of approximately 4 times the upper reference limit are one of the diagnostic criteria for hemophagocytic lymphohistiocytosis (HLH) syndrome. The diagnosis of HLH syndrome should be based on compatible clinical presentation in the context of significantly elevated inflammatory markers, including ferritin, sIL-2Ra, and interferon gamma effectors such as CXCL9 (C-X-C motif chemokine ligand 9).

Cautions

Soluble interleukin 2 receptor alpha (sIL-2Ra) testing should only be used in conjunction with clinical presentation and other laboratory testing as part of a patient's overall assessment. Elevations in sIL-2Ra can be seen in several inflammatory, malignancy, or infectious conditions involving activation of T cells, B cells, granulocytes or natural killer cells. Non-elevated concentration of sIL-2Ra does not exclude the possibility of infection or other inflammatory condition.

There is substantial overlap in elevated sIL-2Ra in patients with other chronic inflammatory conditions or infections.

Soluble interleukin 2 receptor alpha is a marker for lymphocyte activation and proliferation; a comprehensive cytokine evaluation such as CYTOP / Cytokine Panel, Plasma may be more useful in overall disease assessment or pathophysiology.

Clinical Reference

1. Hayden A, Lin M, Park S, et al. Soluble interleukin-2 receptor is a sensitive diagnostic test in adult HLH. Blood Advances. 2017;1(26):2529-2534. doi:10.1182/bloodadvances.2017012310
2. Henter JI, Horne A, Arico M, et al. HLH-2004: Diagnostic and therapeutic guidelines for hemophagocytic lymphohistiocytosis. Pediatr Blood Cancer. Feb 2007;48(2):124-31. doi:10.1002/pbc.21039
3. Damoiseaux J. The IL-2 – IL-2 receptor pathway in health and disease: The role of the soluble IL-2 receptor. Clin Immunol. 2020;218:108515. doi.10.1016/j.clim.2020.108515
4. Fauser J, Klotz W, Trebo M, et al. The diagnostic pitfall of sIL-2R in hemophagocytic lymphohistiocytosis: A key marker lost in analytic translation. Journal of Allergy and Clinical Immunology. 2026;157(1):275-276. doi:10.1016/j.jaci.2025.09.005
5. Eurelings LEM, Miedema JR, Dalm V, et al. Sensitivity and specificity of serum soluble interleukin-2 receptor for diagnosing sarcoidosis in a population of patients suspected of sarcoidosis. PLoS One. 2019;14(10):e0223897. doi:10.1371/journal.pone.0223897
6. Shiratori S, Kosugi-Kanaya M, Shigematsu A, et al. Ultra-high level of serum soluble interleukin-2 receptor at diagnosis predicts poor outcome for angioimmunoblastic T-cell lymphoma. Leuk Lymphoma. 2015;56(9):2592-2597. doi:10.3109/10428194.2014.1001985
7. Kobayashi Y, Sato T, Nagai T, et al. Association of high serum soluble interleukin 2 receptor levels with risk of adverse events in cardiac sarcoidosis. ESC Heart Fail. 2021;8(6):5282-5292
8. Zoref-Lorenz A, Murakami J, Hofstetter L, et al. An improved index for diagnosis and mortality prediction in malignancy-associated hemophagocytic lymphohistiocytosis. Blood. 2022;139(7):1098-1110

Performance

Method Description

Testing for soluble interleukin 2 receptor alpha is performed using a laboratory-developed immunoassay.(Unpublished

Mayo method)

PDF Report
No

Day(s) Performed
Thursday

Report Available
2 to 8 days

Specimen Retention Time
14 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

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 account representative. 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. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information
83520

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
SILRP	IL-2 Receptor Alpha Soluble, P	76039-7

Result ID	Test Result Name	Result LOINC® Value
SILRP	IL-2 Receptor Alpha Soluble, P	76039-7